Employment Benefits from California Climate Investments and Co-investments

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This report is an extension of a briefing paper commissioned by the California Air Resources Board (CARB). Building upon the briefing paper's focus on jobs supported by California Climate Investment programs, this report also analyzes the employment effects of associated co-investments and includes 29 additional chapters each focusing on a specific program.

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DISCLAIMER

The UCLA Luskin Center for Innovation appreciates the contributions of the aforementioned agencies. This paper, however, does not necessarily reflect their views nor does it serve as an endorsement of findings. Any errors are those of the authors.

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For a list of photo credits, see **Appendix A1** in **Part III** of this report.

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PART I: Summary Results

Executive Summary

This report quantifies the jobs that are being supported by California Climate Investments within the State of California.[1] Revenues from California's Cap-and-Trade Program flow as investments into communities across California, particularly to disadvantaged communities affected by pollution and poverty. As directed by Assembly Bill (AB) 32 and AB 1532, these investments are designed to reduce greenhouse gases (GHGs) while providing environmental, public health, and economic benefits, and are collectively referred to as California Climate Investments. Communities where investments occur could realize a wide range of benefits, including: reduced energy costs; more affordable housing; improved mobility; cleaner air; and jobs. In this report, we focus on the latter metric, quantifying statewide, program-specific jobs supported by appropriations for California Climate Investments from 2013 to 2016.[2]

Investment Levels

From the launch of California Climate Investments in 2013 through 2016, the state appropriated about $2.2 billion to 29 programs aimed at reducing GHGs.[3] Many of these programs also induce consumers, businesses, and government entities to contribute matching funds, which we also analyzed. In analyzing these matching funds, we only quantified those that we could determine were induced by California Climate Investments (i.e., matching funds that would have not otherwise occurred without the state's financial support).[4] The largest example of induced co-investment is the $3 billion in federal funding for the High-Speed Rail Project, which would not be available for use without the state's match in Cap-and-Trade Program auction proceeds. After analyzing financial data for all 29 programs, we estimate that the state's $2.2 billion in appropriations induced an additional $6.4 billion in co-investment, resulting in a total investment of nearly $8.6 billion (see **Figure ES.1** for a summary of these investment flows). Consequently, we find that every $1 appropriated by the State Legislature as California Climate Investments induced approximately $3 in additional investment.

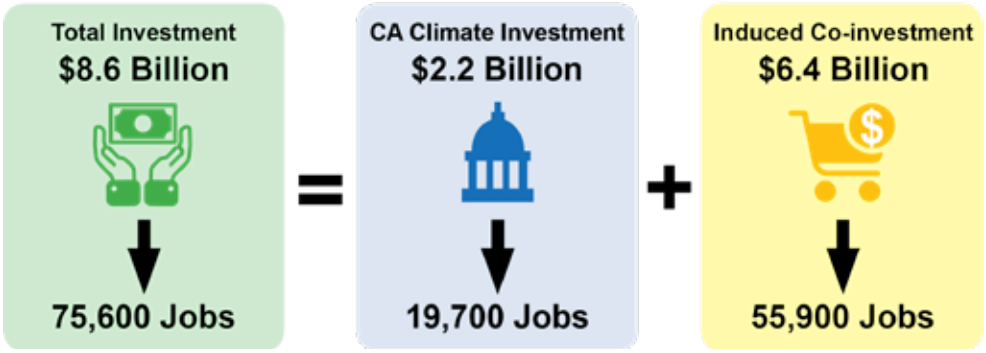
[1] By "job" we mean a full-time equivalent (FTE) job-year, which is defined simply as the equivalent of one person working full-time for one year. These are not permanent jobs and are tied to continued funding.

[2] Dates are simplified for accessibility; "2013 to 2016" refers to fiscal years 2013-14 through 2015-16.

[3] The 29 programs studied were divided according to the structure used in the 2016 California Climate Investments Annual Report (**Table ES-2; Page 8-10**)

[4] This study does not assess how induced co-investments would be spent in the absence of California Climate Investments. Some investments may have been spent elsewhere in the California economy, while some might have been spent out-of-state or overseas.

Figure ES.1. Estimated Number of Jobs in California Supported by California Climate Investments from 2013 to 2016[5]



Total Number of Jobs

Our analysis reveals that the $2.2 billion in California Climate Investment appropriations support about 19,700 jobs in California. The $6.4 billion in induced co-investment supports an additional 55,900 jobs. When added together, appropriated funds and induced co-investment support a total of 75,600 jobs in California (see **Figure ES.1** for a summary of these jobs flows). Some of these jobs have already materialized, while others will be realized in the near future, as not all funded projects have been fully implemented.

Program-Level Jobs

To estimate the total number of jobs supported by California Climate Investments, we first calculated the jobs supported by each of the 29 funded programs (see **Figure ES.2** for a list of programs). A critical first step in this calculation was carefully deriving what is known as an "employment multiplier" for each program, which describes how many jobs are supported by $1 million of investment in that program. Each program's employment multiplier was derived in IMPLAN, an economic input-output model that measures the ripple effects of an investment in one industry across an entire economy.

For every million dollars that the state appropriates in California Climate Investments, we estimate that on average 8.8 jobs will be supported by program funds, and an additional 24.9 jobs will be supported by induced co-investment. These 24.9 additional jobs are largely explained by the High-Speed Rail Project, which has exceptionally high levels of induced co-investment from the federal government and Proposition 1A (High-Speed Rail Act of 2008) funds, thereby magnifying the jobs supported by each state dollar. If the High-Speed Rail Project is removed from the mix of studied programs, we estimate a more representative average of 8.5 jobs per million dollars of California Climate Investment funding, and an additional 2.2 jobs from induced co-investment.

To put these numbers in context, the residential construction industry, which is a common reference point for job creation, has a multiplier of 10.4 jobs per million dollars invested, assuming no additional jobs from co-investment.[6] As another point of comparison, computer and electronic products manufacturing, the largest manufacturing industry in California, has a multiplier of 2.2 jobs per million

26 of the **29** California Climate Investments support more jobs per million dollars of investment than the largest manufacturing industry in California, computer and electronic products manufacturing.

[5] Ibid.

[6] This industry does not explicitly require matching funds, so no co-investment was assumed.

dollars invested, again assuming no additional jobs from co-investment.[7] Nine of the 29 California Climate Investments (31%) have an employment multiplier greater than that of construction, and 26 (90%) have a multiplier greater than that of electronic products manufacturing, not including the additional jobs from co-investment.

Caution is advised when interpreting the social value of a relatively low employment multiplier for a California Climate Investment program. A program may have a low multiplier (e.g., support relatively few jobs per million dollars invested) for three primary reasons: 1) the jobs supported have high wages and generous benefits; 2) the program requires greater spending on materials than labor to achieve its GHG reduction goals, and/or 3) the program must source from out-of-state firms. In addition to the primary GHG reduction benefits of California Climate Investments, employment is one of many co-benefits that could be used to assess the utility of these programs. Program-level investment decisions should not be based solely on job numbers. Other important considerations include job quality and access, community health benefits, household cost savings, and other key performance metrics.

Figure ES.2. Programs Funded by California Climate Investments (2013-16)

Photo credit: California High Speed-Rail Authority

Construction of the High-Speed Rail Project

Transportation and Sustainable Communities Programs

- High-Speed Rail Project
- Transit and Intercity Rail Capital Program
- Low Carbon Transit Operations Program
- Affordable Housing and Sustainable Communities
- Sustainable Agricultural Lands Conservation
- Clean Vehicle Rebate Project
- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project
- Enhanced Fleet Modernization Program Plus-Up
- Car Sharing and Mobility Options Pilot
- Public Fleet Pilot Project
- Financing Assistance Pilot Project
- Zero-Emission Truck and Bus Pilot Projects
- Multi-Source Facility Demonstration Project
- Zero-Emission Drayage Truck Demonstration Project

Photo credit: Association for Energy Affordability Inc.

Energy audits through the Large Multi-Family Energy Efficiency and Renewables program

Clean Energy and Energy Efficiency Programs

- Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating
- Single-Family Solar Photovoltaics
- Large Multi-Family Energy Efficiency and Renewables
- Dairy Digester Research and Development Program
- State Water Efficiency and Enhancement Program
- Water-Energy Grant Program
- State Water Project Turbines Program

Continues next page.

[7] Ibid.

Photo credit: Truckee River Watershed Council

Crews implementing the Middle Martis Creek Wetlands Restoration project.

Natural Resources and Waste Diversion Programs

- » Sacramento-San Joaquin Delta and Coastal Wetlands Restoration
- » Mountain Meadow Ecosystems Restoration
- » Forest Health Program
- » Forest Legacy Program
- » Urban and Community Forestry Program
- » Organics Grant Program
- » Recycled Fiber, Plastic, and Glass Grant Program
- » The Greenhouse Gas (GHG) Reduction Loan Program

Jobs by Economic Sector

The jobs supported by California Climate Investments are diverse, cutting across many different industries and economic sectors, ranging from the manufacture of clean vehicles to the restoration of degraded wetlands. Given this diversity, California Climate Investment-related jobs can serve as a sample of the types of "green" jobs supported by California's transition to a lower-carbon economy. The job totals reported here, however, represent only a fraction of the total green jobs supported by the state's broad suite of climate change policies.

> More than half of the jobs supported by California Climate Investments (2013 –16) are in the construction sector.

Of the many economic sectors that are directly impacted by California Climate Investments, the construction industry stands to gain the most. About 54% of the jobs supported by direct investment in California Climate Investments occur in construction sectors, and 68% of the jobs supported by induced co-investment occur in construction sectors. This is explained by the significant level of investment that goes toward the High-Speed Rail Project, the Transit and Intercity Rail Capital Program that funds new and expanded services, and the Affordable Housing and Sustainable Communities program that funds the construction of multiunit housing near transit, among other programs. The sector receiving the second-highest number of job gains due to California Climate Investments is architectural, engineering, and related services.

The impacted industries employ a diverse workforce of both blue-collar and white-collar employees. For example, the architectural and engineering sector is known for creating white-collar jobs that pay middle-class salaries. Many blue-collar construction jobs funded by California Climate Investments are covered under the state's prevailing wage law. In addition, California public labor code requires that some of the workers be enrolled in state-certified apprenticeship programs. This system ensures that public works construction jobs resulting from California Climate Investments support broad occupational training and provide family-supporting pay and benefits to workers.

Investments Located in Disadvantaged Communities

We find that investments located in disadvantaged communities support more jobs per million dollars invested than those located outside disadvantaged communities. This finding holds true whether or not

the additional jobs supported by co-investment are included. This outcome is explained by the mix of industries that are impacted by investments located in disadvantaged communities, which tend to have higher employment multipliers compared to the mix of industries impacted by investments located in other communities. In other words, a greater share of investment in disadvantaged communities goes toward industries like construction, architecture, engineering services, and transit operations, whereas manufacturing sectors are more impacted by the funds that are spent outside disadvantaged communities.[8]

> California Climate Investments located in disadvantaged communities support more jobs per million dollars than investments located outside disadvantaged communities.

It is important to note that the employment model used in this study (IMPLAN Version 3.1) does not provide data on the precise location of jobs, so the jobs supported by investments spent in disadvantaged communities may actually occur outside those communities. Nevertheless, investments in disadvantaged communities, particularly large infrastructure projects, can and do support some level of employment in those communities. For example, the Transit and Intercity Rail Capital Program provided $38.5 million to the Los Angeles County Metropolitan Transportation Authority for major upgrades to the Willowbrook/Rosa Parks station. The project is located in a disadvantaged community and has a labor agreement requiring the hiring of local workers for a minimum of 40% of all worked hours.[9,10]

Limitations of Study Scope

The modeling tool used for this study focuses on quantifying job flows rather than providing granular detail about job quality, training, job access for workers in disadvantaged communities, and other important components of employment benefits. However, because the study identifies the industries involved in each California Climate Investment program, this study could be used as a springboard to more deeply analyze the industries and specific jobs supported by California Climate Investments, including pay, benefits, and career advancement opportunities.

The number of jobs supported by California Climate Investments is only one of several employment impacts from the Cap-and-Trade Program. Jobs are also supported when firms invest in abatement and compliance measures. Moreover, jobs are supported when California Climate Investments enable households, businesses, and local governments to spend less on resources such as electricity, natural gas, transportation fuels, and water, thereby freeing additional funds to be spent on other goods and services.

Conversely, jobs may be lost in sectors that face reductions in demand for carbon-intensive resources. For example, consumers may purchase less fossil fuel-based electricity and gasoline, or travel fewer vehicle miles. These demand shifts will lead to a reduction in employment in the impacted sectors, which we do not assess in our analysis. Additionally, the revenues that flow into California Climate Investments come from

[8] This study does not assess the degree to which wages/benefits influence the employment multipliers associated with specific industrial sectors. Understanding the quality of jobs supported by California Climate Investments should be a priority for future research.

[9] Los Angeles County Metropolitan Transportation Authority (2017). Project Labor Agreement. Retrieved from https://media.metro.net/about_us/pla/images/agreement_projectlabor_2017-0126.pdf

[10] Per the project labor agreement, a local worker is an individual whose primary place of residence is within an economically disadvantaged area or an extremely economically disadvantaged area in Los Angeles County.

California-based firms that purchase Cap-and-Trade allowances. If these regulated firms had not purchased these allowances, then they would otherwise have invested some of those revenues in California, thereby supporting in-state jobs as well, which we also do not assess.

Lastly, our study also does not look at counterfactual scenarios for spending Cap-and-Trade dollars in lieu of the suite of the California Climate Investments studied here. For example, if auction revenues were instead given to California residents through a dividend program, that transfer of funds would induce consumer spending, thereby supporting jobs. A dividend program is just one of many reinvestment options. Developing a series of alternative investment opportunities, and comparing their employment yields, was outside the scope of this study.

Thus, our analysis is not meant to provide an estimate of the net jobs created by the Cap-and-Trade Program. Rather, we seek to accurately estimate the job flows that result from investment in programs that reduce GHGs, as one measure of their co-benefits.

1. Introduction

The objective of this report is to quantify the jobs in California that are being supported by California Climate Investments.[1] Between 2013 and 2016, the Legislature appropriated over $2.2 billion from Cap-and-Trade auction proceeds as California Climate Investments, which flow into communities across the state.[2] As directed by Assembly Bill (AB) 32 and AB 1532, these investments are designed to reduce greenhouse gas (GHG) emissions while also providing employment and local public health benefits.

The Legislature appropriated the $2.2 billion in California Climate Investments to 11 state agencies (between 2013 and 2016), which have invested these funds in 29 different programs.[3] These programs cover a wide range of sectors, including transportation and sustainable communities, clean energy and energy efficiency, and natural resources and waste diversion. The employment impacts of these programs are amplified because many of these programs require households, businesses, or governments to match or co-invest in the cleaner technology that they are adopting. In this report, we estimate that California Climate Investments induce an additional $6.4 billion in co-investment.

Research Objectives and Motivation

We take a bottom-up approach to estimating the number of jobs supported by each of the 29 programs. For each program, we describe the distinct economic sectors and industries where jobs are being supported. We also estimate what is commonly known as an "employment multiplier" for each program, which refers to the number of jobs supported by one million dollars of investment in that program. We then sum up the number of jobs across all programs according to California Climate Investment appropriations between 2013 and 2016. Lastly, we analyze the share of total jobs that are supported by investments spent within California's disadvantaged communities.

California Climate Investments represent a large redirection of both public and private revenues. It is therefore important for policymakers to understand the number of jobs supported by these investments. Policymakers have the responsibility to determine whether the allocations of Cap-and-Trade revenues have sufficiently enhanced social welfare and advanced the state's climate goals. They must also decide how much total revenue to allocate to California Climate Investments at present and in the future. Lastly, they must decide which programs to fund and how much revenue to allocate, by considering how the portfolio of programs collectively can provide multiple benefits, including but certainly not limited to jobs.

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[1] By "job" we mean a full-time equivalent (FTE) job-year, which is defined simply as the equivalent of one person working full time for one year. These are not permanent jobs and are tied to continued funding.

[2] Dates are simplified for accessibility; by "2013 through 2016" we are referring to fiscal years 2013-14 through fiscal years 2016-17.

[3] The 29 programs analyzed in this report are based on the 31 programs listed in the 2016 California Climate Investments Annual Report (See **Table ES-2, Page 8-10**). Two programs listed in the 2016 California Climate Investments Annual Report did not receive funding during the 2013 through 2016 study period (Bio Fuels and Public Buildings: Energy Efficiency), and were therefore not analyzed in this report.

However, the existing academic literature provides policymakers — specifically the California Legislature — with very little guidance when making specific investment decisions.

Literature Review. At a broad scale, several studies have evaluated the impacts of California's suite of climate measures under AB 32 on employment. For example, Roland-Holst (2008) finds that the proposed package of policies in the state's AB 32 Draft Scoping Plan could create as many as 222,000 new jobs by 2020, or an increase of 1.2% from the business-as-usual scenario.[4] This employment number assumes that new climate policies create new incentives for innovation, and thus dually reflects jobs created by the proposed policies in the Draft Scoping Plan and jobs created by increasing annual energy efficiency gains.

In a similar economic study, Rose et al. (2010) examine the aggregate employment impacts of the state's Cap-and-Trade Program across three scenarios of allowance allocation and revenue recycling.[5] The authors find a net increase of 110,000 to 137,000 jobs by 2020, depending upon the scenario for recycling auction revenues, which represents a positive change of 0.5% to 0.7% from the baseline. In their analysis, the authors assume that the GHG-reducing complementary policies identified in the California Air Resources Board's (CARB) 2009 AB 32 Scoping Plan are fully implemented in conjunction with each scenario for recycling auction revenues. The findings therefore reflect the net economic effect of implementing a broad suite of climate policies, including standards for low-carbon fuels, fuel efficiency, renewable energy procurement, and energy efficiency, among others.

Moreover, CARB conducted its own economic analysis of California's AB 32 Scoping Plan in 2010.[6] The study found that fully implementing the GHG-reducing policies of the Scoping Plan would have a positive impact on employment by 2020, with a 0.1% increase in labor demand above the business-as-usual economic forecast. CARB also conducted sensitivity analyses that considered how employment would be impacted if offset credits were eliminated and if reduction measures in the electricity, natural gas, and transportation sectors were to fall short of anticipated outcomes. These sensitivity analyses yielded a 0.8% to 1.7% decrease in labor demand, which was explained by an increase in allowance prices and a decrease in cost savings derived from many of the complementary measures. Thus, the study found that the employment gains of the AB 32 Scoping Plan ultimately depend on effective implementation.

It should be noted that the above research predates the launch of the Cap-and-Trade Program in 2012 and consequently predates California Climate Investments. These studies therefore do not specifically isolate the jobs supported by the diverse suite of California Climate Investments as we do here. Nonetheless, these studies converge upon a common conclusion that reducing GHGs and increasing employment opportunities can be achieved in tandem.

In addition to these broader economic studies on California's climate policies, two recent studies by Jones et al. (2017) examine the employment impacts of California Climate Investments using methods similar to

[4] D. Roland-Holst (2008). Energy Efficiency, Innovation, and Job Creation in California. UC Berkeley. Center for Energy, Resources, and Economic Sustainability. Commissioned by Next 10.

[5] A. Rose et al. (2010). Aggregate and Distributional Impacts of AB 32 on the California Economy: Alternative Allocation Strategies for Cap-and-Trade. Commissioned by Next 10.

[6] California Air Resources Board (2010). Updated Economic Analysis of California's Climate Change Scoping Plan: Staff Report to the Air Resources Board.

ours.[7,8] The authors find that from 2013 to 2016, these investments had an overall positive net economic impact on the regions of the Inland Empire and the San Joaquin Valley, with 409 and net 1,612 jobs generated, respectively. However, these regional studies did not report the number of jobs supported by California Climate Investments at the program level, as our report does.

Thus, our jobs study represents the highest-resolution, statewide analysis of the jobs supported by California Climate Investments to date. It has been only a few years since state agencies have designed and started to implement an ambitious, comprehensive, and coordinated suite of California Climate Investments. In this time, several implementing agencies have begun tracking the employment impacts associated with their programs. The California Air Resources Board is taking steps to standardize this process across programs. In the meantime, this study and any future study like it can provide important information about how California Climate Investments are supporting jobs for California workers.

Policy History

California Climate Investments grow out of the state's precedent for global climate leadership. The foundation of this leadership is AB 32, also known as the California Global Warming Solutions Act of 2006 (Nunez and Pavley). AB 32 requires the state to reduce GHG emissions to 1990 levels by the year 2020. Among the measures that CARB adopted to meet the goals of AB 32 was a Cap-and-Trade Program, the nation's first economywide cap on carbon emissions designed to reduce GHGs from multiple sources.[9] CARB issues a limited number of tradable carbon allowances equal to that cap. Each allowance is essentially a permit to emit one metric ton of carbon dioxide or the equivalent amount for other GHGs. Allowances are sold at quarterly auctions administered by CARB. The Cap-and-Trade Program began in 2012 with the electricity and industrial sectors and was expanded in 2015 to include emissions from the combustion of transportation fuels.

In 2012, the Legislature passed and Governor Jerry Brown signed into law three bills that established a framework for receiving and appropriating California state-owned auction proceeds from the Cap-and-Trade Program. Senate Bill (SB) 1018 (Budget and Fiscal Review Committee), establishes the Greenhouse Gas Reduction Fund (GGRF) as the account to receive auction proceeds and includes requirements to help ensure that all GGRF expenditures help achieve GHG reductions and further the purposes of AB 32. In addition to supporting the state's climate goals, AB 1532 (Pérez) establishes several additional goals for the funds, including to maximize economic (including job creation), environmental, and public health benefits in California. SB 535 (de León) directs the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities, and sets spending targets in and to benefit disadvantaged communities. More specifically, SB 535 requires that a minimum of 25% of California Climate Investments are required to benefit disadvantaged communities, and a minimum of 10% are required to be located within and provide benefits to disadvantaged communities.

In 2016, AB 1550 (Gomez) increased investment minimums for funds located in disadvantaged communities

[7] B. Jones et al. (2017). The Net Economic Impacts of California's Major Climate Programs in the Inland Empire. A report by researchers at the UC Berkeley Center for Labor Research and Education and the UC Berkeley School of Law. Produced by Next 10.

[8] B. Jones et al. (Jan. 2017). The Economic Impacts of California's Major Climate Programs on the San Joaquin Valley. A report by researchers at the UC Berkeley Center for Labor Research and Education and the UC Berkeley School of Law. Produced by Next 10.

[9] California Air Resources Board (2017). "Cap-and-Trade Program, What is Cap-and-Trade?" Retrieved from https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

from 10% to 25%. Furthermore, AB 1550 requires that an additional minimum of 5% of funds be invested in projects that benefit low-income households or communities statewide, and that another 5% be invested in projects that benefit low-income households or communities that are within 0.5 mile of a disadvantaged community.

The Scope of California Climate Investments

From 2013 through 2016, the Legislature appropriated funding for California Climate Investments to 11 state agencies, which have since invested these funds in 29 different programs.[10] The programs cover a wide range of sectors, including transportation and sustainable communities, clean energy and energy efficiency, and natural resources and waste diversion. **Table A1** provides examples of California Climate Investment programs and what they are accomplishing in communities across the state.

Table A1. Example Programs and Projects Supported by California Climate Investments

Transit and Intercity Rail Capital Program	High-Speed Rail Project
 Photo credit: the source.metro.net **Project:** Willowbrook/Rosa Parks Station and Improvements **Location:** Los Angeles County	 Photo credit: California High Speed-Rail Authority **Project:** Construction Phase 1 of the Initial Operating Segment **Location:** Avenue 19 in Madera County to East American Avenue in Fresno County
Low Carbon Transit Operations Program	**Affordable Housing and Sustainable Communities**
 Photo credit: California Climate Investments website **Project:** Visalia-Fresno Shuttle **Location:** Fresno and Tulare Counties	 Photo credit: Bridge Housing **Project:** Redevelopment of the Jordan Downs Housing Development **Location:** Los Angeles County

Continues next page.

[10] Additional programs have been added to the California Climate Investments portfolio since the development of this report. See CARB's 2017 California Climate Investments Annual Report for details on newly created programs that were not analyzed in this report.

Financing Assistance Pilot Project

Photo credit: California Climate Investments website

Program: Households across the state are benefiting from low-interest loans that help finance clean technology vehicles.
Image Location: San Francisco Bay Area

Single-Family Solar Photovoltaics Program

Photo credit: Women Veterans Alliance

Program: Households across the state are benefiting from solar projects installed by the nonprofit GRID Alternatives.
Image Location: Sacramento County

Statewide Water Efficiency Enhancement Program

Photo credit: California Climate Investments website

Project: Navdip Badhesha Grape Micro-Irrigation Project
Location: Fresno County

Dairy Digester Research and Development Program

Photo credit: Maas Energy Works

Project: Verwey-Hanford Dairy Digester
Location: Kings County

Communities where investments are located are realizing a wide range of benefits, including: reduced energy costs through energy efficiency and renewable energy for homes and business; more affordable housing; improved mobility through expanded transit, walking, and biking options; cleaner air through zero-emission vehicles; greener communities; and jobs for California workers.

Report Road Map

The preceding chapters of **Part I** present broader context and summary results. **Chapter 2** describes our methodology. Our intention is to be transparent about our methods, data, and assumptions in order to allow this study to be replicated or used as a template for future studies. **Chapter 3** presents our aggregate estimates of total investment flows between fiscal year (FY) 2013-14 and FY 2015-16, and the jobs supported by those investment flows. **Chapter 4** describes the jobs specifically supported by investments in California's disadvantaged communities. **Chapter 5** closes with recommendations for enhancing the employment benefits of California Climate Investments.

In **Part II**, we provide a detailed analysis of each of the 29 programs that received California Climate Investment funding during our study period, 2013 through 2016. Each program chapter includes a description

of the program, an explanation for state-level and co-investment estimates, and an overview of how the program was modeled in IMPLAN (Version 3.1). The results from these individual program-level analyses provide the data that we used to aggregate the summary results presented in this report.

Finally, in **Part III** we compile all program appendices, including additional details on the types of jobs supported by each program, as well as the project-level information that was used to inform our modeling assumptions (e.g., budgets, rebate statistics, etc.).

Research Strategy

We rigorously analyzed the 29 programs that received California Climate Investment appropriations from FY 2013-14 through FY 2015-16. For each program, we collected detailed information including: appropriated dollar amount; induced co-investment (e.g., matching funds from customers, businesses, and other entities that occurred only because of the California Climate Investment funds); the industries involved in implementing the program; and their sourcing practices (i.e., the percentage of funds that go to firms located in California). We received data and information from the programs' administrators at the state agencies implementing the 29 programs (referred to as implementing agencies). Whenever possible, we also referenced supporting documents found online. We also reviewed all data inputs and assumptions with the programs' administrators.

We then input this data into a modeling tool (IMPLAN Version 3.1) that is commonly used for employment studies. IMPLAN then translates investment flows into job flows, based on economic data maintained by the U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, and other state and local sources. Each program has a unique employment multiplier, which describes how many FTE jobs are supported by each million dollars of California Climate Investment funding. These employment multipliers can then be compared with those of other benchmark industries within California. In addition to the jobs supported by California Climate Investment funding, additional jobs are supported from induced co-investment. To standardize this secondary benefit across the programs, we calculate the number of jobs supported by induced co-investment according to $1 million of California Climate Investment funding for each program.

This report captures the total jobs supported by past appropriations for California Climate Investments. We present our findings at different scales: a statewide total, a total from spending in disadvantaged communities, and a total for each program.

Study Interpretation and Caveats

Although our analysis is highly detailed and customized for each of the 29 California Climate Investments, the analysis necessarily has its limits, summarized below.

The Definition of a Job. The job numbers in this report represent full time equivalent (FTE) job-years. A job-year is defined as the equivalent of one person working full-time for one year. The job-years reported here are stimulated by investment flows (per appropriations) each year. If California Climate Investments were to cease, so too would the flow of funds needed to pay the wages or salaries of the jobs that we estimate. Therefore, one important caveat is that our analysis does not assess the longevity of the jobs reported.

We also cannot say precisely when the jobs identified in this report occur. There is a lag time between when the Legislature appropriates funding for California Climate Investments and when the funds are implemented, and each program has a unique spending timeline. Some programs involve many small

projects that are implemented quickly (e.g., funding for the purchase of new equipment or vehicles). Others are on much longer timelines that involve spending for many years (e.g., large infrastructure projects like transit-oriented housing and the High-Speed Rail Project). A project's unique timeline will affect when and for how long its associated jobs occur.

Job quality is an important aspect of evaluating the employment benefits of an investment, but was not a focus of this study due to the limitations of the modeling tool used. However, because our study identifies the industries employing in-state workers due to climate California Climate Investments, others could use the industry categories to more robustly analyze the kinds of occupations that are typically supported within those industries, as well as job quality metrics associated with these occupations. The metrics could include wages, benefits, career ladder opportunities, and job training, among others.

A Partial Estimate of the Jobs Supported by the Cap-and-Trade Program. California Climate Investments are only one of several types of job impacts that have resulted from California's Cap-and-Trade Program. First, firms make direct compliance expenditures to reduce their GHGs from their facilities. These expenditures may involve purchasing and installing cleaner and more efficient equipment, switching to lower-carbon fuels, and more carefully monitoring and regulating production processes, among other compliance expenditures. These expenditures also support jobs, but are not assessed in our analyses.

Second, California Climate Investments lead to a long-run reduction in energy, water, and transportation fuel use by California residents, businesses, and government agencies. This is because California Climate Investments enable households and businesses to purchase more fuel-efficient vehicles and travel more cost effectively in general, as well as occupy more energy- and water-efficient buildings, for example. These financial savings become available to households and businesses to save or spend on other things. These incremental expenditures support jobs in a variety of sectors, but again are not considered in our analysis.

Third, the Cap-and-Trade Program reduces GHG emissions, thereby slowing the rate of climate change that would have led to economic losses (e.g., drought duration and severity, lower agricultural yields, etc.). In addition, fewer GHG emissions may be associated with co-benefits such as reduced criteria and toxic air pollution emissions, which can lower the number of people getting sick or dying prematurely. The avoided social costs of carbon and related health co-benefits would free up financial resources that could be put to more productive uses, supporting jobs in new sectors, which are not assessed in our analysis.

Not a Net Job Study. The aggregate impact of California Climate Investments is to reduce household, business, and government demand for carbon-intensive energy, water, transportation fuels, and related products. For example, consumers may purchase less fossil-fuel-based electricity and gasoline, or travel fewer vehicle miles. These demand shifts will lead to a reduction in employment in the impacted sectors, which we do not assess in our analysis.

Our study also does not look at counterfactual scenarios for spending Cap-and-Trade dollars in lieu of the suite of the California Climate Investments studied here. For example, if auction revenues were given to California residents through a dividend program, that transfer of funds would induce consumer spending, thereby supporting jobs. A dividend program is just one of many reinvestment options. Developing a series of alternative investment opportunities, and comparing their employment yields, was outside this scope of this study.

Similarly, our study does not consider the employment impacts of a counterfactual scenario in which the

Cap-and-Trade Program was never implemented. For example, if regulated firms had not been required to purchase carbon allowances, then they would have invested those dollars in other ways. Assessing the employment impacts of this counterfactual scenario is particularly complex. For each regulated firm, one would need to estimate how much of the avoided carbon allowance costs would have gone to shareholders and how much would have been paid in federal, state, and local taxes. These deductions would determine the amount of money allocated for corporate savings versus the firm's direct investments. For those funds allocated to direct investment, one would need to determine where within the firm's facilities that investment would occur, distinguishing in-state and out-of-state facilities. Once the amount of direct California investment is known for each firm, one would need to identify the appropriate industrial sector that describes each firm, and apply the relevant employment multiplier.

Thus, our analysis is not meant to provide an estimate of the net jobs created by California Climate Investments or the Cap-and-Trade Program. Rather, it serves as the most comprehensive, statewide study estimating the number of jobs supported by California Climate Investment-funded programs. Our focus was to quantify these jobs as accurately as possible.

Jobs Are One of Several Investment Criteria. We caution that program-level investment decisions should *not* be based solely on the relative number of jobs supported by a program. Programs that have low employment multipliers are still reducing GHGs while achieving a range of other important co-benefits, including, but not limited to, improvements in air quality, water quality, and human health. Given the diverse suite of California Climate Investments, the strength of an individual program ultimately depends on the metric of interest, of which employment is just one.

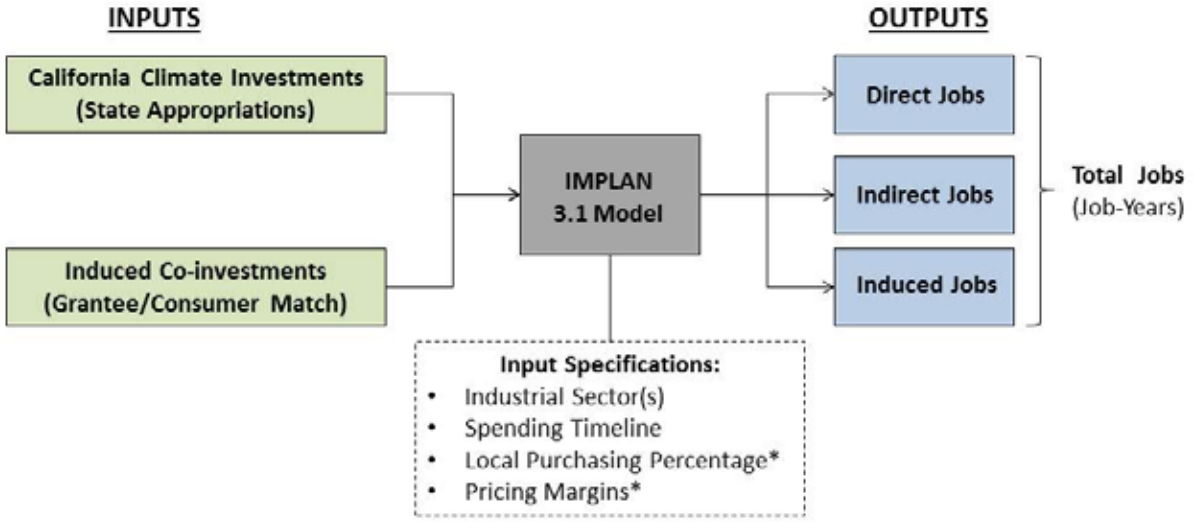
2. Methodology

For each California Climate Investment described in this report, we collected detailed project-level expenditures that we entered into an economic input-output model called IMPLAN (Version 3.1). IMPLAN is a commonly used tool in the literature on job creation, including technical reports for government agencies and academic papers in peer-reviewed journals. Economic input-output models such as IMPLAN are often used to evaluate the impact of a policy or investment when gathering empirical data is difficult or impossible.

Obtaining a complete picture of the number of jobs supported by California Climate Investments requires tracking the direct, indirect, and induced jobs supported by each investment. Direct jobs are those that actually implement funded projects (e.g., project managers, construction workers, architects, etc.). Indirect jobs are those along supply chains that provide inputs for funded projects (e.g., steel workers, warehouse workers, truck drivers, etc.). Induced jobs are those that provide goods and services to workers who are either directly or indirectly supported by California Climate Investments when they spend their income (e.g., grocery clerks, doctors, child care providers, etc.). Quantifying the sum total of these impacts is nearly impossible with observational methods, as it would require verifying the unique supply chain of every impacted firm, as well as the unique spending pattern of every impacted worker. Given the challenge of tracking all the ways in which California Climate Investment dollars move through the economy, a model was used to describe these flows in lieu of observational methods.

To run the model, all financial flows associated with California Climate Investments had to be tracked and totaled. The following section, **Scope of Study**, describes the criteria for determining which investments were included in the model. After quantifying investment totals, the details on how these financial flows were spent, or will be spent, also had to be determined (e.g., affected industries, spending timeline, etc.). The subsequent section, **Model Overview**, describes how IMPLAN translates all of this information into job flows. See **Figure A1** for a summary of the modeling process.

Figure A1. Process for Modeling Climate Investments in IMPLAN



* Local purchasing percentage refers to the share of spending in California; pricing margins refer to the transaction costs associated with bringing a good from the point of production to the final retail location.

Scope of Study

Understanding the significance of the job estimates reported in this study requires a careful understanding of the scope of the study. Our findings reflect a specific study period, geographic boundary, and criteria for tallying financial investments, as highlighted below.

Study Period

This study quantifies the number of jobs that are being supported from California Climate Investments appropriated in fiscal year (FY) 2013-14 through FY 2015-16. This period represents the full range of fiscal years for which there was detailed, program-level investment data during the time of our research. The first set of appropriations for California Climate Investments began in FY 2013-14, totaling $70 million. Subsequent appropriations grew to $842 million in FY 2014-15 and $1.3 billion in FY 2015-16. These totals were obtained from the public expenditure records prepared by state agencies as to how their investments will further the purposes of Assembly Bill (AB) 32.[1] In some cases, the final California Climate Investment appropriation differed from what was initially reported in the public expenditure record. In these instances, final appropriation numbers were obtained directly from the relevant state agencies.

Geographic Boundary

All job estimates provided in this study are located within California. This study does not account for the number of jobs that may be supported out of state or abroad. For example, investments in the rebate and financial incentive programs for clean vehicles will stimulate jobs in the automobile manufacturing industry. With the exception of Tesla Inc., all light-duty vehicle manufacturers operate their production facilities outside California. In this example, only in-state jobs associated with the transport and retail of vehicles manufactured out-of-state are counted in the job totals reported in this study.

California Climate Investments

This study focuses on the potential for state funds appropriated to California Climate Investments to

[1] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

support in-state jobs. Between FY 2013-14 and FY 2015-16, a total of $2.2 billion was appropriated to 11 state agencies to administer 29 programs that reduce greenhouse gases (GHGs) within California, collectively referred to as California Climate Investments.[2] At the time of writing this report, all $2.2 billion in appropriations had been allocated to specific programs, but not all of these funds have been awarded to specific grantees, and therefore have not been fully implemented. Since this study focuses on the potential of appropriated dollars to generate jobs, it is assumed that all $2.2 billion in appropriated funds will eventually be implemented. In other words, the job totals reported in this study reflect the capacity for California Climate Investments to support jobs once all appropriated funds are fully spent. See **Table A2** in **Chapter 3** for a summary of how appropriations for California Climate Investments have been allocated to specific programs.

Induced Co-investment

In addition to tracking state funds, this study also tracks jobs supported by induced co-investments. Many of the California Climate Investments induce consumers, businesses, and government entities to contribute matching funds toward the implementation of a particular program. For many of these programs, their objective is to offer a household, business, or a local government just enough of a subsidy to induce them to purchase the cleaner technology when they would not have otherwise bought it. For these programs, policymakers carefully choose how much state investment there should be and what share of the purchase costs should be borne by consumers. For example, several of the rebate programs offer a financial incentive to reduce the cost of an advanced technology vehicle, but still require the rebate recipient to pay the rest of the vehicle purchase costs.

However, in the case of programs that target lower-income households in disadvantaged communities, policymakers have reduced or eliminated the amount of co-investment that households are required to make by increasing the amount of the rebate or subsidy. For example, the program designed to provide low-income households with cleaner vehicles offers rebates upward of two to three times as large as a similar program focused on non-low-income households.[3] Other examples include the weatherization and solar photovoltaic programs that require very little, if any, co-investments from low-income families. For these and similar programs, policymakers appear to reduce or eliminate the required matching funds by design in order to encourage the more equal adoption of cleaner technologies across income groups.

Co-investments may also arise when California Climate Investments enable a program administrator to access additional funds that require matches. The most obvious example is the High-Speed Rail Project, which has been exceptionally successful in using California Climate Investment funding to access California Proposition 1A funds, which then enabled it to access American Recovery and Reinvestment Act of 2009 funds, as well as other federal appropriations.

In tracking co-investment, we included both co-investments that originate from within California (e.g., household spending, local government matches, etc.), and outside California (e.g., federal funds, overseas electric vehicle manufacturers, etc.). However, only co-investments that are specifically induced by California Climate Investments were included in our analysis. In other words, this study only models consumer and grantee spending on programs that reduce GHGs that would have not otherwise occurred

[2] Some state agencies may use different terminology for what are described as programs in this report (e.g., projects). The 29 programs studied here were broken out according to the structure used in the California Climate Investment annual reports.

[3] For details, see the chapters on the Clean Vehicle Rebate Project (CVRP) and the Efficient Fleet Modernization Program (EFMP) Plus-Up later in **Part II** of this report.

without the state's financial support vis-à-vis California Climate Investments. For example, not all vehicle rebates directly induce a new purchase of an advanced technology vehicle, as some rebate recipients are motivated by another factor (e.g., the availability of charging stations, access to high-occupancy vehicle lanes, etc.).[4,5] In this instance, only the co-investment from rebate recipients who were motivated by the financial incentive to make their vehicle purchase was included in our job analysis.

To determine the co-investment that was induced by a particular program, we relied on a variety of data sources, such as project budgets that show matching fund amounts, and sales data for rebate and incentive programs that show out-of-pocket consumer expenses. Determining whether co-investments were actually induced by California Climate Investment dollars was a major challenge, and was informed by the best available research (e.g., academic studies on consumer behavior) and feedback from administering state agencies. For some programs, there was not enough information to determine whether co-investments were actually induced, so as a conservative assumption, the job benefits of these particular co-investments were excluded from the study. The methodology subsection of each program chapter contains a short explanation of how induced co-investments were determined in the specific context of the respective program. See **Table A2** in **Chapter 3** for a summary of the induced co-investments that were determined for each program.

The induced co-investments reported in this study should be understood as best estimates developed by the UCLA Luskin Center for Innovation. These estimates are not endorsed by any state agency, although they have been reviewed with each implementing agency.

Financial Savings

In many cases, California Climate Investments will result in financial savings for consumers and grantees. Those savings will eventually be spent in the economy on a variety of goods and services, supporting jobs in the process. For the purposes of this study, savings are categorized in two distinct ways: direct and indirect savings. This study analyzes the number of jobs supported from direct savings, but not indirect savings, as defined below.

Direct savings are savings that occur upon immediate implementation of a program that reduces GHGs. The Low Carbon Transit Operations Program, for example, provides funds to a number of transit agencies to offer free fare days in order to encourage ridership. These funds essentially compensate transit agencies for lost revenues that would have occurred from regular transit riders on the free fare day. While these funds do not generate new economic activity within the transit sector, they do create financial savings for transit riders who would have otherwise paid for their trip that day. These financial savings can then be spent on alternative goods and services, supporting jobs in a variety of sectors, which are captured in the job numbers reported in this study.

Indirect savings, on the other hand, are financial savings that occur over time due to an increase in cost efficiency. The Affordable Housing and Sustainable Communities program, for example, aims to reduce vehicle miles traveled (VMT) through investments in transit-oriented development and transit connectivity projects. These reductions in VMT may also lead to an overall decrease in household expenditures on transportation, allowing households to spend their savings on alternative goods and services. Quantifying

[4] W. Sierzchula et al. (2014). "The influence of financial incentives and other socio-economic factors on electric vehicle adoption," Energy Policy 68: 183-194.

[5] J.R. DeShazo et al. (2017). "Designing policy incentives for cleaner technologies: Lessons from California's plug-in electric vehicle rebate program." Journal of Environmental Economics and Management 84: 18-43.

these cost savings is important for comprehensively analyzing the benefits of California Climate Investments, but is a particularly complex undertaking that requires making assumptions about how California Climate Investments will lead to behavior change, and is outside the scope of this study.

Overhead Costs

To successfully implement programs that reduce GHGs, many state agencies have dedicated a small portion of California Climate Investment funding for program administration and state-level operations (see **Table A2** in **Chapter 3**). The jobs supported by funds dedicated to program administration and state-level operations are included in the job totals reported in this study (see **Table A3** in **Chapter 3**). Distinguishing between materials-related administration costs and labor-related administration costs was outside the scope of this study, so it is assumed that all of these funds are spent on payroll (modeled as in IMPLAN as "employment and payroll of state government, non-education").

Net Jobs

This study strictly looks at the gross number of jobs that are supported by California Climate Investments and does not assess whether these jobs are net positive jobs. When modeling investment flows in IMPLAN, the model assumes that each investment leads to an additional flux of spending into the California economy. In reality, all of the funds that make California Climate Investments possible originate from auction revenues that the state collects from regulated industries under California's Cap-and-Trade Program. If these regulated firms had not purchased these allowances, then they would otherwise have invested some of those revenues in California, thereby supporting in-state jobs as well. Likewise, some of the induced co-investment from consumers, businesses, and government agencies would also have remained in the California economy, again supporting in-state jobs. Thus, some of the jobs identified in this study may represent a transfer of jobs from one sector of the economy to another, rather than an overall gain in employment.

Conducting a net job analysis would require developing counterfactual scenarios about how Cap-and-Trade dollars and induced co-investments would be spent in the absence of the suite of California Climate Investments studied here. For example, a business-as-usual scenario would involve making assumptions about how regulated entities would have spent their auction allowances in the absence of the Cap-and-Trade Program. In addition to a business-as-usual scenario, one could also model alternative policy designs to the Cap-and-Trade Program in which auction revenues are spent on an entirely different set of public investments. The number of jobs supported by these counterfactual scenarios would then need to be contrasted with the number of jobs supported by California Climate Investments. Developing such counterfactual scenarios and analyzing the number of jobs they support was outside the scope of this study.

Model Overview

All job estimates reported in this study were generated in an economic input-output model (IMPLAN Version 3.1) with the 2014 data package for the State of California. Economic input-output models such as IMPLAN work by mapping the interdependent relationships between all of the industrial sectors in a defined economy. In other words, an economic input-output model shows how the outputs of one particular industry become the inputs of another industry, and vice versa. By mapping these interdependent relationships, the ripple effects of a change in one industry can be quantified across all other industries. For example, if there is a spike in the sales of zero-emission vehicles, additional demand is placed on the auto-manufacturing sector, which in turn places additional demand on supporting sectors such as automobile

equipment manufacturers, marketing services, financial services, etc. An economic input-output model captures all of these ripple effects and quantifies them according to a number of economic measures (e.g., value added, jobs supported, etc.), both across the entire economy and within each industry. In this study, we focus exclusively on employment.

The potential for a financial investment to support jobs ultimately varies by the industry in which that investment is spent. Since industries are heterogeneous in their production processes, they are also heterogeneous in their labor needs, yielding different demands on the workforce given the same level of investment. The number of jobs supported within an industry per dollar of investment is referred to as an employment multiplier and is usually expressed as a ratio of job-years per million dollars of spending. A "job-year" simply means the equivalent of employing one person for one full year. In practice, one job-year may take the form of two employees for six months each, three employees for four months each, or any other combination of employees that adds up to one year's worth of labor. All job-years have been converted to FTEs in this study because some industries employee a number of part-time workers, and a standard unit was needed for comparing the jobs supported by different investments.

Much of the research for this study involved identifying the appropriate industrial sectors in IMPLAN in which to code California Climate Investments. In total, there are 536 industry codes in IMPLAN.[6] In general, IMPLAN's industry codes map very closely to the six-digit North American Industry Classification System (NAICS) codes, especially for manufacturing sectors. However, many of the service, agricultural, and construction sectors in IMPLAN have been consolidated into unique industry categories created by the Minnesota IMPLAN Group (e.g., construction of new highways and streets). Given the general overlap between NAICS and IMPLAN industry codes, the 2012 NAICS definitions were used to infer which IMPLAN codes were most appropriate for describing the various activities funded by California Climate Investments.[7] The process of matching California Climate Investments with IMPLAN codes was also informed by interviews with administering agencies and precedents set by other employment studies. The methodology section of each program chapter details the various IMPLAN codes that were selected to model that program.

Another major research task was identifying how to allocate investment dollars when they involved multiple industries. The Affordable Housing and Sustainable Communities program, for example, led to spending in a number of industrial sectors (e.g., construction of new residential structures, transit and ground passenger transportation, architectural and engineering services, etc.). Determining how much money was spent in each of these sectors required interviewing staff members at the administering agency (e.g., Strategic Growth Council) and reviewing the proposed budgets of awarded projects. The assumptions used to allocate investment dollars to different industrial sectors are detailed in the methodology section of each program chapter.

The following subsections describe the model in more detail, including a description of the dataset used to build the model, relevant model inputs and outputs, specifications required by IMPLAN for each model input, and limitations that constrain the precision of model outputs.

Model Data Package

The employment multipliers reported in this study originate from data maintained by multiple sources

[6] IMPLAN (2017). "IMPLAN Sectoring & NAICS Correspondences." Retrieved from https://implanhelp.zendesk.com/hc/en-us/articles/115009674428-IMPLAN-Sectoring-NAICS-Correspondences

[7] United States Census Bureau. "2012 NAICS Definitions." Retrieved from http://www.census.gov/eos/www/naics/2012NAICS/2012_Definition_File.pdf

including the U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, the U.S. Census Bureau, and other state and local sources.[8] The Minnesota IMPLAN Group then synthesizes these datasets into a single package that can be imported into the IMPLAN modeling software and disaggregated by 536 different industry categories at varying geographic scales (i.e., national, state, county, ZIP code).[9] This study utilized the 2014 IMPLAN data package for the state of California for all job estimates. This dataset is unique to California, so the model's outputs did not need to be adjusted to reflect California's economy. The model also adjusts for inflation, so investment values did not need to be modified before being entered into the model. However, a spending timeline had to be defined for each investment flow and is explained in each program chapter.

Model Inputs

Investment dollars are the inputs into the model. This study specifically looks at two investment streams that are used to fund programs that reduce GHGs:

- **California Climate Investments:** Cap-and-Trade auction proceeds are deposited in California's Greenhouse Gas Reduction Fund, and are ultimately appropriated toward programs that reduce GHGs, collectively referred to as California Climate Investments. This study looks specifically at the jobs supported by appropriated funds. Thus, it is assumed that all appropriated funds will eventually be implemented in the community, supporting jobs in the process.
- **Induced Co-investment:** Matching funds from grantees or consumers that would not have otherwise occurred if not for the state's financial support vis-à-vis California Climate Investment funds (described above). Matching funds include funds from households, businesses, and government entities. Determining whether matching funds were actually induced by California Climate Investment funds was one of the major research challenges of this study and was informed by the best available research (e.g., studies on consumer behavior) and informational interviews with administering state agencies. The assumptions we used to estimate the induced co-investments for a particular program are described in the methodology section of that program's chapter.

When investment flows are entered into IMPLAN, the model treats them as a new influx of money into the California economy. In reality, some portion of these dollars would have been spent in California even in the absence of California Climate Investments, just on a different set of economic activities. For this reason, the job numbers reported in this study should not be viewed as net employment gains. Rather, they should be viewed as the gross number of jobs supported by California Climate Investments and the co-investments that they induce.

Input Specifications

Once the financial flows associated with California Climate Investments were determined, certain specifications needed to be entered into IMPLAN to describe how these financial flows were or will be spent. In other words, the model needs to be fine-tuned so that it can most accurately reflect reality. As previously discussed, identifying the most appropriate industrial sector(s) in which to code a climate investment is one of the most critical specifications in running the model. Other important specifications include the timing of how the investment is spent, the presence of pricing margins (i.e., transaction costs associated with retail and wholesale services), and the local purchase percentage (i.e., the percentage of funds that are spent

[8] IMPLAN (2015). "Comparison of IMPLAN Source Data for Employment and Labor Income." Retrieved from http://oldsupport.implan.com/index.php?option=com_content&view=article&id=450

[9] IMPLAN (2015). "United States Economic Data." Retrieved from http://www.implan.com/us-data/

within the study region). Each of these specifications ultimately affects how IMPLAN calculates the employment multipliers, as described below:

- **Industrial Sector:** The employment multiplier for an industry is influenced by two key factors: (1) the ratio between the cost of materials and labor within that industry and (2) the compensation and benefit packages paid to each employee. An industry that is material intensive tends to support fewer jobs than an industry that is labor intensive, given the same level of financial investment. Similarly, industries that rely on highly skilled labor tend to pay higher wages and provide more benefits than an industry that relies on less-skilled labor, and thus supports fewer jobs given the same level of investment. IMPLAN has built-in assumptions for each industrial sector that reflect that sector's spending on materials versus labor, as well as how much that sector spends on employee compensation. Spending on employee compensation is reported in IMPLAN at the gross scale (i.e., total payroll costs, including benefits), not at the individual scale (i.e., salaries by occupation). Since a California data package was used for this study, the built-in assumptions discussed here are unique to California.
- **Spending Timeline:** The number of jobs supported by an investment varies over time because of two important factors: (1) inflation and (2) relative price changes over time. The effects of inflation reduce the purchasing power of today's dollars in the future. Thus, a delayed investment in that industry will produce fewer jobs than an immediate investment. Holding the effects of inflation aside, the relative value of a good also changes over time. Some products are becoming cheaper over time relative to other goods and services, while some products are becoming more expensive. Each industry in IMPLAN has built-in assumptions, or "deflators," to adjust for the changing value of that industry's outputs relative to other goods and services. These built-in deflators are based on historical data from the U.S. Bureau of Economic Analysis and an employment growth model from the U.S. Bureau of Labor Statistics.[10] The impact of these deflators on employment varies from industry to industry. If an industry's goods are increasing in value over time (after adjusting for inflation), then it will support fewer jobs in the future given the same level of investment (i.e., fewer goods can be purchased with $1 million and therefore less labor is needed to make those goods). Conversely, if an industry's goods are decreasing in value over time, then it will support more jobs given the same level of investment (i.e., more goods can be purchased with $1 million, and therefore more labor is needed to make those goods).
- **Pricing Margins:** The presence of pricing margins determines how an investment gets distributed across a supply chain. If an investment is used to purchase goods from a retailer (e.g., car dealership, hardware store, etc.), then there are transaction costs associated with bringing those goods from the factory to the retail location. These transaction costs are referred to as pricing margins and are equal to the difference between the cost to the consumer and the cost the producer. In order to accurately model job flows, IMPLAN requires the user to specify whether the value of an investment includes pricing margins, so that it can distribute some portion of that investment to retail-, wholesale-, and transportation-related industries, thereby supporting jobs in each of those industries. If an investment goes directly to the producer, then pricing margins can be ignored, and the full value of the investment is assumed to be spent at the point of production. In summary, pricing margins shift the distribution of jobs away from production-related industries to a greater

[10] IMPLAN (2015). "Margins and Deflators." Retrieved from http://support.implan.com/index.php?option=com_content&view=article&id=397:397-transferred&catid=229:229#deflators

mix of industries. When pricing margins are appropriate, IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing goods from a particular industry, as derived from data reported by the U.S. Bureau of Economic Analysis.[11]

» **Local Purchase Percentage:** For the purposes of this study, the local purchase percentage refers to the share of expenditures that stay within California. Investments that are spent on industries comprised of firms that primarily operate out of state will support fewer jobs in California compared to industries that are dominated by in-state firms. IMPLAN has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. For example, investments that incentivize the purchase of advanced technology buses made in California will have higher local purchasing percentages than investments that support the heavy-duty vehicle manufacturing sector at large. IMPLAN's default assumptions for local purchasing patterns are calibrated with the Commodity Flow Survey data published by the U.S. Census Bureau.[12]

The specifications used to model each program are described in the methodology section of each program chapter.

Model Outputs

Once the model is run, IMPLAN generates a series of output tables to show the direct, indirect, and induced impacts of a given level of investment on employment. The definitions for each of these impacts are provided below:

» **Direct Jobs:** Positions that directly implement the projects that are funded by California Climate Investments (e.g., construction workers building affordable housing, engineers designing transportation infrastructure, foresters overseeing planting projects, etc.)

» **Indirect Jobs:** The jobs along the supply chains that provide inputs for California Climate Investments (e.g., vendors supplying building materials, bankers financing construction, truckers delivering goods, etc.).

» **Induced Jobs:** The jobs that provide goods and services to workers with direct and indirect jobs when they spend their income (i.e., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.).

Each of the above impacts are reported in IMPLAN as job-years, without differentiation between full-time, part-time, and temporary jobs. In order to translate generic job-years into FTEs, IMPLAN has provided a set of conversion coefficients for each industrial sector.[13] All of the job totals reported in this study have been converted to FTE job-years.

Model Limitations

Input-output models have several advantages for estimating the employment impacts of different investment decisions. They capture employment impacts across an entire economy (i.e., direct, indirect,

[11] IMPLAN (2015). "Margins and Deflators." Retrieved from http://support.implan.com/index.php?option=com_content&view=article&id=397:397-transferred&catid=229:229#margins

[12] IMPLAN (2015). "IMPLAN'S Gravity Model and Tradeflow RPCs." Retrieved from http://support.implan.com/index.php?option=com_content&view=article&id=406:406&catid=223:223

[13] IMPLAN (2015). "536 FTE & Employment Compensation Conversion Table (2013)." Retrieved from http://oldsupport.implan.com/index.php?view=document&alias=4-536-fte-a-employment-compensation-conversion-table&category_slug=536&layout=default&option=com_docman&Itemid=1764

and induced jobs) and they can be used to forecast employment impacts when data from the field is impossible to collect. Input-output models, however, have a number of limitations that constrain their ability to perfectly quantify the employment impacts of a given investment. The limitations of the input-output model used in this study, IMPLAN Version 3.1, are described below:

- **Static Relationships:** The interdependent relationships between economic sectors in IMPLAN are static (i.e., frozen in time), providing a snapshot of the economy in the year captured by the data package. In this study, the data package reflects industrial purchasing patterns in 2014. Thus, job outputs from the model do not account for changes in consumer or industry behavior that may occur after 2014, such as an economic downturn or a technological innovation, which in turn could change industrial purchasing patterns. Similarly, IMPLAN does not account for price elasticity. In other words, the prices of goods and services are not affected by a surge of investment into the economy. For example, a construction boom, as modeled in IMPLAN, would not raise the price of building materials following a sudden influx in demand. Since the California economy is so much larger than the investment flows analyzed in this study (three orders of magnitude larger), it is assumed that California Climate Investments have a negligible impact on prices across the economy. Thus, if price elasticity had been incorporated into the model, we would expect similar employment estimates.
- **Linear Relationships:** The relationships between economic sectors in IMPLAN are also linear. In other words, employment multipliers are not sensitive to the magnitude of an investment. For example, the jobs supported by a $1 billion investment in urban forestry projects will be exactly 1,000 times greater than a $1 million investment in the same set of projects. In reality, industries face supply constraints, such that there may not actually be enough viable open space in cities to implement $1 billion worth of urban forestry projects. In addition, industries face declining marginal costs as their operations grow, allowing firms to spend more money on labor instead of capital costs. In the dairy digester example, a $100 million investment may allow manufacturers who produce digester-related equipment to spend more money on product development (e.g., engineers, designers, consultants, etc.), and less on capital investments (e.g., assembly lines, transportation equipment, etc.). Since IMPLAN is a linear model, these supply constraints and cost considerations are not accounted for in this study. Again, given the size of California Climate Investments relative to the size of the California economy, we would expect similar employment estimates even if IMPLAN were a nonlinear model.
- **Timing of Impacts:** IMPLAN does not specify when jobs gains will actually be realized. The job totals that IMPLAN reports are based on the ripple effects felt in the economy by a particular investment. Some of those effects will occur sooner than others. For example, an investment in automobile manufacturing may create direct jobs in that sector immediately, but the secondary industries that supply automobile manufacturers with vehicle parts (e.g., steel mills, glass manufacturers, rubber manufacturers, etc.) may need a ramp up period to respond to additional demand (i.e., time to mine materials, manufacture automotive parts, transport those parts to the assembly site, etc.). Assessing how long each industry needs to respond to additional demand is difficult to predict, so IMPLAN does not provide a time range in which all job-years will be completed.
- **Job Quality:** Information about job quality is critical for assessing the impact of an investment on the economic well-being of hired workers. Unfortunately, IMPLAN does not provide sufficient information for assessing job quality, such as detailed data on wages by occupation, retirement packages, health benefits, paid leave, training opportunities, or prospects for career

advancement. IMPLAN does provide information about the industrial sectors that are impacted by investment flows, including the number of job-years supported in each industry and total amount of employee compensation (salaries plus benefits) generated within each industry. While an average compensation package for each industry could be deduced from these outputs (employee compensation divided by total job-years), such a metric would mask the significant wage disparity that exists in many industries, and was therefore not presented in this study.

» **Geographic Granularity:** IMPLAN does not provide data on the location of jobs, just the gross number of jobs that are supported within a defined geographic boundary. In this study, the geographic boundary was defined as the entire state of California. The most granular geographic boundary that can be constructed in IMPLAN is at the zip code level. Thus, it is not possible to discern the number of job-years specifically located within disadvantaged communities, which are defined at the census-tract level.[14] As a result, all of the jobs supported by spending in disadvantaged communities that are reported in this document reflect statewide jobs.

Model Validation

When possible, model inputs and input specifications were grounded in actual program data, such as budgets, work plans, and expense reports. The final methodology used to model each program was then reviewed by the program administrators at the various state agencies receiving California Climate Investment funding. While this review process greatly improved the fidelity of the models to the on-the-ground implementation of California Climate Investments, none of the models in this report have been endorsed by the state agencies tasked with implementing California Climate Investments. Any errors are those of the authors.

Model outputs were not validated against empirical job counts in the field. Since the scope of this study includes the impact of California Climate Investments on indirect and induced jobs, it is impossible to know exactly how long it will take for these indirect and induced jobs to materialize, and once they do, they are difficult to precisely track.

The results obtained from IMPLAN were also not validated against other models, such as REMI or RIMS, each of which may yield different results. REMI is a dynamic equilibrium model that combines economic input-output modeling with econometric modeling. In doing so, REMI is able to account for how investment flows also affect the prices of goods and services across an economy, and how those price changes ultimately affect the labor market. RIMS, on the other hand, is a static economic input-output model (like IMPLAN), and is based solely on the economic input-output tables published by the U.S. Bureau of Economic Analysis (unlike IMPLAN and REMI, both of which rely on multiple data sources). IMPLAN was the model of choice for this study because it allows the user to disaggregate employment impacts by direct, indirect, and induced jobs, as well as by industry (unlike RIMS). While REMI also has this feature, IMPLAN affords the user the greatest number of industrial sectors to choose from when modeling a particular investment (160 sectors versus 536 sectors, respectively).[15,16] Understanding the types of direct jobs supported by California Climate Investments, with the most sectoral specificity possible, was an essential part of this study's scope of work.

[14] California Energy Commission (2017). "Disadvantaged Communities Definition." Retrieved from http://www.energy.ca.gov/commission/diversity/definition.html

[15] REMI (2015). "Industries for PI + V2.1." Retrieved from http://www.remi.com/wp-content/uploads/2017/10/Industries-Hierarchical-v2_1.pdf

[16] IMPLAN (2017). "IMPLAN Sectoring & NAICS Correspondences." Retrieved from https://implanhelp.zendesk.com/hc/en-us/articles/115009674428-IMPLAN-Sectoring-NAICS-Correspondences

3. Summary of Program-Level Findings

How many jobs have been supported by the Legislature's appropriations for California Climate Investments from fiscal year (FY) 2013-14 through FY 2015-16? In this chapter, we answer this question for each of the 29 programs supported and for the suite of California Climate Investments as a whole. Policymakers can use this information to help make informed California Climate Investment decisions that balance greenhouse gas (GHG) reductions with the provision of co-benefits, including, but not limited to employment. In order to estimate the employment impacts we must start by answering two questions. First, how much California Climate Investment funding has each program received? And second, how much co-investment has each program induced from households, business, or government agencies?

Our Approach

In this chapter, we present our high-level employment findings. We do so by aggregating the findings for each of the 29 programs that are analyzed in Part II of this report. For the summary results presented here and the disaggregated results presented in Part II, we follow a similar approach to estimating the number of jobs supported by California Climate Investments, as described below:

Step 1: We identify investment flows for each program. To do so, we first determine the amount of California Climate Investment funding that each program received during our study period (FY 2013-14 through FY 2015-16). We then we estimate the induced co-investment associated with each program.

Step 2: We apply program-level employment multipliers to the investment flows. We use IMPLAN to construct employment multipliers for each program according to the impacted industrial sectors that characterize each program. The methods used to develop the employment multipliers for each program are detailed in the methodology subsection of the 29 chapters that constitute Part II of this report.

Step 3: We sum the results across all programs. We look at the cumulative number of jobs supported by California Climate Investments across all 29 programs. We separate the benefits from the dollars that are appropriated by the Legislature and the dollars that come from co-investors, such as households, businesses, local governments, and the federal government.

So that the reader has comparative context, we briefly discuss how the number of jobs supported by California Climate Investments compare to common benchmark industries in California, such as construction and computer manufacturing. Finally, we describe which industries are most directly benefiting from the investment flows, so as to give the reader a sense of the types of jobs are occurring.

Results

Step 1: Investment Levels

As discussed, this study tracks two investment flows associated with California Climate Investments: the funding directly appropriated by the California State Legislature, and the co-investment that these public funds induce. Refer to **Chapter 2 – Methodology** for background information and a description of how the investments flows are determined. This section summarizes our methods and then reports high-level results for each of the 29 climate investment programs analyzed in this study. In the program-level chapters that follow, each of these program-level investment flows are described in more detail.

From the launch of California Climate Investments in FY 2013-14 through FY 2015-16, the state appropriated $2.2 billion toward programs that reduce GHGs.[1] This total was obtained from the public expenditure records prepared by state agencies as to how their investments will further the purposes of Assembly Bill (AB) 32.[2] In some cases, the final California Climate Investments appropriation differed from what was initially reported in the public expenditure record. In those cases, we received updated numbers from the administering state agencies.

As described in **Chapter 2,** many California Climate Investment programs induce consumers, businesses, and government entities to contribute matching funds toward the implementation of a particular program. For many of these programs, the objective is to offer a household, business, or local government just enough of a subsidy to induce them to purchase a clean technology. For example, California residents receive rebates that reduce the cost of purchasing clean vehicles but (depending on income) often still need to pay the rest of the vehicle purchase costs. Similarly, businesses receive an upfront subsidy for the adoption of recycling organic equipment programs but must cover the remainder of the purchase costs. Co-investments also arise when California Climate Investments enable a program administrator to access additional funds that require match funding. The most obvious example of this is the High-Speed Rail Project, which has been exceptionally successful in using California Climate Investment funding to access $2.6 billion State Proposition 1A funds and $3 billion in federal appropriations.

This study quantified these induced leveraged funds, which we refer to as co-investments. Only co-investments that are induced by California Climate Investment funding are counted here. In other words, this study analyzes only consumer and grantee spending that occurred because of the state's financial support vis-à-vis California Climate Investment funds. Determining the share of co-investments that were actually induced by California Climate Investment funding was a major challenge, and was informed by the best available research (e.g., academic studies on consumer behavior) and feedback from administering state agencies. In many cases, there was not enough information to determine whether co-investment was actually induced, so as a conservative assumption, the job impacts of these particular co-investments were excluded from the study. The methodology section of each program chapter explains how induced co-investments were determined in the specific context of the respective program. The jobs supported by induced co-investment should be considered with an important caveat: Some of these co-investments may have likely been spent elsewhere in the California economy even in the absence of California Climate Investments, so they do not necessarily represent a new influx of dollars into the state.

[1] This total also includes funding allocated to each state agency for program administration and fund management, which are also represented in our employment totals.

[2] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

When added up, we estimate that California Climate Investments induced an additional $6.4 billion during the study period. **Table A2** summarizes funding levels for California Climate Investments and estimated induced co-investment for each of the 29 programs that received funding between FY 2013-14 and FY 2015-16. The table also summarizes the funding allocated to each state agency for program administration and fund management.

Table A2. Summary of Funds Analyzed From FY 2013-14 Through FY 2015-16*

State Agency	Program	California Climate Investment ($ Million)	Estimated Induced Co-investment ($ Million)**
High-Speed Rail Authority (HSRA)	High-Speed Rail Project	$707	$5,578.9
	Program Administration	$0	N/A
California State Transportation Agency (CalSTA)	Transit and Intercity Rail Capital Program	$208.3	$0.8
	Program Administration	$0.7	N/A
California Department of Transportation (DOT)	Low Carbon Transit Operations Program	$116.2	N/A
	Program Administration	$0.2	N/A
California Strategic Growth Council (SGC)	Affordable Housing and Sustainable Communities	$411.4	N/A
	Sustainable Agricultural Lands Conservation	$42	$18.0
	Program Administration	$10	N/A
California Air Resources Board (CARB)	Clean Vehicle Rebate Project	$204	$474.5
	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	$20	$60.8
	Enhanced Fleet Modernization Program Plus-Up	$12	$30.8
	Car Sharing and Mobility Options Pilot Project	$3	$6.9
	Public Fleet Pilot Project	$3	$9.7
	Financing Assistance Pilot Project	$0.9	$1.1
	Zero-Emission Truck and Bus Pilot Projects	$25	$21.4
	Multi-Source Facility Demonstration Project	$24.7	$22.3
	Zero-Emission Drayage Truck Demonstration Project	$24.7	$16.5
	Program Administration	$8	N/A
California Department of Community Services and Development (CSD)	Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating	$49.2	N/A
	Single-Family Solar Photovoltaics	$71.8	N/A
	Large Multi-Family Energy Efficiency and Renewables	$24	$4.6
	Program Administration	$8.8	N/A
California Department of Food and Agriculture (CDFA)	Dairy Digester Research and Development Program	$11.3	$26
	State Water Efficiency and Enhancement Program	$55.5	N/A
	Program Administration	$5.2	N/A

Continues next page.

State Agency	Program	California Climate Investment ($ Million)	Estimated Induced Co-investment ($ Million)**
California Department of Water Resources (DWR)	Water-Energy Grant Program	$46.8	N/A
	State Water Project Turbines Program	$20	$6.0
	Program Administration	$2.7	N/A
California Department of Fish and Wildlife (DFW)	Sacramento-San Joaquin Delta and Coastal Wetlands Restoration	$15.4	N/A
	Mountain Meadow Ecosystems Restoration	$5.9	N/A
	Program Administration	$5.7	N/A
California Department of Forestry and Fire Protection (CALFIRE)	Forest Health Program	$18.2	N/A
	Forest Legacy Program	$4.2	$15.2
	Urban and Community Forestry Program	$15.7	N/A
	Program Administration	$3.9	N/A
California Department of Resources Recycling and Recovery (CalRecycle)	Organics Grant Program	$14.5	$30.9
	Recycled Fiber, Plastic, and Glass Grant Program	$5	$13.7
	The Greenhouse Gas (GHG) Reduction Loan Program	$9.2	$60.7
	Program Administration	$1.3	N/A
Subtotal for Programs		**$2,216**	**$6,399**
CARB	Fund Administration and Management	$24.2	N/A
California Office of Environmental Health Hazard Assessment (OEHHA)	Identification of Disadvantaged Communities	$1.9	N/A
Total		**$2,242**	**$6,399**

* Numbers may not add up to total amounts due to rounding.

** N/A signifies that there was not enough information to determine whether the co-investment by this program was actually induced by California Climate Investment funding.

Step 2: Program-Specific Employment Multipliers

After estimating the total investment levels associated with California Climate Investments, we then used IMPLAN to develop program-specific employment multipliers to apply to those investment flows. Employment multipliers are expressed as a ratio of job-years per million dollars of investment. For the purposes of this study, all jobs are reported in terms of full-time equivalent (FTE) job-years, which simply means one person working full time for one year. In practice, one job-year may take the form of two employees for six months each or three employees for four months each.

When modeling a program in IMPLAN, a number of inputs have to be entered to describe how program funds are spent, including the industries that are impacted, the percentage of funds that are spent within the California economy, the percentage of funds that go to transaction costs (e.g., third-party retailers, transportation, etc.), and the timeline over which funds are spent. Refer to **Chapter 2 – Methodology** for a detailed overview of how IMPLAN works, as well as a discussion of the various factors that determine the employment multiplier associated with a particular program.

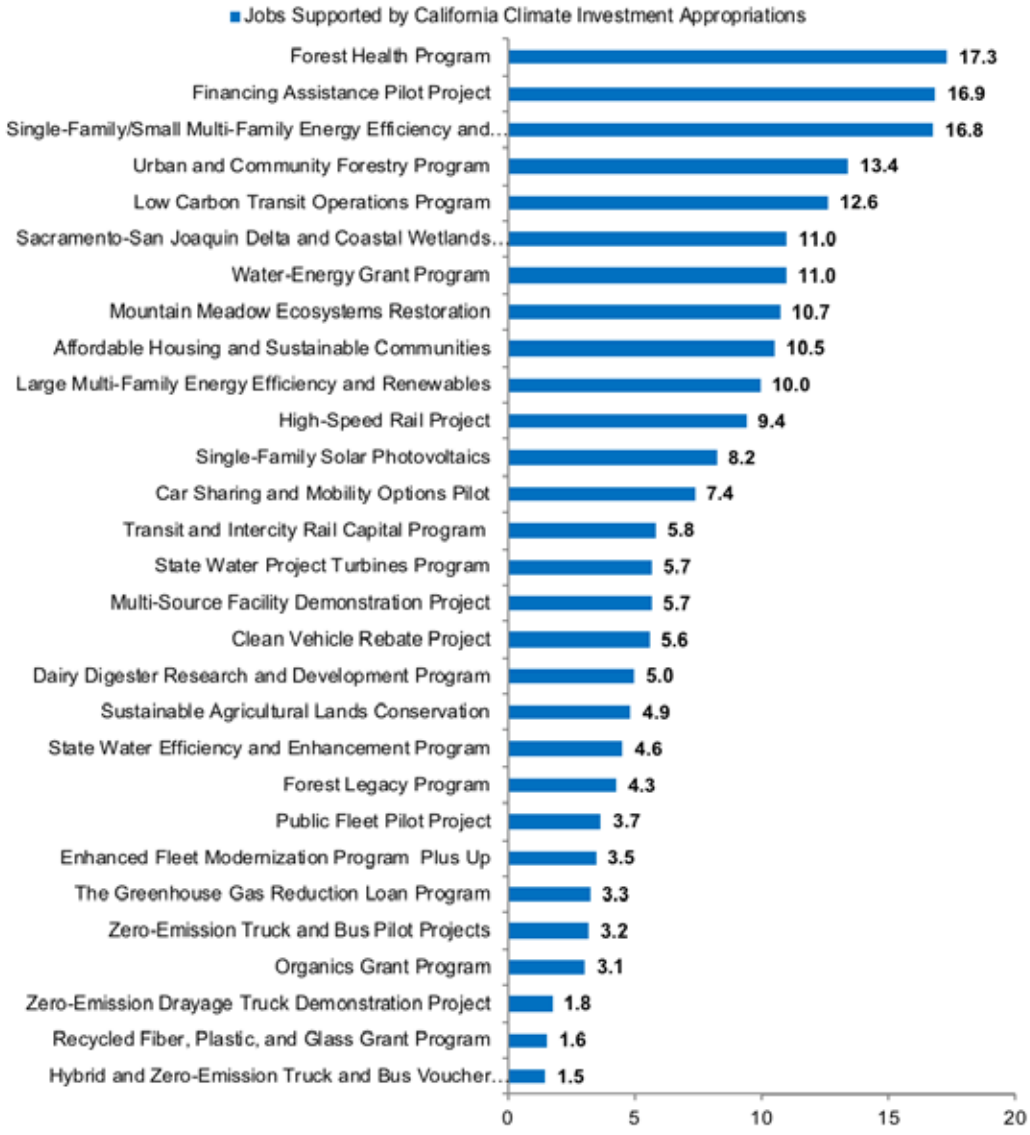
The employment multipliers for California Climate Investments vary greatly by program (see **Figures A2** and **A3**). These programs, after all, are heterogeneous. Some programs primarily rely on human labor to achieve

GHG reductions (e.g., reforestation and ecosystem restoration programs), while others primarily rely on innovative technologies (e.g., zero-emission truck and bus programs). Of the programs that rely on emerging technologies, some are able to source from California manufacturers (e.g., heavy-duty electric vehicle programs), while others must look out of state for cost-effective options (e.g., light-duty vehicle programs).

Comparing the multipliers for each program can inform policy decisions that maximize the number of jobs supported by public funds. Yet the ultimate merit of each program should not be solely evaluated in terms of job-years. Programs that have low employment multipliers are still reducing GHGs while producing a range of co-benefits, of which employment is only one. Other important co-benefits to consider, but which are outside the scope of this study, include improvements in air quality, water quality, and human health. It is important to consider how the mix of programs can collectively achieve multiple goals, as each program has its strengths.

Figure A2. Employment Multipliers by Program - Excluding Co-investment

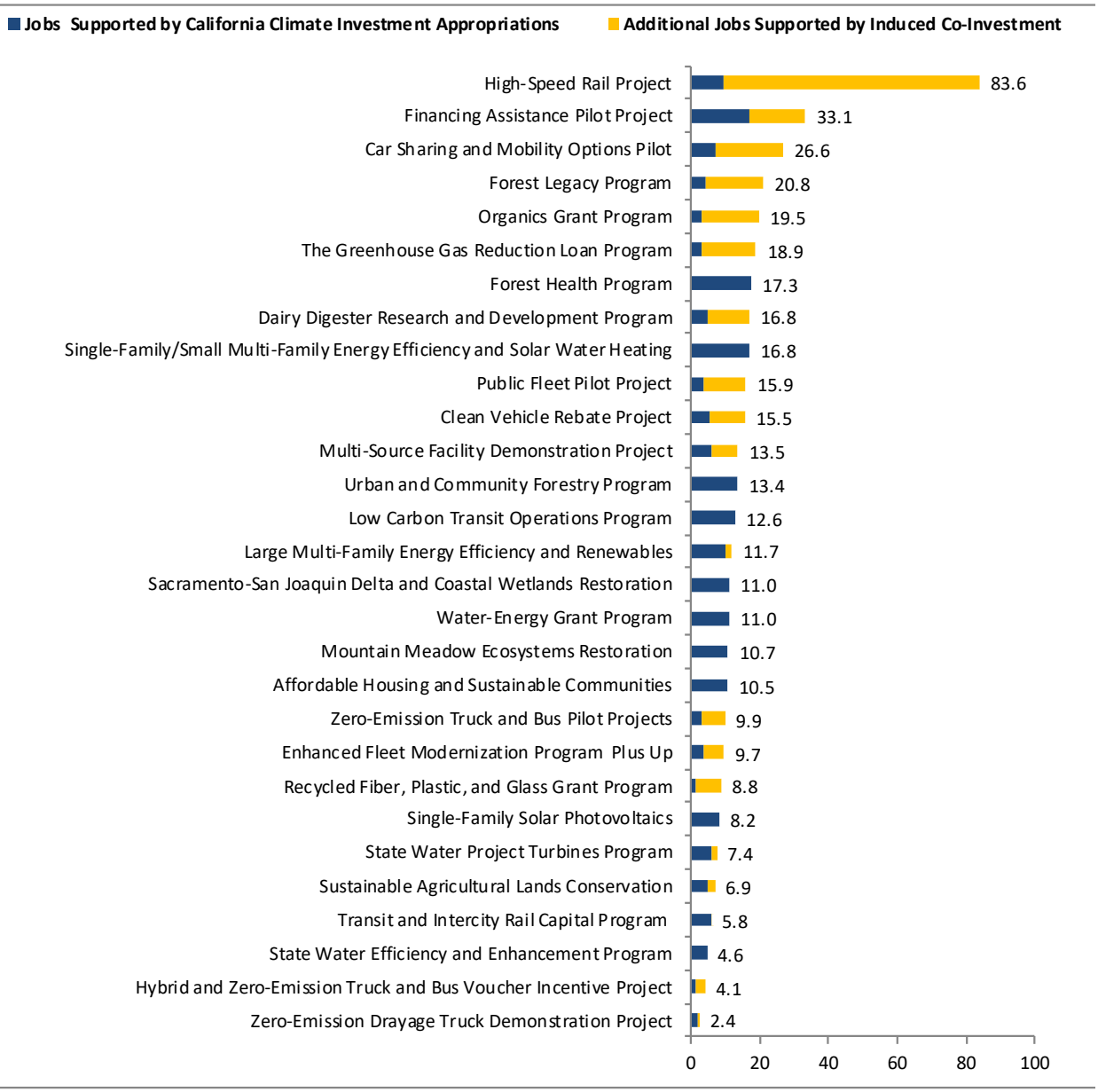
(FTE Job-Years in California per $1 Million of Appropriations for California Climate Investments)[3]



[3] The program-level details that influenced the multiplier reported for each program are described in the **Methodology** section of each program's respective chapter in of this report.

Figure A3. Employment Multipliers by Program — Including Co-investment

(FTE Job-Years in California per $1 Million of Appropriations for California Climate Investment Appropriations)[4]



Across all of the programs studied here, we estimate that for every million dollars of California Climate Investments appropriated between FY 2013-14 and FY 2015-16, a total of 8.8 job-years are supported by appropriated funds, and an additional 24.9 job-years are supported by induced co-investment. When the jobs supported by California Climate Investment appropriations and induced co-investment are added together, a million dollars of appropriated funds supports a total of 33.7 job-years.

The multiplier for the induced co-investments differs from the multiplier for California Climate Investments

[4] The program-level details that influenced the multiplier reported for each program are described in the methodology section of each program's respective chapter in **Part II** of this report.

for two reasons. First, the induced co-investments are spent on a different mix of industries than California Climate Investment appropriations. For example, some awarded projects use the appropriated funds to purchase equipment and matching funds to pay for operations. Second, the ratio between appropriated funding and induced co-investment is not one-to-one. For every million dollars in California Climate Investments appropriated to programs that reduce GHGs, an additional $2.9 million in co-investment is induced from outside sources. That additionality is heavily weighted by the High-Speed Rail Project, which generates exceptionally high levels of induced co-investment from the federal government and Proposition 1A funds. During the study period, the High-Speed Rail Project induced $5.6 billion in co-investment, which represents 87% of the total co-investment identified in the study ($6.4 billion).

When the High-Speed Rail Project is removed from the mix of programs, we estimate that a million dollars of California Climate Investment funding supports 8.5 job-years, and induces an additional $0.5 million in co-investment, thereby supporting an additional 2.2 job-years. Thus, the effect of the High-Speed Rail Project on the employment multiplier for California Climate Investments (excluding the additional jobs from induced co-investment) is relatively marginal, increasing the multiplier from 8.5 to 8.8 job-years per million dollars, about a 3.5% increase. However, when the additional jobs from co-investment are included, the High-Speed Rail Project has a more dramatic effect. For every million dollars appropriated to California Climate Investments, the inclusion of the High-Speed Rail Project increases the amount of induced co-investment from $823 million to $6.4 billion, thereby increasing the additional jobs from induced co-investment from 2.2 to 24.9, which is more than a tenfold increase.

To put these numbers in context, we compare them to the employment multipliers of two benchmark industries: (1) the residential construction industry, which is a common reference point for job creation, and (2) computer and electronic products manufacturing, the largest manufacturing industry in California by employment. In making comparisons between California Climate Investments and these two benchmark industries, we look only at the jobs supported by direct investment and exclude induced co-investment. Assessing the ways in which public investment in the benchmark industries might induce outside co-investment was outside the scope of this study. Nine of the 29 California Climate Investments (31%) have an employment multiplier greater than that of construction (10.4 FTE job-years per million dollars), and 26 (90%) have an employment multiplier greater than that of computer and electronic products manufacturing (2.2 FTE job-years per million dollars).[5,6]

Step 3: Total Jobs Supported by California Climate Investments

Our analysis reveals that the $2.242 billion in appropriated California Climate Investments supports around **19,700** job-years in California. The $6.403 in induced co-investment supports an additional **55,900** job-years in California. When added together, California Climate Investment funds and induced co-investment support a total of **75,600** job-years in California. Some of these jobs exist now while others will be realized in the near future, as not all funded projects have been fully implemented.

It is important to note that job outputs from IMPLAN are not necessarily net new jobs. When modeling

[5] It is important to note that the average employment multiplier for California Climate Investments represents a mix of industrial sectors, including construction and manufacturing sectors. For a percentage breakdown on the mix of industries that c constitute each California Climate Investment, see the methodology section of each program chapter in **Part II**.

[6] The multiplier for computer and electronic product manufacturing is actually a weighted composite of all of 22 IMPLAN industries that fit within the computer and electronic product manufacturing sector. Weights were based on each industry's share of total sales, according to the 2012 Economic Census for the state of California (Table EC1200A1). These weights are summarized in **Appendix A2**.

investment flows in IMPLAN, the model assumes that each investment is an additional flux of spending into the California economy. In reality, all of the funds that make California Climate Investments possible originate from auction revenues that the state collects from regulated industries under California's Cap-and-Trade Program. Conducting a net job analysis would require making assumptions about how California Climate Investments and induced co-investments would be spent in the absence of the Cap-and-Trade Program, then modeling those investment flows, and comparing their job yields to the job yields from California Climate Investments, all of which were outside the scope of this study.

Given the scope of the study, the job numbers reported here should be viewed as gains in green jobs (e.g., solar jobs, recycling jobs, zero-emission technology jobs, etc.) and jobs that support green jobs (e.g., environmental consultants, civil engineers, etc.). While many of these green jobs occur in industries that are not conventionally thought of as "green" (e.g., automobile manufacturing, consulting, construction, etc.), they are considered green in the context of this study because they support activities that reduce GHGs. A construction job, for example, is not a green job when it supports the development of coal-fired power plants, but is a green job when it supports the development of solar power infrastructure or dairy digesters.

Table A3 summarizes the number of jobs supported by California Climate Investments and induced co-investments for each of the 29 programs that received funding between FY 2013-14 and FY 2015-16. The total jobs reported for each program are ultimately dependent on a myriad of variables that had to be described in IMPLAN, including: (1) total amount of California Climate Investment funding allocated to each program, (2) the amount of co-investment generated by each program, (3) the industrial sectors impacted by each program, (4) the percentage of funds that went to California-based firms versus those that are out of state, (5) the timeline over which funds will be spent, and (6) whether material goods are purchased directly from manufacturers or third-party retailers. The influence of the first two variables on employment is relatively simple; the more money invested in a program, the more jobs supported. The influence of the latter four variables is more nuanced, and is summarized in **Chapter 2 – Methodology**.

Table A3. Estimated Job-Years in California Supported by Appropriations for California Climate Investments From FY 2013-14 Through FY 2015-16*

State Agency	Program	California Climate Investment (FTE Job-Years in California)	Estimated Induced Co-investment (FTE Job-Years in California)**
HSRA	High-Speed Rail Project	6,656	52,468
	Program Administration	0	N/A
CalSTA	Transit and Intercity Rail Capital Program	1,215	2
	Program Administration	8	N/A
DOT	Low Carbon Transit Operations Program	1,468	N/A
	Program Administration	3	N/A
SGC	Affordable Housing and Sustainable Communities	4,330	N/A
	Sustainable Agricultural Lands Conservation	204	81
	Program Administration	113	N/A

Continues next page.

State Agency	Program	California Climate Investment (FTE Job-Years in California)	Estimated Induced Co-investment (FTE Job-Years in California)**
CARB	Clean Vehicle Rebate Project	1,137	2,031
	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	30	52
	Enhanced Fleet Modernization Program Plus-Up	42	74
	Car Sharing and Mobility Options Pilot Project	22	57
	Public Fleet Pilot Project	11	36
	Financing Assistance Pilot Project	16	13
	Zero Emission Truck and Bus Pilot Projects	80	167
	Multi-Source Facility Demonstration Project	140	192
	Zero-Emission Drayage Truck Demonstration Project	43	15
	Program Administration	90	N/A
CSD	Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating	825	N/A
	Single-Family Solar Photovoltaics	591	N/A
	Large Multi-Family Energy Efficiency and Renewables	239	40
	Program Administration	99	N/A
CDFA	Dairy Digester Research and Development Program	57	132
	State Water Efficiency and Enhancement Program	253	N/A
	Program Administration	58	N/A
DWR	Water-Energy Grant Program	514	N/A
	State Water Project Turbines Program	114	33
	Program Administration	34	N/A
DFW	Sacramento-San Joaquin Delta and Coastal Wetlands Restoration	170	N/A
	Mountain Meadow Ecosystems Restoration	63	N/A
	Program Administration	64	N/A
CALFIRE	Forest Health Program	315	N/A
	Forest Legacy Program	18	68
	Urban and Community Forestry Program	211	N/A
	Program Administration	44	N/A

Continues next page.

State Agency	Program	California Climate Investment (FTE Job-Years in California)	Estimated Induced Co-investment (FTE Job-Years in California)**
CalRecycle	Organics Grant Program	44	238
	Recycled Fiber, Plastic, and Glass Grant Program	8	34
	The Greenhouse Gas (GHG) Reduction Loan Program	30	141
	Program Administration	15	N/A
Subtotal for Programs		**19,374**	**55,873**
CARB	Fund Administration and Management	273	N/A
OEHHA	Identification of Disadvantaged Communities	21	N/A
Total		**19,669**	**55,873**

*Numbers may not add up to total amounts due to rounding.

** N/A signifies that there was not enough information to determine whether the co-investment by this program was actually induced by California Climate Investment funding, and as a result, we did not model the jobs supported by co-investment for that program.

Disaggregating Jobs by Economic Sector

The direct jobs supported by California Climate Investments can serve as a representative sample, or a microcosm, of the green jobs that are supported by the state's transition to a lower-carbon economy. **Figure A4** summarizes the top 10 industries most directly impacted by California Climate Investments. Similarly, **Figure A5** summarizes the top 10 industries most directly impacted by induced co-investments. These figures do not take into account the many indirect and induced jobs supported by these investment flows.[7] Indirect and induced jobs were excluded from the industry breakdowns reported here in order to isolate the jobs that will be most visibly supported by California Climate Investments at the community level. Likewise, these figures do not take into account the administrative jobs at state agencies supported by California Climate Investment appropriations. Together, the 10 industries highlighted below account for 88% of the direct jobs supported by California Climate Investments and 99% of those supported by induced co-investments.

Of the many economic sectors that are directly impacted by California Climate Investments and induced co-investment, the construction sectors were most positively impacted. These job-years are explained by the significant level of investment that goes toward the High-Speed Rail Project, the Affordable Housing and Sustainable Communities program, and a number of other programs that involve building new facilities or installing solar photovoltaic (PV) systems. When the construction sectors are totaled, about 4,900 construction job-years are supported by California Climate Investment funding appropriated between FY 2013-14 and FY 2015-16 (54% of total direct job-years), and 18,400 construction job-years are supported by co-investment induced during that same period (68% of total direct job-years).

[7] See **Appendix A3** for the top 10 industries where indirect and induced jobs are occurring.

Figure A4. Top 10 Industries Directly Impacted by Appropriations for California Climate Investments From FY 2013-14 Through FY 2015-16[8,9]

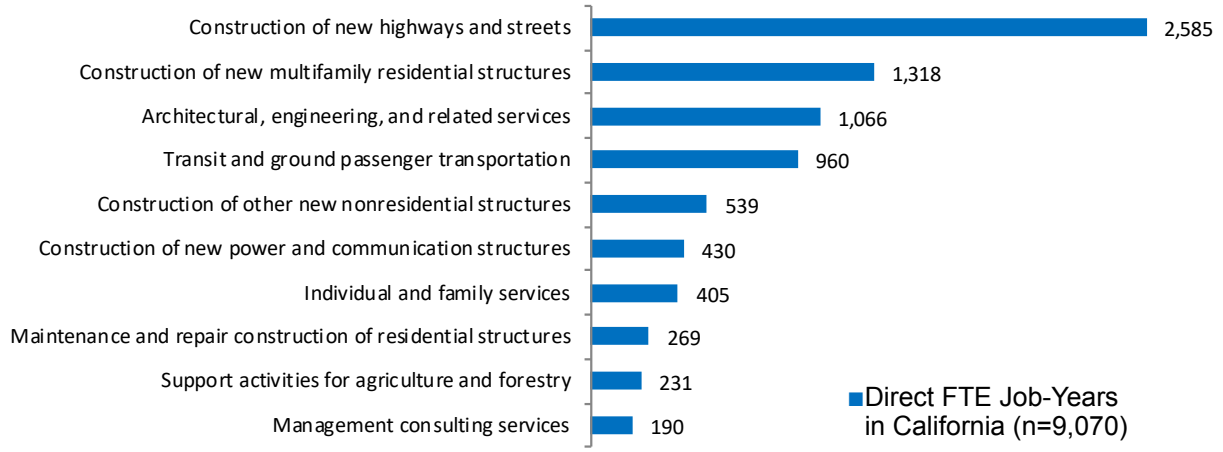


Figure A5. Top 10 Industries Directly Impacted by Induced Co-investment

Economic sectors are helpful for inferring the potential quality of jobs supported by California Climate Investments. Although IMPLAN does not provide details on which occupations are supported within each of these impacted sectors, inferences can be made using outside literature that has studied wages, benefits, and other job quality metrics of the industries identified in this study. For example, a recent study from the Center for Labor Research and Education at University of California, Berkeley, found that the renewable energy construction sector performs particularly well according to a number of job quality metrics, including employer contributions to apprenticeship training, pension funds, and health insurance. Looking specifically at construction activities in California between 2002 and 2015, the study found that renewable energy construction jobs came with benefit packages equal to 49% of the take-home wages for each

[8] These industry categories are taken directly from IMPLAN. In total, there are 536 industry codes in IMPLAN. In general, IMPLAN's industrial sectors map very closely to the six-digit North American Industry Classification System (NAICS) codes, especially for manufacturing sectors. However, many of the service, agricultural, and construction sectors in IMPLAN have been consolidated into unique industry categories created by IMPLAN (e.g., construction of new highways and streets). Refer to the program chapters in **Part II** for a more detailed discussion of the direct jobs supported by each.

[9] This figure does not include administrative jobs at state agencies supported by appropriated funds.

hour worked, including health insurance, pensions, and apprenticeship training.[10] These benefit packages help train new construction workers and retain experienced construction workers, which is particularly important for maintaining a skilled labor force with career ladder opportunities resilient to fluctuations in the labor market.

Another UC Berkeley study assessed the large number of construction jobs supported by California Climate Investments in the San Joaquin Valley and noted most of that these blue-collar construction jobs are covered under the state's prevailing wage law.[11] Prevailing wage laws establish a wage and skill standard so that competitiveness among contractors is not enhanced by hiring unskilled workers and paying low wages. In addition, California Labor Code 1777.5 requires all public works contractors to hire apprentices enrolled in state-certified apprenticeship programs for a minimum number of project hours. This requirement ensures that California Climate Investments will continue to support workforce training of the next generation and stabilize the construction workforce, while providing work opportunities to both new and incumbent workers.

[10] B. Jones et al. (2016). The Link Between Good Jobs and a Low Carbon Future: Evidence from California's Renewable Portfolio Standard, 2012-2015. University of California, Berkeley: Donald Vial Center on Employment in the Green Economy, Center for Labor Research and Education.

[11] B. Jones et al. (2017). The Economic Impacts of California's Major Climate Programs on the San Joaquin Valley. UC Berkeley Center for Labor Research and Education, UC Berkeley School of Law, and Next 10.

4. Investments in Disadvantaged Communities

To ensure that California Climate Investments are distributed equitably across the state, Senate Bill (SB) 535 (de León) requires that a minimum of 25% of California Climate Investment funding benefit disadvantaged communities. Of that, a minimum of 10% is required to be located within those communities. More recently, the Legislature passed, and Governor Jerry Brown signed, Assembly Bill (AB) 1550 (Gomez), which modified investment minimums for disadvantaged communities such that at least 25% of funds go to projects located within and benefiting disadvantaged communities. AB 1550 also adds investment minimums for projects that are located within and benefiting individuals living in low-income communities. The state uses the California Communities Environmental Health Hazard Assessment Screening Tool (CalEnviroScreen) to identify disadvantaged communities, defined as the top 25% of census tracts in California most impacted by and vulnerable to multiple sources of pollution.[1]

The analysis in this chapter seeks to answer:

- What is the employment multiplier for California Climate Investments located in disadvantaged communities and how does it compare to California Climate Investments located in other communities?
- How many total job-years will be supported by California Climate Investments that are located in disadvantaged communities?

We focus our analysis on investments that are located in disadvantaged communities, rather than the broader category of investments that benefit disadvantaged communities, because the former is a better proxy for jobs located in disadvantaged communities. The economic input-output model used in this study (IMPLAN Version 3.1) does not provide data on the precise location of jobs, so it is not possible to discern the number of jobs specifically located within disadvantaged communities at the census-tract level.[2] Nevertheless, investments that are located in disadvantaged communities, particularly investments in large infrastructure projects, can and do support jobs in those communities. For example, the Transit and Intercity Rail Capital Program is providing $38.5 million to the Los Angeles County Metropolitan Transportation Authority for major upgrades to the Willowbrook/Rosa Parks station. The project is located

[1] The designation of disadvantaged community applies to the highest-scoring 25% of census tracts from CalEnviroScreen 3.0, an index that evaluates the vulnerability of a community according to variety of environmental, health, economic, and social indicators. For more information in disadvantaged communities, visit: https://www.calepa.ca.gov/files/2017/04/SB-535-Designation-Final.pdf.

[2] IMPLAN provides the gross number of jobs that are supported within a defined geographic boundary. ZIP codes are the most granular geographic boundary available in IMPLAN. Disadvantaged communities, however, are defined at the census-tract level.

in a disadvantaged community and has a labor agreement in place that requires the hiring of local workers for a minimum of 40% of all worked hours.[3]

In contrast, investments that benefit disadvantaged communities, although not located in them, fund projects that bring some measurable co-benefit to disadvantaged communities, such as improved air quality, but are more likely to support jobs elsewhere. For example, the Public Fleet Pilot Project provides incentives for public fleet operators to switch to advanced technology vehicles that operate in and near disadvantaged communities, but the fleet operator does not necessarily need to be located within a disadvantaged community. Thus, all of the program funds for the pilot project benefit disadvantaged communities because they reduce pollution in those communities, but not all of the program funds are directly spent within disadvantaged communities. In the event that a public fleet operator is located outside a disadvantaged community, but still qualifies for an incentive, we conservatively assume that they also spend incentive funds at retail locations (e.g., auto dealerships) outside disadvantaged communities, thereby supporting jobs outside disadvantaged communities.

Approach

The data that we used to answer the research questions that guide this chapter are based on percentages reported by grantees in the form of implemented funds.[4] The scope of this study, however, is at the scale of appropriated funds. The key difference between implemented funds and appropriated funds is that the former are those that have been disbursed to actual projects, while appropriated funds may still be awaiting full disbursement. For example, some agencies stagger the disbursement of their appropriated funds in order to pilot a concept for a program before implementing the program more widely.

In order to resolve the difference in scale between implemented and appropriated funds, and ultimately answer the research questions driving this chapter, we completed the following steps:

- Identify implemented funds located in disadvantaged communities.
- Scale up implemented funds located in disadvantaged communities to the full appropriations for California Climate Investments from fiscal year (FY) 2013-14 to FY 2015-16.
- Apply program-level employment multipliers (refer to **Chapter 3**) to the investment flows from Step 2.
- Sum the program-level impacts from Step 3 to determine the total number of jobs supported by California Climate Investments located in disadvantaged communities from FY 2013-14 to FY 2015-16.

In completing these steps, we excluded appropriations to state agencies for administration, operations, fund management, and research. We excluded these because these funds were never intended to be directly spent within communities, disadvantaged or otherwise.

Findings

Investments for Disadvantaged Communities: Implemented Funds

As mentioned, we first identified the amount of implemented funding located in disadvantaged communities. Here, we relied on the percentages reported by the California Air Resources Board (CARB) in

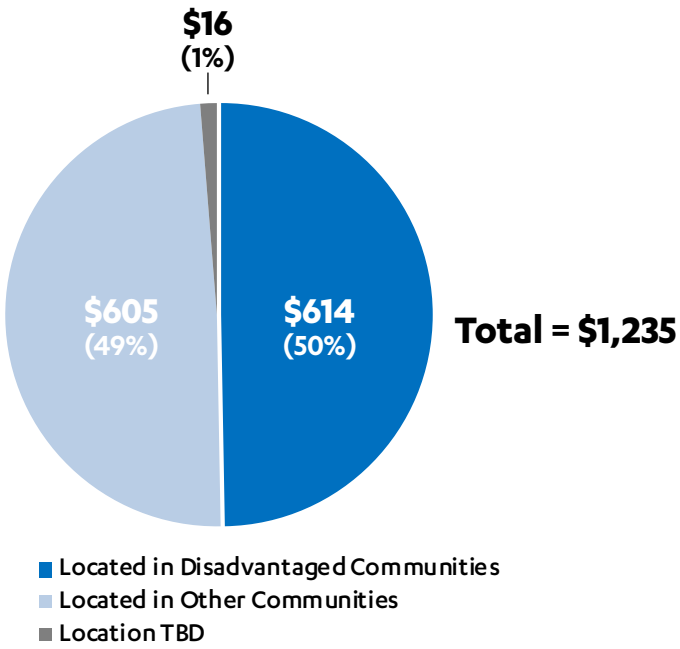
[3] Los Angeles County Metropolitan Transportation Authority (2017). "Project Labor Agreement."

[4] California Air Resources Board (2017). Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. (**Table ES-2; Page xii – xiv**)

the 2017 California Climate Investments Annual Report for implemented funds.[5] At the time of our research, the 2017 annual report did not contain percentages for the High-Speed Rail Project, so we obtained percentages directly from the High-Speed Rail Authority.[6] We find that about 50% of implemented funds have been located in disadvantaged communities.[7] This cumulative percentage reported here differs from the cumulative percentage (34%) reported by CARB because of the inclusion of the High-Speed Rail Project in our calculations, and the exclusion of data for newly launched programs in FY 2016-17 (e.g., Biofuels) from our calculations.

See **Table A4** for a summary of the percentages of implemented funds located in disadvantaged communities broken out by program. **Figure A6** provides the total dollar value of implemented funds located in disadvantaged communities through 2016.

Figure A6. Implemented California Climate Investment Funding Through 2016 ($ Million)[8]



[5] California Air Resources Board (2017). Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. (**Table ES-2; Page xii – xiv**).

[6] High-Speed Rail Authority (Email correspondence, June 23, 2017).

[7] The percentage of funds located in disadvantaged communities does not include potential funds for the Urban and Community Forestry Program or the Large Multi-Family Energy Efficiency and Renewables program. With respect to the Urban and Community Forestry Program, a project is considered located within a disadvantaged community if more than 50% of the trees planted are located within disadvantaged communities. When the 2017 California Climate Investments annual report was released, the projects being implemented had not planted 100% of their trees, and therefore it was it too soon to determine the share of funds located within disadvantaged communities. With respect to the Large Multi-Family Energy Efficiency and Renewables program, no funds had been implemented prior to the release of the 2017 California Climate Investments annual report. Thus, the percentage of funds located in disadvantaged for communities for both of these programs was reported as "to be determined" (TBD).

[8] Ibid.

Table A4. Implemented California Climate Funding Through 2016*[9,10]

Program	Implemented Funds[11] ($ Million)	Located in Disadvantaged Communities (%)
High-Speed Rail Project	$348	56%
Transit and Intercity Rail Capital Program	$224.3	81%
Low Carbon Transit Operations Program	$86.6	67%
Affordable Housing and Sustainable Communities	$71.0	51%
Sustainable Agricultural Lands Conservation	$3.8	0%
Clean Vehicle Rebate Project	$243.2	7%
Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	$25.1	43%
Enhanced Fleet Modernization Program Plus Up	$4.4	64%
Car Sharing and Mobility Options Pilot	$3.0	100%
Public Fleet Pilot Project	$2.4	42%
Financing Assistance Pilot Project	$0.1	61%
Zero-Emission Truck and Bus Pilot Projects	$13.4	50%
Multi-Source Facility Demonstration Project	$23.7	50%
Zero-Emission Drayage Truck Demonstration Project	$23.7	100%
Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating	$5.5	100%
Single-Family Solar Photovoltaics	$19.0	100%
Large Multi-Family Energy Efficiency and Renewables	$0	TBD
Dairy Digester Research and Development Program	$11.3	71%
State Water Efficiency and Enhancement Program	$34.0	36%
Water-Energy Grant Program	$6.7	51%
State Water Project Turbines Program	$11.8	0%
Sacramento-San Joaquin Delta and Coastal Wetlands Restoration	$15.4	87%
Mountain Meadow Ecosystems Restoration	$5.9	0%
Forest Health Program	$14.7	0%
Forest Legacy Program	N/A[12]	0%
Urban and Community Forestry Program	$15.6	TBD
Organics Grant Program	$14.5	61%
Recycled Fiber, Plastic, and Glass Grant Program	$5.0	0%
The Greenhouse Gas (GHG) Reduction Loan Program	$2.6	32%
Total	**$1,235**	**50%**

* Numbers many not add up to total amounts due to rounding.

[9] California Air Resources Board (2017). Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds. (**Table ES-2; Page xii – xiv)**.

[10] High-Speed Rail Authority (Email correspondence, June 23, 2017).

[11] The percentages in this table reflect implemented funds between FY 2013-14 and FY 2016-17, while the study period of this report is between FY 2013-14 and FY 2015-16. Thus, some of the implemented funding totals reported in this table exceed the allocations reported elsewhere in this report.

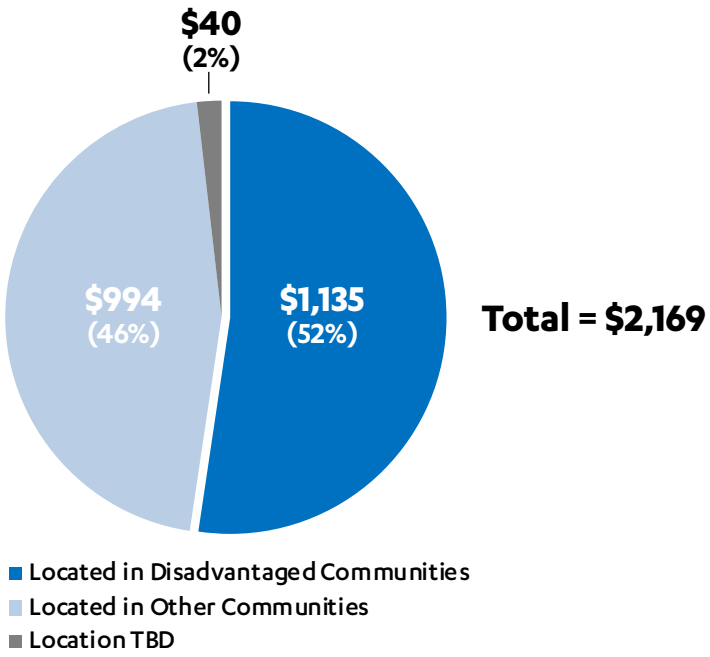
[12] The Forest Legacy Program was collapsed into the Forest Health Program in the 2017 annual report (i.e., funds for the Forest Legacy Program are reported as part of the Forest Health Program).

Investments for Disadvantaged Communities: Appropriated Funds

After identifying the percentage of *implemented funds* that have been spent in disadvantaged communities, we then applied these percentages to *appropriated funds*.[13] In making this calculation, we assume that the percentages for implemented funds spent in disadvantaged communities through 2016 will hold true for the remaining funds that have been allocated, but not yet fully implemented. In reality, there may be some variation. For example, the number of Clean Vehicle Rebate Project (CVRP) rebates going to residents of disadvantaged communities may increase in the future because the program began offering increased incentives for low-income households as of March 29, 2016. Nonetheless, we assume that spending patterns observed through 2016 for implemented funds are fairly representative of how the remaining funds will be spent.

Based on our calculations, we estimate a total of $1.135 billion in funds appropriated between FY 2013-14 and FY 2015-16 will be spent in disadvantaged communities.[14] This translates to 52% of total appropriations during the study period (see **Figure A7**). This percentage is slightly greater than the percentage reported for implemented funds (50%) because it was derived from a slightly different mix of funding weights spread across the 29 programs. In other words, not all programs have been implemented to their full funding allocation. Thus, as programs go from partially implemented to fully implemented, one can expect a greater share of funds to be located in disadvantaged communities, all else being equal. See **Table A5** for a summary of the appropriated funds (by program) that we estimate will be located in disadvantaged communities.

Figure A7. Estimated Appropriations for California Climate Investments From FY 2013-14 Through FY 2015-16 ($ Million)[15]



[13] We excluded appropriations to state agencies for program administration from our analysis because these funds were never intended to be directly spent in communities, disadvantaged or otherwise.

[14] The estimated total of appropriated funds located in disadvantaged communities does not include potential funds from the Urban and Community Forestry Program or the Large Multi-Family Energy Efficiency and Renewables program (see footnote 7), which are classified as TBD.

[15] Ibid.

Table A5. Appropriations For California Climate Investments From FY 2013-14 Through FY 2015-16*

Program	Actual Appropriations[16] ($ Million)	Estimated Appropriations Located in Disadvantaged Communities ($ Million)[17]
High-Speed Rail Project	$707.0	$395.9
Transit and Intercity Rail Capital Program	$208.3	$168.7
Low Carbon Transit Operations Program	$116.2	$77.9
Affordable Housing and Sustainable Communities	$411.4	$209.8
Sustainable Agricultural Lands Conservation	$42.0	$0
Clean Vehicle Rebate Project	$204.0	$14.3
Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	$20.0	$8.6
Enhanced Fleet Modernization Program Plus Up	$12.0	$7.7
Car Sharing and Mobility Options Pilot	$3.0	$3.0
Public Fleet Pilot Project	$3.0	$1.3
Financing Assistance Pilot Project	$0.9	$0.6
Zero-Emission Truck and Bus Pilot Projects	$25.0	$25.0
Multi-Source Facility Demonstration Project	$24.7	$12.3
Zero-Emission Drayage Truck Demonstration Project	$24.7	$12.3
Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating	$49.2	$49.2
Single-Family Solar Photovoltaics	$71.8	$71.8
Large Multi-Family Energy Efficiency and Renewables	$24.0	TBD
Dairy Digester Research and Development Program	$11.3	$8.0
State Water Efficiency and Enhancement Program	$55.5	$20.0
Water-Energy Grant Program	$46.8	$23.9
State Water Project Turbines Program	$20.0	$0
Sacramento-San Joaquin Delta and Coastal Wetlands Restoration	$15.4	$13.4
Mountain Meadow Ecosystems Restoration	$5.9	$0
Forest Health Program	$18.2	$0
Forest Legacy Program	$4.2	$0
Urban and Community Forestry Program	$15.7	TBD
Organics Grant Program	$14.5	$8.9
Recycled Fiber, Plastic, and Glass Grant Program	$5.0	$0
The Greenhouse Gas (GHG) Reduction Loan Program	$9.2	$2.9
Total	**$2,169**	**$1,135**

*Numbers many not add up total amounts due to rounding.

[16] Appropriated funds were obtained from the public expenditure records prepared by state agencies. In some cases, the final appropriation differed from what was initially reported in the public expenditure record. These updates were made in consultation with administering state agencies.

[17] Estimated funds were obtained by applying the percentages from Table A4 to total appropriated funds.

Employment Multipliers for California Climate Investments Located in Disadvantaged Communities

To arrive at the total number of jobs supported by investments located in disadvantaged communities, we applied program-level employment multipliers to the estimated appropriation amounts from **Table A5.** We used IMPLAN to construct the employment multipliers for each program, as based on how program funds are actually spent. The methods that were used to develop the employment multipliers for each program are detailed in the methodology subsection of the 29 chapters that constitute **Part II** of this report. See **Chapter 3** for a summary of employment multipliers by program.

When state appropriations for California Climate Investments are divided into two distinct funding streams — those that are located in disadvantaged communities and those located in other communities — the investments that are located in disadvantaged communities have a greater average employment multiplier than those that are not, regardless of whether the additional jobs from induced co-investment are included. For every million dollars of California Climate Investment funding spent in disadvantaged communities, **nine job-years** are supported in California by appropriated funds, and an additional **26.6 job-years** are supported by induced co-investment.[18] If the same million dollars is spent outside disadvantaged communities, a total of **8.2 job-years** are supported in California by appropriated funds, and an additional **25.8 job-years** are supported by induced co-investment.[19]

Investments located in disadvantaged communities support more jobs per million dollars than investments in other communities because they impact a different mix of industries. In other words, a greater share of investment dollars located in disadvantaged communities goes toward industries like construction, architecture, engineering services, and transit operations, which tend to have high employment multipliers relative to other industries. In contrast, investments located outside disadvantaged communities tend to more strongly favor manufacturing sectors, which have low employment multipliers relative to other industries.

When the High-Speed Rail Project is excluded from the analysis, California Climate Investments located in disadvantaged communities continue to support more jobs than California Climate Investments located in other communities (8.8 job-years versus 7.7 job-years per million dollars of program funds, respectively), but they induce less co-investment, and therefore support fewer jobs from co-investment.[20] This outcome is the result of strategic policy design, as discussed in the following subsection. See **Figure A8** for a visualization of the High-Speed Rail Project's impact on the average employment multiplier for California Climate Investments located in disadvantaged communities compared to other communities.

[18] These employment multipliers are weighted averages. They reflect the jobs supported by $1 million of appropriations for California Climate Investments proportionally distributed across the mix of programs funded between FY 2013-14 and FY 2015-16. The proportionality of that distribution was based on the amount of funding each program received during that same period. These weighted averages exclude funds and jobs associated with program administration at the state-level (see footnote 13), the Urban and Community Forestry Program (see footnote 7), and the Large Multi-Family Energy Efficiency and Renewables program (see footnote 7). A unique employment multiplier was developed for the latter two programs, which have a weighted average of 11.3 job-years per million dollars of appropriations, not including the additional jobs supported by induced co-investment. When induced co-investment is included in the analysis, an additional 1.1 job-years are supported by each million dollars of California Climate Investment funding.

[19] Ibid.

[20] Ibid.

Lower Co-investment Policy Requirements by Design

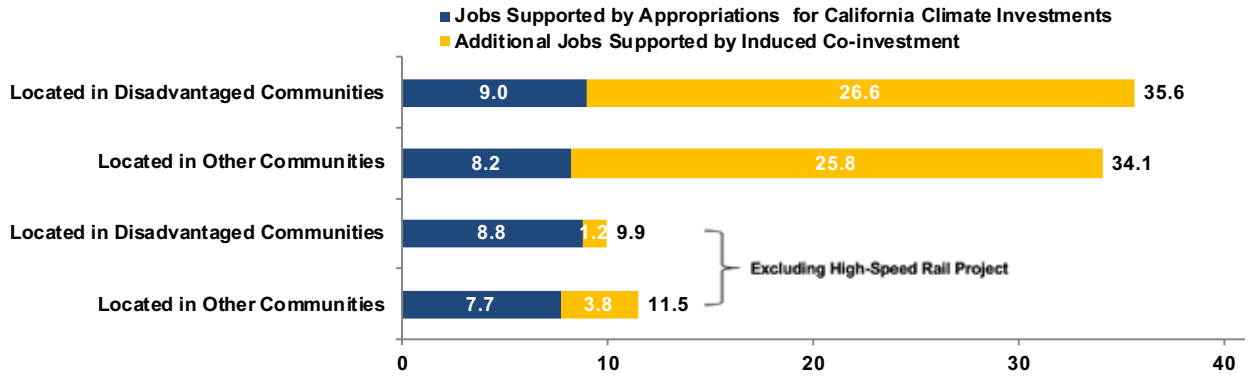
Many of the programs that are located in disadvantaged communities are designed to help residents of those communities adopt cleaner vehicles, take transit, live in more energy- and water-efficient homes, and green their neighborhoods. To advance the state's equity goals, policymakers have sought to incentivize lower-income households to adopt a suite of cleaner technologies while minimizing the financial burden of doing so.

As a result, policymakers have designed programs targeting disadvantaged communities by increasing the relative rebate levels or related state contributions while reducing the required household contribution. The Single-Family Solar Photovoltaics program, for example, provides low-income households in single-family homes with free solar photovoltaic (PV) systems, including both material and installation costs. Comparable single-family solar programs in non-disadvantaged communities currently require households a much larger share of these costs. Similarly, the Enhanced Fleet Modernization Program (EFMP) Plus-Up is designed to make the cost of upgrading from a polluting vehicle to a zero-emission vehicle as affordable as possible to low-income consumers, requiring much lower co-investment from consumers compared to a more general facing program such as CVRP.

A consequence of reducing low-income households' required co-investment, which advances equity in the adoption of these technologies, is that programs targeting low-income households are not inducing as much co-investment as other programs, given the same level of appropriations. Based on spending patterns during the study period, California Climate Investments *located in disadvantaged communities* induced **$2.92 million** in co-investment per million dollars of appropriations, while California Climate Investments *located in other communities* induced **$3.10 million** in co-investment per million dollars of appropriations. When the High-Speed Rail Project is excluded from the mix, the co-investment gap widens, with co-investment levels declining to $0.26 million and $0.92 million, respectively, per million dollars of appropriations. Thus, the High-Speed Rail Project nearly closes the co-investment gap, and does so without sourcing any co-investment directly from disadvantaged communities (the High-Speed Rail Project's co-investment comprises ARRA and Prop 1A funds).

Figure A8. Comparison of Employment Multipliers for California Climate Investments Located in Disadvantaged Communities Versus Other Communities[21]

(FTE Job-Years in California per $ Million of Appropriations for California Climate Investments)



[21] Ibid.

Total Jobs Supported by California Climate Investments Located in Disadvantaged Communities

We estimate that a total of $1.1 billion in California Climate Investment dollars will be spent in disadvantaged communities once appropriated funds from FY 2013-14 through FY 2016-16 are fully implemented, supporting a total of **10,225 job-years** in California.[22] These program funds are estimated to induce an additional $3.3 billion in co-investment, supporting an additional **30,229 job-years** in California.[23] These results are strongly influenced by the High-Speed Rail Project, which receives 25% of all California Climate Investment appropriations under SB 862. In addition, the High-Speed Rail Project induces significant co-investment ($5.6 billion total), with about 56% of those funds located in disadvantaged communities.[24]

When the High-Speed Rail Project is excluded from the mix of studied programs, we estimate a total of $740 million in California Climate Investment dollars will be spent in disadvantaged communities, supporting a total of **6,498 job-years** in California.[25] These program funds are estimated to induce an additional $189 million, supporting an additional **847 job-years** in California.[26] See **Table A6** for a program-by-program breakdown of the jobs supported by California Climate Investments located in disadvantaged communities.

Of all the jobs supported by California Climate Investments, those supported by funds located in disadvantaged communities account for 54% of the total (see **Figure A9**).[27,28] This percentage decreases slightly to 52% when the High-Speed Rail Project is excluded from the mix of studied programs. California Climate Investments located in disadvantaged communities support a larger portion of total jobs than investments in other communities for two key reasons. First, based on how implemented funds have been spent, we estimate that the majority of appropriations during our study period will be located in disadvantaged communities (see **Figure A7**). Second, investments located in disadvantaged communities support more jobs per million dollars than those in other communities (see **Figure A8**). These findings hold true whether the High-Speed Rail Project is included or excluded from the mix of studied programs.

[22] The jobs totals for investments located in disadvantaged communities include direct, indirect, and induced jobs, but exclude jobs supported by funds appropriated for administration at the state agency level (see footnote 13), the Urban and Community Forestry Program (see footnote 7), and the Large Multi-Family Energy Efficiency and Renewables program (see footnote 7). Since there was insufficient data to discern whether jobs supported by the Urban and Community Forestry Program and the Large Multi-Family Energy Efficiency and Renewables program are located in disadvantaged communities, the jobs supported by these programs are reported separately (i.e., jobs from funds in TBD locations).

[23] Ibid.

[24] High-Speed Rail Authority (Email correspondence, June 23, 2017).

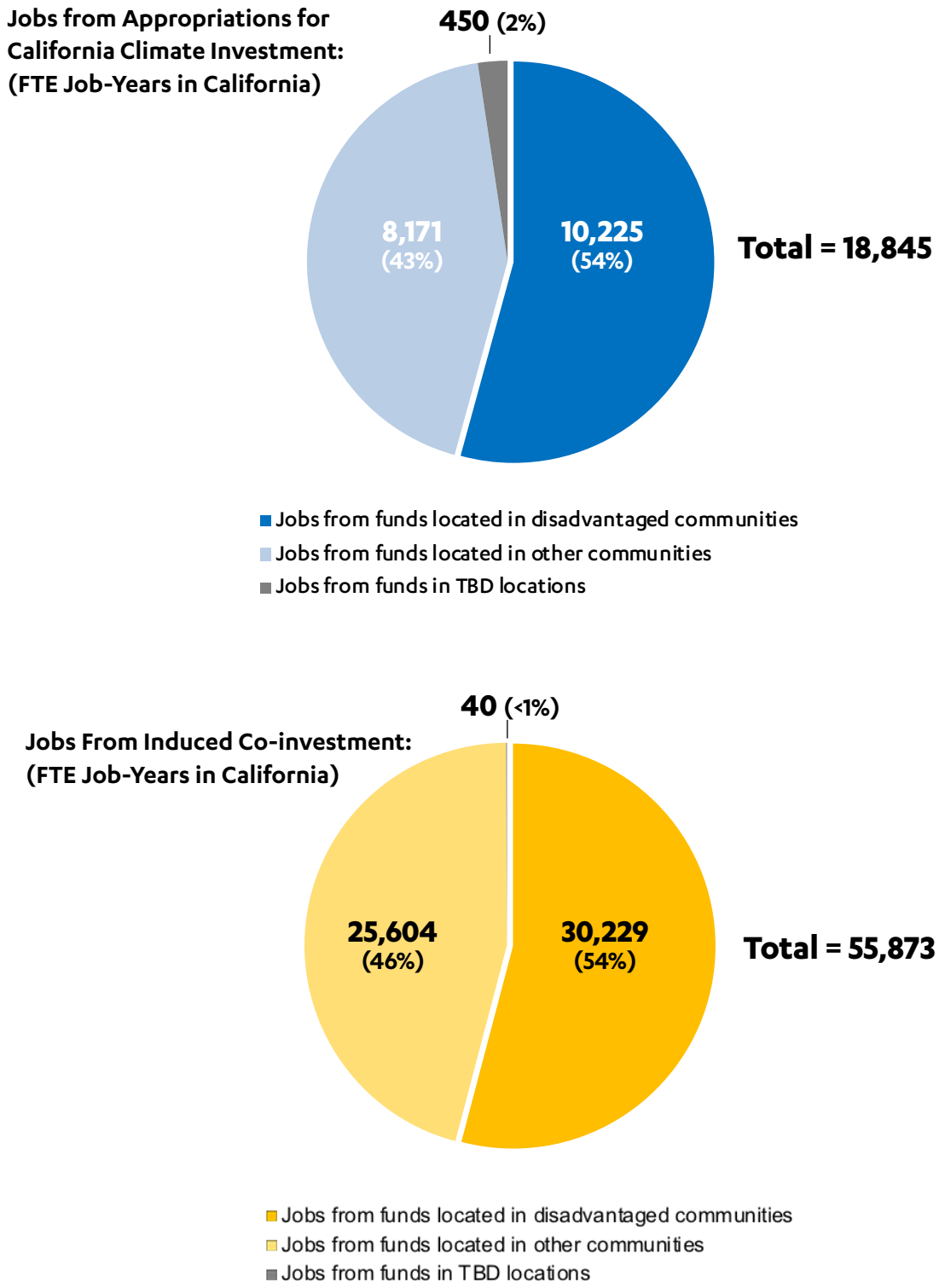
[25] See footnote 22.

[26] Ibid.

[27] Ibid.

[28] Ibid.

Figure A9. Jobs Supported by Appropriations From FY 2013-14 Through FY 2015-16 For California Climate Investments Located in Disadvantaged Communities[29]



[29] Ibid.

Table A6. Jobs Supported by Appropriations From FY 2013-14 Through FY 2015-16 for California Climate Investments Located in Disadvantaged Communities*,[30]

Program	State Appropriations (FTE Job-Years in California)	Induced Co-investment (FTE Job-Years in California)
High-Speed Rail Project	3,727	29,382
Transit and Intercity Rail Capital Program	984	1
Low Carbon Transit Operations Program	983	0
Affordable Housing and Sustainable Communities	2,208	0
Sustainable Agricultural Lands Conservation	0	0
Clean Vehicle Rebate Project	80	142
Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	13	22
Enhanced Fleet Modernization Program Plus Up	27	47
Car Sharing and Mobility Options Pilot	22	57
Public Fleet Pilot Project	5	15
Financing Assistance Pilot Project	10	8
Zero-Emission Truck and Bus Pilot Projects	80	167
Multi-Source Facility Demonstration Project	70	96
Zero-Emission Drayage Truck Demonstration Project	22	7
Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating	825	0
Single-Family Solar Photovoltaics	591	0
Large Multi-Family Energy Efficiency and Renewables	TBD	TBD
Dairy Digester Research and Development Program	40	94
State Water Efficiency and Enhancement Program	91	0
Water-Energy Grant Program	262	0
State Water Project Turbines Program	0	0
Sacramento-San Joaquin Delta and Coastal Wetlands Restoration	148	0
Mountain Meadow Ecosystems Restoration	0	0
Forest Health Program	0	0
Forest Legacy Program	0	0
Urban and Community Forestry Program	TBD	TBD
Organics Grant Program	27	145
Recycled Fiber, Plastic, and Glass Grant Program	0	0
The Greenhouse Gas (GHG) Reduction Loan Program	10	45
Total	**10,225**	**30,229**

*Numbers may not add up total amounts due to rounding.

[30] These job totals include direct, indirect, and induced jobs, but exclude jobs supported by funds appropriated for administration at the state agency level (see footnote 13), the Urban and Community Forestry program (see footnote 7), and the Large Multi-Family Energy Efficiency and Renewables program (see footnote 7). The job totals were obtained by applying program-level employment multipliers from **Chapter 3** to the estimated appropriation amounts from **Table A5**.

5. Conclusions and Recommendations

California Climate Investments represent a diverse suite of programs aimed at reducing greenhouse gases, each of which has a unique employment multiplier. The programs with the largest employment multipliers, holding the effects of co-investment aside, devoted a greater share of investment dollars to services rather than materials. The employment multiplier of a program was also positively influenced by the share of investment dollars going to firms based in California rather than out-of-state firms. The total number of jobs supported by a program was further enhanced when the program induced consumers, businesses, or local government to co-invest in GHG-reducing activities or technologies. These findings can inform recommendations for legislators and agency leaders wanting to ensure that California Climate Investments are designed to meet statutory obligations while also maximizing employment co-benefits.

As reiterated throughout this report, the number of jobs supported by a particular program is dependent on the industrial sectors that are impacted by program funds. Thus, in order to maximize the number of jobs supported by the California Climate Investments, administering agencies could design or update programs to involve sectors with high employment multipliers, such as social services, agriculture, forestry, engineering, and construction, among others. To support this effort, policymakers could commission an inventory of California industries and their respective employment multipliers using an economic input-output model similar to the one used here. Program guidelines could then require applicants to identify the industries impacted by each expense in their budgets, which could then be cross referenced with the inventory to estimate the number of jobs that will be supported. Since job quality metrics are critical to holistically assess the employment benefits of an investment, programs guidelines could specify how applicants will be prioritized based on metrics such as job training, career ladder opportunities, wages, and benefits for their employees.

California Climate Investments present a unique opportunity to help grow local businesses dedicated to developing zero-emission technologies, upgrading buildings and infrastructure to be more energy efficient, restoring degraded ecosystems to better capture carbon, and a number of other activities that support GHG reductions. To maximize the positive impact of California Climate Investment dollars on local business activity, administering agencies could prioritize funding for recipients that contract with vendors located in California, and that purchase materials manufactured in California as much as possible (unless the materials cannot be obtained from a California-based manufacturer or it is cost prohibitive). We are not aware of any program receiving California Climate Investment funds that currently incentivizes recipients to do this, but such an incentive mechanism could greatly enhance the number of jobs that California Climate Investments bring to the state.

To further maximize the jobs supported by every appropriated dollar, administrating agencies could design or update programs to induce customers, businesses, local governments, and the federal government to co-invest with the state in GHG-reduction strategies, where appropriate. This may mean requiring applicants to commit matching funds toward a project, but minimizing or eliminating the cost burden for low-income households to participate. It is important to note that inducing co-investment does not necessarily lead to net job growth in California, as some share of that co-investment might have still been spent in-state. Nonetheless, requiring co-investment helps ensure that outside funds are spent on activities that reduce GHGs rather than on more carbon-intensive alternatives.

With respect to investments located in disadvantaged communities, we find that California Climate Investments located in these communities support more jobs per million dollars than investments in other communities. This finding holds true whether or not the effects of induced co-investment are included in the analysis. This outcome is explained by the mix of industries that are impacted by investments located in disadvantaged communities, which tend to have higher employment multipliers compared to the mix of industries impacted by investments located outside disadvantaged communities. Since the data package used in this study yielded statewide results, it is not known which of these jobs are actually located in disadvantaged communities or go to disadvantaged workers. To better assess the number of jobs that go to residents of disadvantaged communities, administering agencies could require funding recipients to report on the number of workers hired using California Climate Investment dollars, including the census tract in which they reside. Adopting certified payroll systems is one approach that could simply address this need.[1] Furthermore, policymakers could incentivize infrastructure projects located in disadvantaged communities to have local hire provisions if they receive California Climate Investment funds.

This report analyzed appropriated dollars for the first three years of California Climate Investments (2013-14 through 2015-16), the years in which researchers were able to obtain sufficient details about expenditures to conduct this study. Since then, annual investment amounts have increased. Appropriations for California Climate Investments in FY 2017-18 are over $2.4 billion — an annual amount higher than the cumulative total of appropriations for the first three years of California Climate Investments.[2]

As investments increase, so too will the number of jobs supported by the state's suite of greenhouse gas-reducing programs. With the aforementioned deliberate planning, the number of jobs in California could be further enhanced. Future studies could build upon this one to quantify employment associated with appropriations post-2016, or more deeply explore job quality, job training, job access for workers in disadvantaged communities, and other important components of employment benefits from California Climate Investments.

[1] For more information, see C. Zabin et al. (2014). Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities. Retrieved from: http://laborcenter.berkeley.edu/pdf/2014/WET-Plan-Appendices14.pdf

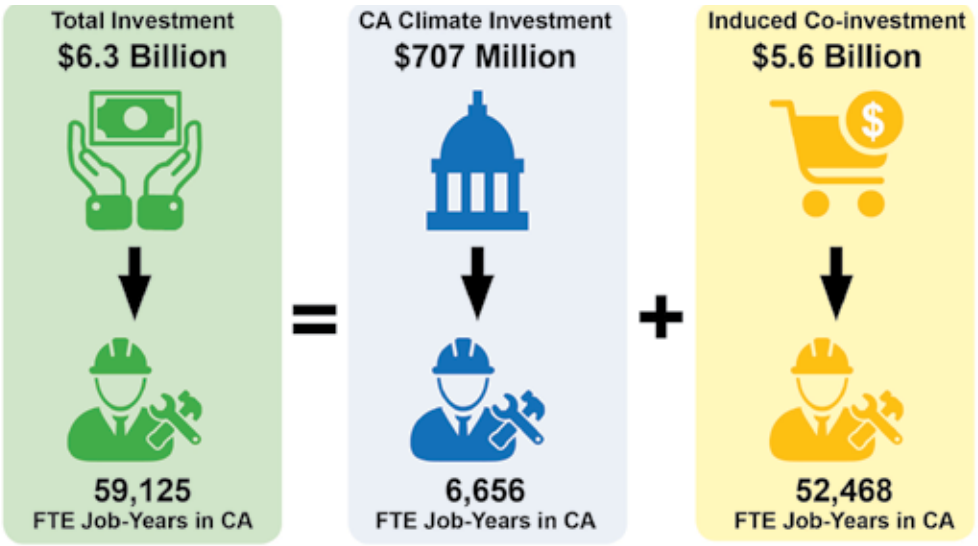
[2] State of California. "Background." Retrieved from: http://www.caclimateinvestments.ca.gov/about-cci/

PART II: Program-Level Results

1. High-Speed Rail Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The California high-speed rail system seeks to connect California's mega-regions, promote transit-oriented development, create high-skilled jobs, and preserve agricultural and protected lands. By 2029, the project aims to provide rail service from the San Francisco Bay Area to the Los Angeles basin via the Central Valley in less than three hours at speeds capable of exceeding 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations.[1]

The project is funded by a variety of sources, including federal, state, and local agencies, and plans to generate private investment once service starts. From FY 2013-14 through FY 2015-16, $707 million in California Climate Investment funding was appropriated to the High-Speed Rail Project.[2] California Climate Investment funding is specifically allotted toward the construction of the initial operating segment

[1] California High-Speed Rail Authority (2017). "About California High-Speed Rail Authority." Retrieved from http://www.hsr.ca.gov/About/index.html

[2] California Air Resources Board (2017). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2017.pdf

(connecting the Silicon Valley to the Central Valley) and further environmental and design work on the statewide rail system.[3] Construction has started between Madera and Kern counties. That segment is expected to cost $7.8 billion in year of expenditure (YOE) dollars.[4] To cover this cost, California Climate Investment funding (including past and future appropriations) will be leveraged alongside $3 billion in federal funding, and $2.6 billion in Proposition 1A bond proceeds.[5] See the following **Methodology** section of this chapter for details about how these funds were incorporated into our analysis.

Since job creation was such an important part of the High-Speed Rail Project's funding through the American Recovery and Reinvestment Act (ARRA), the California High-Speed Rail Authority has already begun tracking a number of employment-related measures over the course of the project's development. As of April 2017, the project had employed more than 1,100 craft labor workers in the Central Valley and contracted with 68 small businesses located within disadvantaged communities.[6] To meet the demand for skilled workers, training programs have also rapidly expanded in the region, with nearly 450 apprentices and pre-apprentices enrolled in programs throughout the San Joaquin Valley.[7] These training programs are designed to help build a pipeline between disadvantaged communities and the construction trades. Graduates of training programs are equipped with a variety of skills, so that they can take on new activities in an evolving industry.

Administration

The California High-Speed Rail Authority (Authority) is responsible for administering the High-Speed Rail Project, including all activities related to planning, designing, building, and operations. The Authority is a member agency of the California State Transportation Agency.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the High-Speed Rail Project between FY 2013-14 and FY 2015-16, totaling $707 million, are supporting a total of **6,656 full-time equivalent (FTE) job-years** in California.[8] We estimate that these appropriations induced $5.6 billion in co-investment, supporting an additional **52,468 FTE job-years**.[9] When modeled together, appropriated funds and induced co-investment support a total of **59,125 FTE job-years** in California.[10] See **Table 1.1** for totals by direct, indirect, and induced jobs.[11]

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[3] California Air Resources Board (2014). "Greenhouse Gas Reduction Fund: High Speed Rail Expenditure Record for Fiscal Year 2014-15." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-hsr-expenditure-record.pdf

[4] California High-Speed Rail Authority (2017). "Central Valley Segment Funding Plan." Retrieved from http://www.hsr.ca.gov/docs/newsroom/reports/2017/DOF_Cover_Funding_Plan_Report.pdf

[5] California High-Speed Rail Authority (2017). "Department of Finance Office of the Director." Retrieved from https://www.hsr.ca.gov/docs/about/funding_finance/Central_Valley_Segment_Funding_Plan_030317.pdf

[6] California High Speed Rail Authority (Email correspondence, May 24, 2017).

[7] California Air Resources Board (2016). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] Ibid.

[10] Ibid.

[11] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 1.1. Direct, Indirect, and Induced Jobs Supported by the High-Speed Rail Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	3,219	48%	25,340	48%
Indirect Jobs	1,650	25%	13,022	25%
Induced Jobs	1,786	27%	14,103	27%
Total	**6,656**	**100%**	**52,468**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by the High-Speed Rail Project occur in construction sectors (**see Table 1.2**). The construction sectors directly impacted by the program include the construction of new transportation infrastructure, new power and communication structures, and other new nonresidential structures. IMPLAN does not have a dedicated construction sector for the building of rail tracks and related structures, so these activities were coded as "construction of new highways and streets" in the model, since this sector involves construction activities related to establishing right-of-way for transportation corridors. Architectural, engineering, and related services is the second most directly impacted industry, which is explained by spending on the design of rail segments, geotechnical investigations, and the preparation of environmental impact reports, among other activities. The jobs in the electric power transmission and distribution sector are supported by spending on electricity to test the high-speed rail system.

Table 1.2. Direct Jobs Supported by the High-Speed Rail Project (by Industry)[12]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new highways and streets	1,971	61.2%
Architectural, engineering, and related services	895	27.8%
Construction of new power and communication structures	197	6.1%
Construction of other new nonresidential structures	147	4.6%
Electric power transmission and distribution	9	0.3%
Total of All Industries	**3,219**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new highways and streets	15,524	61.3%
Architectural, engineering, and related services	7,055	27.8%
Construction of new power and communication structures	1,540	6.1%
Construction of other new nonresidential structures	1,150	4.5%
Electric power transmission and distribution	69	0.3%
Total of All Industries	**25,340**	**100%**

[12] A summary of the indirect and induced jobs, by industry, supported by the High-Speed Rail Project can be found in **Appendix 1.1.**

Methodology

In order to model the High-Speed Rail Project in IMPLAN, all financial flows associated with it had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the project, the presence or absence of pricing margins, and the local purchasing percentage.

The following section describes all of the inputs that were entered into IMPLAN in order to model the employment benefits of the High-Speed Rail Project. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 1.3**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $707 million in California Climate Investment funding was appropriated to the High-Speed Rail Project.[13] This funding was dedicated to the design and construction of the system including civil works, tracks, electric power transmission and distribution, signaling and communication systems, rail stations, and maintenance.[14]

Induced Co-investment

In addition to California Climate Investment dollars, the initial operating segment of the High-Speed Rail Project is primarily funded by three additional sources: (1) state bond money from Proposition 1A approved by voters in 2008, (2) federal funds from ARRA signed by President Obama in 2009, and (3) additional federal funds appropriated by Congress in FY 2010 to supplement ARRA funding.[15] Over the course of completing the initial operating segment, the sum of these three funding sources will total $5.6 billion in YOE dollars, with $2.6 billion coming from Proposition 1A and $3 billion coming from ARRA and FY 2010 federal appropriations.[16]

All $5.6 billion in co-investment is considered induced by California Climate Investment funding committed toward the High-Speed Rail Project. In order to use ARRA and FY 2010 federal funds, California must provide a state match.[17] To honor that requirement, the state committed Proposition 1A funds.[18,19] However, to secure Proposition 1A funds, the Authority had to develop a funding plan that complied with Proposition 1A requirements (such that bond proceeds did not account for more than 50% of the total cost of construction of the corridor).[20] To meet that requirement, the funding plan adopted by the Authority used the Legisla-

[13] California Air Resources Board (2017). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2017.pdf

[14] California High-Speed Rail Authority (2016). "Connecting and Transforming California 2016 Business Plan." Retrieved from http://www.hsr.ca.gov/docs/about/business_plans/2016_BusinessPlan.pdf

[15] Ibid.

[16] Ibid.

[17] Ibid.

[18] U.S. Department of Transportation Federal Railroad Administration (2016). "FRA Grant/Cooperative Agreement for ARRA Funding (Amendment, FR-HSR-0009-10-01-06)." California High-Speed Rail Authority. Retrieved from http://www.hsr.ca.gov/docs/about/funding_finance/funding_agreements/HSRFRA_CooperativeGrantAgreement_Amendment6_051816_Redacted.pdf

[19] U.S. Department of Transportation Federal Railroad Administration. (2017). "FRA Grant/Cooperative Agreement for FY 10 Funding (Amendment, FR-HSR-01118-12-01-01)." http://www.hsr.ca.gov/docs/about/funding_finance/funding_agreements/Executed_FY10_Amendment_1.pdf

[20] California High-Speed Rail Authority (2017). "Central Valley Segment Funding Plan." Retrieved from http://www.hsr.ca.gov/docs/newsroom/reports/2017/DOF_Cover_Funding_Plan_Report.pdf

ture's 25% continuous appropriation of annual auction proceeds from the Cap-and-Trade Program, which are distributed to the High-Speed Rail Project vis-à-vis California Climate Investments.21 Thus, without the continuous appropriation of California Climate Investment funding, the state might not have been able to access Proposition 1A funds, and in turn would not have been able to access federal funds. In other words, California Climate Investments serve as the linchpin that ensures that all Proposition 1A, ARRA, and FY 2010 federal funds are available, and thus these three funding sources were modeled as induced co-investment toward the High-Speed Rail Project.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. Table 1.3 summarizes the industrial sectors directly impacted by the High-Speed Rail Project. This mix of industrial sectors was developed in collaboration with the authors of a February 2017 publication, "The Economic Impact of California High-Speed Rail."[22] The percentage share of California Climate Investment funding assigned to each industrial sector reflects detailed project expenditures maintained by the Authority.

Of particular note, IMPLAN does not have a dedicated construction sector for building rail tracks and related structures, so these activities were coded as "construction of new highways and streets" in the model, since this economic sector involves construction activities related to establishing right-of-way for transportation corridors.

Spending Timeline

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line adopted for the High-Speed Rail Project represents the completion of the Central Valley segment that will connect Madera to north of Bakersfield (2015-2022). The distribution of funds between those years reflects detailed project expenditures maintained by the Authority. See **Appendix 1.2** for a summary of how funds are split between each calendar year.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Since all of the industries that are directly impacted by the High-Speed Rail Project are service-related, and since services are not purchased through third-party retailers, margins were not applicable for modeling this program.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Detailed sourcing information for project expenses was not available at the time of writing this study, so the default local purchase rate was assumed for all program expenditures.

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[21] "San Francisco to San Jose Peninsula Corridor Funding Plan." (2017). California High-Speed Rail Authority. 12. http://www.hsr.ca.gov/docs/newsroom/reports/2017/DOF_Cover_Funding_Plan_Report.pdf.

[22] https://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Economic_Impact.pdf

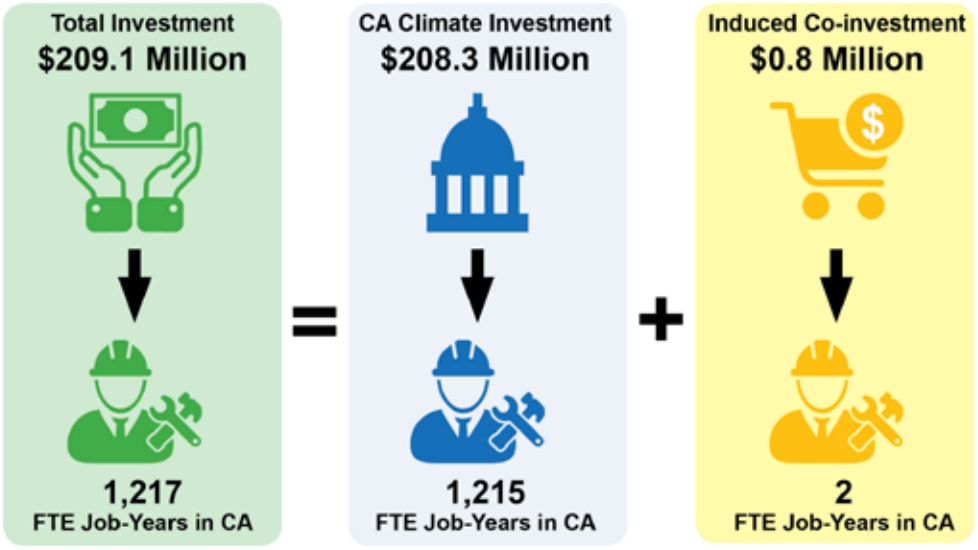
Table 1.3. Summary of Modeling Inputs for the High-Speed Rail Project

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($707 Million)	Construction of new highways and streets	59%	2015-2022	N/A	Default (99.8%)
	Architectural, engineering, and related services	24.9%	2015-2022	N/A	Default (95.7%)
	Electric power transmission and distribution	7.9%	2015-2022	N/A	Default (28.5%)
	Construction of new power and communication structures	4.5%	2015-2022	N/A	Default (100%)
	Construction of other new nonresidential structures	3.8%	2015-2022	N/A	Default (99.9%)
Induced Co-investment ($5,579 Million)	Construction of new highways and streets	59%	2015-2022	N/A	Default (99.8%)
	Architectural, engineering, and related services	24.9%	2015-2022	N/A	Default (95.7%)
	Electric power transmission and distribution	7.9%	2015-2022	N/A	Default (28.5%)
	Construction of new power and communication structures	4.5%	2015-2022	N/A	Default (100%)
	Construction of other new nonresidential structures	3.8%	2015-2022	N/A	Default (99.9%)

2. Transit and Intercity Rail Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Transit and Intercity Rail Capital Program (TIRCP) provides competitive grants for transformative capital improvements that modernize California's intercity, commuter, and urban rail systems, and bus and ferry transit systems. The goals of the program are to reduce greenhouse gas emissions, integrate rail service, increase ridership, and improve transit safety. The program also aims to improve connectivity between existing state and local transit systems, including the high-speed rail system.

The first round of awards was issued during the FY 2015-16 year, ranging from $200,000 to $41.2 million, and went to a mix of 14 regional planning and local service providers. The awarded projects represented a diverse set of capital improvements, including the development of a bus rapid transit route, the purchase of natural gas and battery electric buses, the electrification of bus routes, railroad track upgrades, vehicle

refurbishments, and maintenance facility renovations, among many others.[1]

Administration

The California State Transportation Agency (CalSTA), in collaboration with the California Department of Transportation (Caltrans) and the California Transportation Commission (CTC), is responsible for administering this program. Both Caltrans and the CTC are member agencies within CalSTA. With respect to roles and responsibilities, CalSTA and Caltrans jointly solicit and evaluate funding applications, and the CTC allocates the funding to the grant awardees.[2]

Results

After modeling the program in IMPLAN, we estimate that appropriations for TIRCP between FY 2013-14 and FY 2015-16, totaling $208.3 million, are supporting a total of **1,215 full-time equivalent (FTE) job-years** in California.[3] We estimate that these appropriations induced $0.8 million in co-investment, supporting an additional **two FTE job-years**.[4] When modeled together, appropriated funds and induced co-investment support a total of **1,217 FTE job-years**.[5,6] See **Table 2.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[7]

Table 2.1. Direct, Indirect, and Induced Jobs Supported by TIRCP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	518	43%	1.4	84%
Indirect Jobs	355	29%	0.1	5%
Induced Jobs	339	28%	0	0%
Total	**1,215**	**100%**	**1.6**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by appropriations for TIRCP occur in construction-related sectors, including construction of nonresidential structures, new power and communication structures, and new highways and streets. These jobs are explained by the program funds that go toward building new transportation infrastructure. Manufacturing-related sectors are also greatly impacted by TIRCP, including railroad rolling stock manufacturing, heavy-duty truck manufacturing, and other communications equipment manufacturing. These manufacturing-related jobs are explained by the program funds that are specifically dedicated to the procurement of new railcars, railroad tracks, signaling infrastructure, and zero-emission buses. The remaining direct jobs supported by the program funds are located in

[1] California Department of Transportation (2016). "Transit and Intercity Rail Capital Program Second Round Selected Projects – Project Detail Summary." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/Cap&Trade/detailed.project.award.summary.pdf

[2] California Department of Transportation. "Transit and Intercity Rail Capital Program Fact Sheet." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Presentations/Cap%20and%20Trade/tircp.fact.sheet.final_081914.docx

[3] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[4] Ibid.

[5] Ibid.

[6] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[7] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

industries that support the planning and implementation of capital improvement projects (e.g., transit and ground passenger transportation; architectural, engineering, and related services; scientific research and development services, etc.). See **Table 2.2** for a summary of the direct jobs supported by appropriations for TIRCP.

Co-investment induced by TIRCP supports direct jobs in a similar mix of industries to those described above. This is explained by the matching funds that have been committed toward railroad track and signal improvements. See **Table 2.2** for a summary of the direct jobs supported by induced co-investment for TIRCP.

Table 2.2. Direct Jobs Supported by TIRCP (by Industry)[8]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of other new nonresidential structures	248.0	47.9%
Railroad rolling stock manufacturing	79.1	15.3%
Transit and ground passenger transportation	71.2	13.8%
Construction of new power and communication structures	44.3	8.6%
Architectural, engineering, and related services	39.2	7.6%
Construction of new highways and streets	15.6	3.0%
Heavy-duty truck manufacturing	15.6	3.0%
Scientific research and development services	2.2	0.4%
Other communications equipment manufacturing	1.8	0.3%
Advertising, public relations, and related services	0.7	0.1%
Total of All Industries	**517.8**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new power and communication structures	0.5	35.4%
Construction of other new nonresidential structures	0.5	35.4%
Other communications equipment manufacturing	0.3	21.8%
Railroad rolling stock manufacturing	0.1	7.3%
Total of All Industries	**1.4**	**100%**

Methodology

In order to model TIRCP in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of TIRCP. Before reading the following section, we recommend readers first review the

[8] A summary of the indirect and induced jobs, by industry, supported by TIRCP can be found in **Appendix 2.1.**

Methodology chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 2.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $209 million in California Climate Investment funding was appropriated to TIRCP.[9] Of this funding, around $0.7 million was allocated to CalSTA for program administration.[10] The rest of the funding was allocated to grantees. During the study period, a total of $224.3 million was awarded to 14 grantees.[11] While this award amount exceeds the amount of California Climate Investment funding allocated to TIRCP projects during the study period, the difference in funding will come from FY 2016-17 funding allocations. The job-years supported by the $0.7 million in state-level administrative funds were excluded from the job totals reported in this chapter, and are instead reported in **chapter 3** of **Part I**.

Induced Co-investment

There is no required cost-share to receive a TIRCP grant, but grantees were encouraged to leverage private, federal, state, local, and regional funds toward the completion of their project. Between FY 2013-14 and FY 2015-16, grantees co-invested $493.7 million in outside funding toward their TIRCP award.[12] For many of these projects, it is not known which of these matched funds were specifically induced by the program and which would have likely been secured even in the absence of TIRCP funding. However, based on input from CalSTA, it was determined that the Capitol Corridor Travel Time Reduction Project would not have happened without TIRCP funds, so the project's matching funds ($0.8 million) were considered induced and modeled toward the program's employment benefits.[13] Since all remaining co-investment dollars could not be determined as induced by California Climate Investment funding, they were excluded from the employment benefits reported for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 2.3** summarizes the industrial sectors directly impacted by TIRCP. These industry codes and their percentage share of total project spending were based on the proposed budgets and work plans submitted by the 14 awarded projects between FY 2013-14 and FY 2015-16.[14] For line-item level information on how each expenditure was coded for the various TIRCP awards, refer to **Appendix 2.2**.

Of particular note, the Pacific Surfliner Transit Transfer Program received California Climate Investment funding to provide Pacific Surfliner intercity rail passengers with free transfers to 11 connecting bus and rail transit services when they present a valid Amtrak Pacific Surfliner ticket. The purpose of the project is to

[9] California Air Resources Board (2017). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2017.pdf

[10] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

[11] California Department of Transportation (2015). "CalSTA Transit and Intercity Rail Capital Program First Round Selected Projects – Project Detail Summary." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/TIRCPAwardSummary06302015.pdf

[12] The co-investment figure is based on project proposals submitted by the grantees.

[13] CalSTA (Email correspondence, March 27, 2017).

[14] California Department of Transportation (2015). "CalSTA Transit and Intercity Rail Capital Program First Round Selected Projects – Project Detail Summary." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/TIRCPAwardSummary06302015.pdf

demonstrate the ability to increase use of transit for access to and from intercity rail services through the use of seamless ticketing and transfer policies.[15] All program funds that were used to finance the transit transfer subsidy were modeled as an increase in household income, rather than an investment in any particular industry. In other words, it is assumed that California Climate Investment funding offsets fares collected from regular transit riders making intercity transit connections, and that these riders will spend their transportation savings elsewhere in the economy. Without detailed data on how these transit riders will spend these savings, it is assumed that they will spend it on a variety of goods of services. To model the transit transfer subsidy in IMPLAN, funds were coded as "household income," which is a unique economic activity within the model that averages together the many ways in which an increase in household income may be spent, including both savings and the purchase of goods and services. In other words, an increase in "household income" represents a basket of industries that reflect typical consumer spending patterns.[16]

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line for TIRCP was based on project-level information for the 14 awarded projects using FY 2014-15 and FY 2015-16 funds. See **Table 2.3** for the spending time line for each impacted industry. Without detailed expenditure data broken out on an annual basis, it is assumed that funds are spent evenly over each project's lifetime.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). In the case of TIRCP, all materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., construction of other new nonresidential structures, scientific research and development services, advertising and related services, etc.). Similarly, pricing margins were not applicable for funds that go toward an increase in household income.

The pricing margins for household income varies because an increase in income represents spending on a basket of industries and some of the industries in that basket involve pricing margins, while others do not. Spending on goods typically involve pricing margins because they are purchased from retail locations (e.g., grocery stores, department stores, etc.). Spending on services, on the other hand, typically do not involve pricing margins because they are purchased directly from the service provider (e.g., medical services, dining establishments, etc.). IMPLAN has built-in assumptions that account for this variability, and those assumptions were used in this analysis.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local

[15] Ibid.

[16] Since spending patterns vary by income, IMPLAN allows users to build in assumptions about the income levels of transit riders. According to Table S0802 of the 2015 American Community Survey (1-year estimates), household income is expected to vary among transit riders according to the following groupings: under $10,000 (17.6%); $10,000 to $14,999 (10.9%); $15,000 to $24,999 (16.9%); $25,000 to $34,999 (9.5%); $35,000 to $49,999 (9.9%); $50,000 to $64,999 (7.8%); $65,000 to $74,999 (4.5%), $75,000 or more (22.9%). This distribution was assumed to be representative of regular transit riders who benefited from free fare days funded through TIRCP and was built into the IMPLAN model for this program.

purchase rates were adjusted for TIRCP when project-level sourcing information could be determined, based on public documents and news clips found online. When a supplier or vendor was not known, IMPLAN's default local purchase rate was assumed. For line-item level sourcing information for individual TIRCP grants, refer to **Appendix 2.2.**

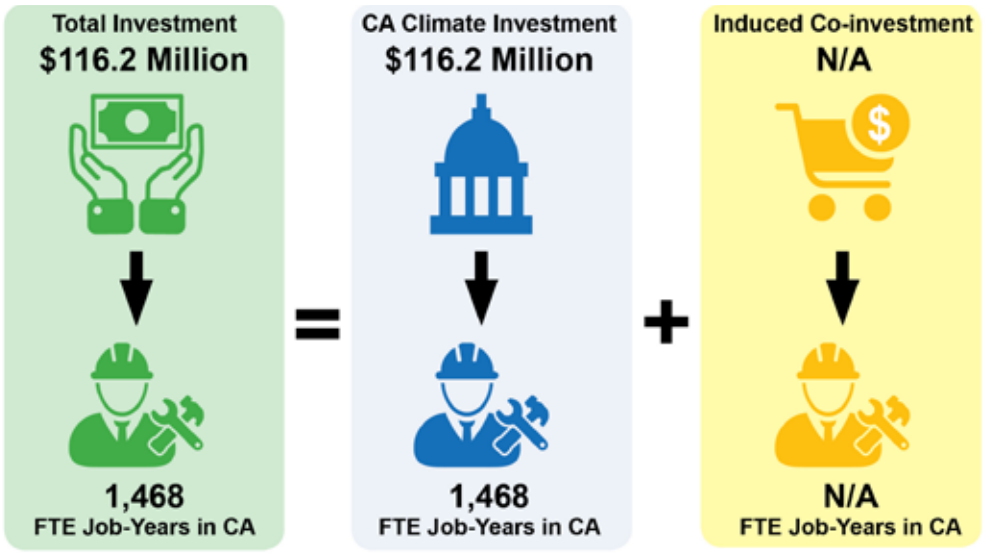
Table 2.3. Summary of Modeling Inputs for the Transit and Intercity Rail Capital Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($208.3 Million)	Railroad rolling stock manufacturing	56.5%	2015-2030	N/A	58.6%
	Construction of other new nonresidential structures	20.7%	2014-2030	N/A	Default (99.9%)
	Heavy-duty truck manufacturing	9.6%	2015-2018	N/A	79.9%
	Architectural, engineering, and related services	3.6%	2014-2019	N/A	Default (95.7%)
	Construction of new power and communication structure	3.3%	2015-2030	N/A	Default (100%)
	Transit and ground passenger transportation	2.9%	2014-2020	N/A	100%
	Construction of new highways and streets	1.6%	2016-2017	N/A	Default (99.8%)
	Other communication equipment manufacturing	0.8%	2017-2030	None	Default (35.7%)
	Household income	0.6%	2015-2016	Default (Varies)	100%
	Scientific research and development services	0.4%	2015-2018	N/A	Default (97.9%)
	Advertising and related services	0.1%	2014-2019	N/A	Default (98.3%)
Induced Co-investment ($0.8 Million)	Railroad rolling stock manufacturing	37.5%	2017-2030	N/A	Default (99.8%)
	Other communication equipment manufacturing	37.5%	2017-2030	None	Default (95.7%)
	Construction of other new nonresidential structures	12.5%	2017-2030	N/A	Default (28.5%)
	Construction of new power and communication structure	12.5%	2017-2030	N/A	Default (99.9%)

3. Low Carbon Transit Operations Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Low Carbon Transit Operations Program (LCTOP) provides operating and capital assistance for transit agencies according to a statutory funding formula. Transit agencies can use LCTOP funds toward projects that support new or expanded bus or rail services and expanded intermodal transit facilities. Eligible expenses include equipment acquisition, fueling, maintenance, and other costs to operate transit services or facilities.[1]

The goals of LCTOP are to reduce greenhouse gas emissions (GHGs), expand service, increase ridership, and improve safety. These goals are the same as the state's complementary Transit and Intercity Rail Capital Program (TIRCP). But in contrast to TIRCP, which is a competitive grant program, LCTOP provides formu-

[1] California Department of Transportation (2017). "Low Carbon Transit Operations Program (LCTOP) Program Overview." Retrieved from http://www.dot.ca.gov/hq/MassTrans/lctop.html

la-based direct financial assistance to transit operators and transportation planning agencies that qualify for State Transit Assistance. The LCTOP funding formula is divided in two equal parts. One half of the funds are available for regional entities and are based on a ratio of the population of the jurisdiction area to the total population of the state. The other half of the funds are based on a ratio of the total revenue of each operator during the prior fiscal year to the total revenue of all the operators of the state. The purpose of this formula-based approach is to ensure that all eligible transit providers receive a representative share of the program funds.[2]

From FY 2013-14 through FY 2015-16, $116.2 million in California Climate Investment funding was allocated to LCTOP. Individual grants were first distributed in FY 2014-15 to 95 projects across the state, ranging from $1,000 to $5.9 million.[3,4] In FY 2015-16, an additional 131 projects were awarded grants ranging from $5,900 to $9.8 million.[5] LCTOP, along with TIRCP grants, paid for major capital improvement projects, including the purchase of new buses and trains, the installment of electric vehicle charging infrastructure, and the rehabilitation of bus shelters and transit centers. Grants also supported projects directly aimed at increasing ridership, such as educational and outreach campaigns, free fare days, more frequent service and expanded routes.

Administration

This program is administered by the California Department of Transportation (Caltrans) in coordination with the California Air Resources Board (CARB) and the California State Controller's Office (SCO). Caltrans is responsible for ensuring that the statutory requirements of the program are met in terms of project eligibility, greenhouse gas reduction, disadvantaged community benefit, and other requirements of the law. CARB assists Caltrans with evaluating each project and determining the potential reduction in GHGs, while the SCO processes payments to the transportation agencies and operators.[6]

Results

After modeling the program in IMPLAN, we estimate that appropriations for LCTOP between FY 2013-14 and FY 2015-16, totaling $116.2 million, are supporting a total of **1,468 full-time equivalent (FTE) job-years** in California.[7] These job-years stem solely from California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 3.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[8]

[2] California Department of Transportation (2015). "Low Carbon Transit Operations Program (LCTOP) Guidelines FY15-16." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/Cap&Trade/lctop.guidelines.fy15-16_112415.pdf

[3] California Department of Transportation. "LCTOP 14-15 Early Bird Projects." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/Cap&Trade/lctop.14-15.early.bird.projects.pdf

[4] California Department of Transportation. "LCTOP Fiscal Year 2014-15 Cycle 2 Project List." Retrieved from http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/LCTP_14-15_Final_Projects.pdf

[5] California Department of Transportation. "Low Carbon Transit Operation Program FY15-16 Project List." Retrieved from http://dot.ca.gov/hq/MassTrans/Docs-Pdfs/Cap&Trade/lctop.projectlist.1516.pdf

[6] California Department of Transportation (2017). "Low Carbon Transit Operations Program (LCTOP) Program Overview." Retrieved from http://www.dot.ca.gov/hq/MassTrans/lctop.html

[7] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 3.1. Direct, Indirect, and Induced Jobs Supported by LCTOP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	967	66%	N/A	N/A
Indirect Jobs	240	16%	N/A	N/A
Induced Jobs	259	18%	N/A	N/A
Total	**1,468**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by LCTOP occur in the transit and ground passenger transportation sector. These jobs are explained by the program funds that go to transportation agencies for transportation service related projects, such as the establishment of new services or expansion of existing services. The construction sector is the second most impacted industry, including both the construction of nonresidential structures and of new power and communication structures, which is explained by the grants that are spent on transit shelters and stations, as well as electric vehicle charging infrastructure. The remaining direct jobs supported by LCTOP are located in a variety of manufacturing and service industries that support transit related improvements (e.g., heavy-duty truck manufacturing, railroad rolling stock manufacturing, ship building and repairing, etc.). See **Table 3.2** for a summary of the direct jobs supported by LCTOP.

Table 3.2. Direct Jobs Supported by LCTOP (by Industry)[9]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Transit and ground passenger transportation	865.3	89.5%
Construction of other new nonresidential structures	73.7	7.6%
Heavy-duty truck manufacturing	14.6	1.5%
Semiconductor and related device manufacturing	3.5	0.4%
Construction of new power and communication structures	3.3	0.3%
Railroad rolling stock manufacturing	2.4	0.3%
Maintenance and repair construction of nonresidential structures	1.8	0.2%
Other commercial service industry machinery manufacturing	0.9	0.1%
Ship building and repairing	0.7	0.1%
Environmental and other technical consulting services	0.5	<0.1%
Subtotal of Top 10 Industries	**966.6**	**99.9%**
Total of All Industries	**967.2**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[9] A summary of the indirect and induced jobs, by industry, supported by LCTOP can be found in **Appendix 3.1.**

Methodology

In order to model LCTOP in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of LCTOP. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 3.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $116.4 million in California Climate Investment funding was allocated to LCTOP. Of this funding, around $0.2 million was allocated to Caltrans for program administration.[10] The remaining $116.2 million was awarded to 226 grantees to implement LCTOP projects (95 projects in FY 2014-15 and 131 projects in FY 2015-16).[11] The job-years supported by the $0.2 million in state-level administrative funds were excluded from the job totals reported in this chapter, and are instead reported in **Chapter 3** of **Part I.**

Induced Co-investment

There is no required cost-share to receive a LCTOP grant, but a number of grantees have leveraged outside funds toward the completion of their proposed project. However, it is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured for the transportation projects even in the absence of California Climate Investment funding. Without detailed data on how grantees would have spent matching funds in the absence of an LTCOP award, only the employment benefits of California Climate Investment funding (described above) were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 3.3** summarizes the industrial sectors directly impacted by LCTOP. These industry codes and their percentage share of total project spending were based on project descriptions for the 95 awarded projects using FY 2014-15 funds and the 131 awarded projects using FY 2015-16 funds.[12] For project-level information on how industrial sectors were assigned to each LCTOP award, refer to **Appendix 3.2**.

Of particular note, the solar photovoltaic (PV) and smart grid baskets each represent a mix of industries, based on the industry basket assigned to the solar and smart grid sectors in *The Economic Benefits of Investing in Clean Energy* authored by the Center for American Progress.[13] The mix of industries included

[10] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

[11] California Department of Transportation (2017). "LCTOP Archive." Retrieved from http://www.dot.ca.gov/drmt/splctop_archive.html

[12] Ibid.

[13] Pollin, Robert, Heintz, James, Garrett-Peltier, Heidi (2009). "The Economic Benefits of Investing in Clean Energy." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf

in the solar PV basket include: construction of new power and communication structures (30%); hardware manufacturing (17.5%); miscellaneous electrical equipment and component manufacturing (17.5%); other electronic component manufacturing (17.5%); and environmental and other technical consulting services (17.5%). The mix of industries included in the smart grid basket include: construction of new power and communication structure (25%); mechanical power transmission equipment manufacturing (25%); other electronic component manufacturing (25%); all other miscellaneous electrical equipment and component manufacturing (12.5%); and storage battery manufacturing (12.5%).

Additionally, all program funds that were used to finance free fare days were modeled as an increase in household income, rather than an investment in any particular industry. In other words, it is assumed that California Climate Investment funding offsets fares collected from regular transit riders on free fare days, and that these riders will spend their transportation savings elsewhere in the economy. Without detailed data on how these transit riders will spend these savings, it is assumed that they will spend it on a variety of goods of services. To model free fare days in IMPLAN, funds for this purpose were coded as "household income," which is a unique economic activity within the model that averages together the many ways in which an increase in household income may be spent, including both savings and the purchase of goods and services. Therefore, an increase in "household income" represents a basket of industries that reflect typical consumer spending patterns.[14]

Spending on free or reduced transit vouchers, in contrast, was modeled as an investment in "transit and ground passenger transportation" because these expenditures are targeted at individuals who do not normally take transit, and therefore do not normally pay transit fares.

Spending Time L ine

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for LCTOP begins in 2015 and ends in 2022. FY 2014-15 awards were announced in July 2015. According to the project guidelines for that fiscal year, all funds must be applied to a project within two years, and completed within the subsequent two years.[15] Thus, FY 2014-15 funds are modeled between 2015 and 2019. FY 2015-16 awards were announced in July 2016. According to the project guidelines for that fiscal year, all funds must be applied to a project within three years, and completed within the subsequent three years.[16] Thus, FY 2015-16 funds are modeled between 2016 and 2022. Funds are assumed to be spent in equal amounts each year during each project's assumed timeline.

[14] Since spending patterns vary by income, IMPLAN allows users to build in assumptions about the income levels of transit riders. According to Table S0802 of the 2015 American Community Survey (one-year estimates), household income is expected to vary among transit riders according to the following groupings: under $10,000 (17.6%); $10,000 to $14,999 (10.9%); $15,000 to $24,999 (16.9%); $25,000 to $34,999 (9.5%); $35,000 to $49,999 (9.9%); $50,000 to $64,999 (7.8%); $65,000 to $74,999 (4.5%), $75,000 or more (22.9%). This distribution was assumed to be representative of regular transit riders who benefited from free fare days funded through LCTOP, and was built into the IMPLAN model for this program.

[15] California Department of Transportation (2015). "Interim Guidelines for Low Carbon Transit Operations Program." Retrieved from http://www.dot.ca.gov/drmt/docs/lctop/Archive/LCTOP_guidelines_draftV2.pdf

[16] California Department of Transportation (2015). "Low Carbon Transit Operations Program (LCTOP) Guidelines FY 15-16." Retrieved from http://www.dot.ca.gov/drmt/docs/lctop/Archive/lctop.guidelines.fy15-16_112415.pdf

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending in a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins.

In the case of LCTOP, all materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., transit and ground passenger transportation, construction of other new nonresidential structures, ship building and repairing, etc.). Similarly, pricing margins were not applicable for funds that go toward an increase in household income.

The pricing margins for household income varies because an increase in income represents spending on a basket of industries and some of the industries in that basket involve pricing margins, while others do not. Spending on goods typically involve pricing margins because they are purchased from retail locations (e.g., grocery stores, department stores, etc.). Spending on services, on the other hand, typically do not involve pricing margins because they are purchased directly from the service provider (e.g., medical services, dining establishments, etc.). IMPLAN has built-in assumptions that account for this variability, and those assumptions were used in this analysis.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for LCTOP when sourcing information could be determined, based on public documents and news clips found online. When a supplier or vendor was not known, the default local purchase rate was assumed. For project-level sourcing information for LCTOP grants, refer to **Appendix 3.2.**

Of particular note, the default local purchase rate for the solar PV basket varies between 16% and 100% because that basket represents five different industrial sectors. The default local purchase rate in IMPLAN was assumed for all five industries (hardware manufacturing was 16.1%; miscellaneous electrical equipment and component manufacturing was 21.7%; other electronic component manufacturing was 46.5%; environmental and other technical consulting services was 100%; and construction of new power and communication structures was 100%).

Additionally, the default local purchase rate for the smart grid basket varies between 2% and 100% because it also represents five different industrial sectors. The default local purchase rate in IMPLAN was assumed for all five industries (mechanical power transmission equipment manufacturing was 2%; miscellaneous electrical equipment and component manufacturing was 21.7%; storage battery manufacturing was 26.4%; electronic component manufacturing was 46.5%; and construction of new power and communication structures was 100%).

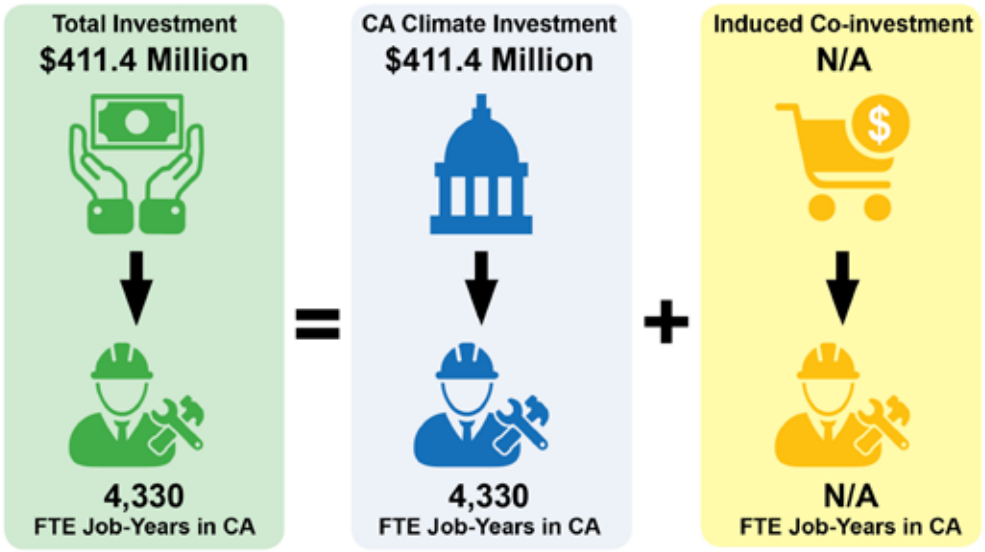
Table 3.3. Summary of Modeling Inputs for the Low Carbon Transit Operations Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($116.2 Million)	Transit and ground passenger transportation	60.6%	2015-2022	N/A	100%
	Heavy-duty truck manufacturing	13.4%	2015-2022	N/A	100%
	Construction of new nonresidential structures	10.6%	2015-2022	N/A	Default (99.9%)
	Railroad rolling stock manufacturing	7.9%	2015-2022	N/A	Default (21.7%)
	Semiconductor and related device manufacturing	4.4%	2015-2022	None	Default (71.3%)
	Other commercial service industry machine manufacturing	0.6%	2015-2022	None	Default (42.8%)
	Household income	0.5%	2015-2022	Default (Varies)	100%
	Motorcycle, bicycle, and parts manufacturing	0.4%	2015-2022	None	Default (16.4%)
	Construction of new power and communication structures	0.3%	2015-2022	N/A	Default (100%)
	Maintenance/repair construction of nonresidential structures	0.3%	2015-2022	N/A	Default (85.9%)
	Light truck and utility vehicle manufacturing	0.3%	2015-2022	None	Default (2.4%)
	Ship building and repairing	0.3%	2015-2022	N/A	Default (61.7%)
	Solar PV basket	0.2%	2015-2022	None	Default (16-100%)
	Showcase, partition, shelving and locker manufacturing	0.1%	2015-2022	None	Default (21.6%)
	Smart grid basket	0.1%	2015-2022	None	Default (2-100%)
	Sign manufacturing	0.1%	2015-2022	None	Default (48.7%)
	Broadcast and wireless communication equipment manufacturing	0.02%	2015-2022	None	Default (0.8%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

4. Affordable Housing and Sustainable Communities

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Affordable Housing and Sustainable Communities (AHSC) program is designed to further the purposes of California's landmark greenhouse gas (GHG) reduction law, Assembly Bill (AB) 32, and the Sustainable Communities and Climate Protection Act of 2008, known as Senate Bill (SB) 375. Authored by then-state Senator Darrell Steinberg, SB 375 supports the state's goal to reduce GHG emissions through coordinated transportation and land use planning for sustainable communities. Under SB 375, the California Air Resources Board (CARB) sets regional targets for reductions in GHGs from passenger vehicles. In 2010, CARB established targets for 2020 and 2035 for each region covered by one of the state's metropolitan planning organizations (MPOs).[1]

[1] The Strategic Growth Council (2015). "Affordable Housing and Sustainable Communities (AHSC) Program." Retrieved from http://sgc.ca.gov/Grant-Programs/AHSC-Program.html

In order to reach the emissions targets set for each MPO, the AHSC Program provides grants and loans for projects that will reduce GHG emissions and benefit disadvantaged communities by increasing the accessibility of affordable housing, employment centers, and key destinations via low-carbon transportation. The goal is fewer vehicle miles traveled through reduced vehicle trip length or by shifting modes from passenger vehicles to transit, bicycling, or walking[2].

Projects funded through the AHSC program fall within three categories:[3]

- **Transit-Oriented Developments (TOD)** located within half a mile of "qualifying high-quality transit." Project proposals are required to include affordable housing or housing-related and transportation-related infrastructure. The transportation infrastructure could involve transit station area improvements, such as bus stop benches and shelters; or sidewalks and dedicated bicycle paths connecting the housing project and a nearby transit station. Another option is traffic signal technology, which gives transit vehicles a priority over other traffic.
- **Integrated Connectivity Projects (ICP)** that demonstrate a reduction in vehicle miles traveled through fewer or shorter vehicle trips or a mode shift to transit, bicycling, or walking in areas that lack qualifying high-quality transit. ICP grants can also be used for infrastructure improvements that do not include affordable housing.
- **Rural Innovation Project Area (RIPA)** is a designation for an ICP that specifically occurs in a rural community, which is a priority area for the AHSC program.

From FY 2014-15 through FY 2015-16, $419 million in California Climate Investment funding was allocated to AHSC. Using those funds, a total of 53 projects received AHSC awards, ranging from $1 million to $20 million.[4] In addition to funding the construction of affordable housing developments, AHSC awards have been used to purchase buses for a bus rapid transit system, install bike sharing infrastructure, operate shuttle services, and provide programming that encourages residents to adopt active modes of transportation, among other transportation-related improvements and activities.

Administration

California's Strategic Growth Council (SGC) administers AHSC, in coordination with the California Department of Housing and Community Development (HCD) and CARB. The SGC is composed of cabinet-level Governor Brown Administration officials and three public members appointed by the governor, the Assembly speaker, and the Senate Rules Committee. The council coordinates the activities of state agencies, while the HCD implements the transportation, housing, and infrastructure components of the AHSC program.[5]

Results

After modeling the program in IMPLAN, we estimate that appropriations for AHSC between FY 2013-14 and FY 2015-16, totaling $411.4 million, are supporting a total of **4,330 full-time equivalent (FTE) job-years** in California.[6] These job-years stem solely from California Climate Investment funding since no induced

[2] Ibid.
[3] Ibid.
[4] The Strategic Growth Council (2015). "AHSC Awards." Retrieved from http://sgc.ca.gov/Grant-Programs/AHSC-Awards.html
[5] California Department of Housing and Community Development (2016). "Affordable Housing and Sustainable Communities Program FY 2015-16 Notice of Funding Availability." Retrieved from http://www.hcd.ca.gov/financial-assistance/affordable-housing-and-sustainable-communities/docs/fy1516ahsc_nofa_final.pdf
[6] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

co-investment was determined for the program (see the **Methodology** section of this chapter for details on this determination). See **Table 4.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[7]

Table 4.1 Direct, Indirect, and Induced Jobs Supported by AHSC by Industry*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	1,979	46%	N/A	N/A
Indirect Jobs	1,341	31%	N/A	N/A
Induced Jobs	1,008	23%	N/A	N/A
Total	**4,330**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by AHSC occur in construction sectors. The two construction sectors most directly impacted by the program are new multifamily residential structures and new highways and streets. Since IMPLAN does not have a dedicated construction sector for complete street improvements (e.g., the installation of bike lines, curb extensions, bus shelters, etc.), these activities were coded as "construction of new highways and streets" in the model. The remaining direct jobs supported by AHSC are located in industries that support construction activities (e.g., landscape and horticultural services, architectural, engineering, and related services.), as well as industries in that provide on-site programming to encourage public transit use and active modes of transportation (e.g., transit and ground passenger transportation, labor and civic organizations, community food, housing, and other relief services, including rehabilitation services, etc.). See **Table 4.2** for a summary of the direct jobs supported by AHSC.

Table 4.2 Direct Jobs Supported by the AHSC Program (by Industry)[8]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new multifamily residential structures	1,318.3	66.6%
Construction of new highways and streets	598.2	30.2%
Architectural, engineering, and related services	30.4	1.5%
Transit and ground passenger transportation	23.3	1.2%
Labor and civic organizations	4.2	0.2%
Employment and payroll of local government, non-education	2.7	0.1%
Landscape and horticultural services	1.1	0.1%
Community food, housing, and other relief services, including rehabilitation services	0.4	<0.1%
Heavy-duty truck manufacturing	0.4	<0.1%
Advertising, public relations, and related services	0.3	<0.1%
Total of All Industries	**1,979.2**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[7] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.
[8] A summary of the indirect and induced jobs, by industry, supported by AHSC can be found in **Appendix 4.1.**

Methodology

In order to model AHSC in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of AHSC. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 4.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $419 million in California Climate Investment funding was allocated to the AHSC program.[9] Of this funding, $411.4 million was awarded to 53 AHSC projects (28 in FY 2014-15 and 25 in FY 2015-16).[10] The remaining $7.6 million was allocated to SGC, HCD, and the Governor's Office of Planning and Research (OPR) for program administration.[11] The job-years supported by the $7.6 million in funding for state-level administration were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**.

Induced Co-investment

There is no required cost-share to receive an AHSC award, but a number of grantees have leveraged outside funds toward the completion of their proposed project. However, it is not known which of these locally matched funds were specifically induced by the program and which funds would have likely been secured for the housing developments even in the absence of AHSC funding. Without detailed data on how grantees would have spent matching funds in the absence of an AHSC award, only the employment benefits of California Climate Investment funds (described above) were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 4.3** summarizes the industrial sectors directly impacted by the AHSC program. These industry codes and their percentage share of total project spending were based on the on the proposed budgets for the 28 awarded projects using FY 2014-15 and the 25 awarded projects using FY 2015-16 funds.[12] For project-level information on how industrial sectors were assigned to each AHSC award, refer to **Appendix 4.2**. Not all of the awarded projects have been fully constructed, so the percentage breakdown of funds allocated to each industrial sector reflect proposed costs, rather than final costs.

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[9] AHSC (Email correspondence, June 16, 2017).

[10] AHSC (Email correspondence, June 16, 2017).

[11] California Air Resources Board (2014). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm.

[12] Strategic Growth Council (2015). "AHSC Awards." Retrieved from http://sgc.ca.gov/Grant-Programs/AHSC-Awards.html. Detailed budget information was obtained from the California State Water Resources Control Board's Financial Assistance Application Submittal Tool (FAAST): http://faast.waterboards.ca.gov/Public_Interface/PublicPropSearchMain.aspx.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline modeled for AHSC begins in 2015 and ends in 2019. According to the program guidelines for AHSC, grant terms are three years. FY 2014-15 projects were announced in June 2015 and are assumed to finish in June 2018. FY 2015-16 projects were announced in October 2016 and are assumed to finish in June 2019. Funds are assumed to be spent in equal amounts each year during each project's assumed timeline.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). In the case of AHSC, all materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., construction of new multi-family structures, construction of new highways and streets, architectural, engineering, and related services, etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for AHSC when project level sourcing information could be determined, based on project proposals. When a supplier or vendor was not known, the default local purchase rate in IMPLAN was assumed. For project-level sourcing information for AHSC grants, refer to **Appendix 4.3.**

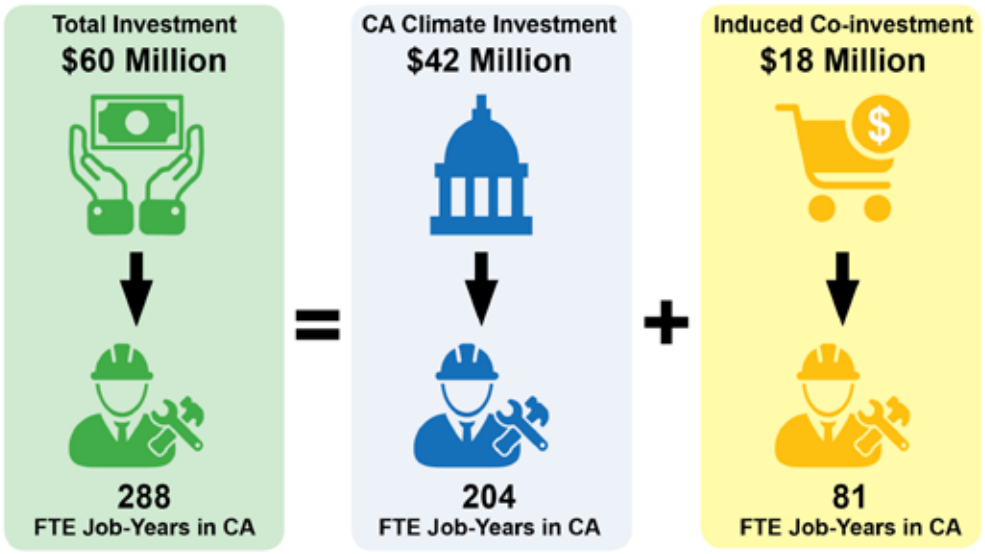
Table 4.3. Summary of Modeling Inputs for AHSC

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($411.4 Million)	Construction of new multifamily structures	65.8%	2015-2019	N/A	Default (99 .9%)
	Construction of new highways and streets	31.1%	2015-2019	N/A	Default (99.8%)
	Architectural, engineering, and related services	1.4%	2015-2019	N/A	Default (95.7%)
	Light truck and utility vehicle manufacturing	0.6%	2015-2019	None	Default (2.4%)
	Transit and ground passenger transportation	0.5%	2015-2019	N/A	100.0%
	Heavy-duty truck manufacturing	0.3%	2015-2019	None	Default (28.3%)
	Civic, social, professional, and similar organizations	0.1%	2015-2019	N/A	100.0%
	Employment and payroll only (local government, noneducation)	0.1%	2015-2019	N/A	100.0%
	Advertising, public relations, and related services	0.02%	2015-2019	N/A	Default (98.3%)
	Landscape and horticultural services	0.02%	2015-2019	N/A	Default (99.9%)
	Community food, housing, and other relief services, including rehabilitation services	0.01%	2015-2019	N/A	100.0%
	Management consulting services	0.002%	2015-2019	N/A	Default (99.4%)
	Motorcycle, bicycle, and parts manufacturing	0.001%	2015-2019	None	Default (16.4%)
	Construction of new power and communication structures	0.001%	2015-2019	N/A	Default (99.9%)
	Printing	0.001%	2015-2019	N/A	Default (51.69%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

5. Sustainable Agricultural Lands Conservation

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Sustainable Agricultural Lands Conservation (SALC) Program is designed to prevent increases in greenhouse gas (GHG) emissions by limiting opportunities for sprawling, vehicle-dependent development in favor of more focused, compact, and transit-oriented development within discrete growth boundaries. In other words, the SALC Program seeks to avoid vehicle miles traveled by steering urban development away from agricultural land (including rangeland and pasture) to established cities. In future years, the SALC Program may also support farm-scale conservation management practices that further promote reductions in GHGs through increases in soil carbon sequestration.[1]

[1] California Department of Conservation (2016). "Sustainable Agricultural Lands Conservation (SALC) Program Overview." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Pages/Index.aspx

The SALC Program currently provides two types of grants:[2]

- **Agricultural Conservation Easements (ACE)** – Grants to cities, counties, nonprofit organizations, resource conservation districts, and open-space districts/authorities that directly protect important agricultural lands under threat of conversion via permanent agricultural conservation easements. In most circumstances, the applicant will become the holder of the agricultural conservation easement in perpetuity.
- **Agricultural Land Conservation Strategies and Outcomes (ALCSO)** – Grants to counties, cities, and partners to design and implement a local or regional agricultural land conservation strategy that results in an outcome that reduces GHGs through the long-term protection of agricultural lands under threat of conversion by promoting regional growth within discrete boundaries. Example strategies include the development of local conservation easement purchase programs, the adoption of urban growth boundaries, and the establishment of agricultural greenbelts between cities.

In order to ensure that projects will reduce GHGs, applicants for SALC Program funding must demonstrate that agricultural lands within their geographic area are at risk of conversion to nonagricultural uses. Documentation of risk may include a development proposal that identifies agricultural land as a proposed site, a revised zoning proposal or land use plan that rezones agricultural land to some other land use, a municipal plan to expand city boundaries to include agricultural land (i.e., annexation), or some other formal notice that indicates urban encroachment on agricultural land.

Administration

California's Strategic Growth Council (SGC) administers the SALC Program, in coordination with the California Natural Resources Agency and the California Department of Conservation.[3] SGC is responsible for approving program guidelines, and the Department of Conservation oversees the application and grant administration process.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the SALC Program between FY 2013-14 and FY 2015-16, totaling $42 million, are supporting a total of **204 full-time equivalent (FTE) job-years** in California.[4] We estimate that these appropriations induced $18 million in co-investment, supporting and additional **81 FTE job-years**.[5] When modeled together, appropriated funds and induced co-investment support a total of **288 FTE job-years**.[6,7]

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[2] California Department of Conservation (2016). "Sustainable Agricultural Lands Conservation (SALC) Final Program Guidelines." Retrieved from http://www.conservation.ca.gov/dlrp/Documents/FY2015%20SALCP%20Final%20Guidelines_12.18.2015.pdf

[3] California Air Resources Board (2016). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from http://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

[4] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[5] Ibid.

[6] Ibid.

[7] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

Induced jobs comprise the majority of job-years supported by the program. This is explained by the program's design. Most of the funding dedicated to the SALC Program is spent on conservation easements, which compensate landowners for the development rights to their land. Easement payments then create an increase in property-owner income, which ultimately gets spent on a variety of goods and services, supporting induced jobs. See **Table 5.1** for a breakdown of the SALC Program's employment benefits by direct, indirect, and induced jobs.[8]

Table 5.1. Direct, Indirect, and Induced Jobs Supported by the SALC Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	9	5%	0	0%
Indirect Jobs	2	1%	0	0%
Induced Jobs	193	95%	81	100%
Total	**204**	**100%**	**81**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by the SALC Program are located in the environmental and other technical consulting services sector. These jobs are explained by the $675,000 in grant funds that go to environmental organizations with expertise in agricultural conservation to assist ALSCO grantees with their planning efforts. These planning grants also explain the jobs supported in local government (modeled in IMPLAN as "employment and payroll of local government, non-education"). The real estate sector is the second most directly impacted industry, which is explained by the ACE grant funds that pay for transaction costs associated with the purchase of easements. All induced co-investment was modeled in IMPLAN as an increase in property-owner income, supporting induced jobs, but no direct jobs. See **Table 5.2** for a summary of the direct jobs supported by the SALC Program.

Table 5.2. Direct Jobs Supported by the SALC Program (by Industry)[9]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Environmental and other technical consulting services	5.6	59.3%
Real estate	2.7	27.1%
Employment and payroll of local government, non-education	1.2	13.6%
Total of All Industries	**9.4**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.
[9] A summary of the indirect and induced jobs, by industry, supported by the SALC Program can be found in **Appendix 5.1.**

Methodology

In order to model the SALC Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the SALC Program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Tables 5.3** and **5.4.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $44.3 million in California Climate Investment funding was allocated to the SALC Program.[10,11] Of this funding, a total of $42 million has been awarded ($41.3 million was awarded to ACE grantees and $675 thousand was awarded to ALCSO grantees).[12,13,14,15] It is assumed that the remaining $2.3 million in funding was allocated to SGC, the California Natural Resources Agency, and the California Department of Conservation for program administration. The job-years supported by the $2.3 million in funding for state-level administration were excluded from the job totals reported in this chapter, and are instead reported in **Chapter 3** of **Part I.**

Induced Co-investment

In order to receive a grant through the SALC Program, applicants must provide a minimum amount of matching funds toward the total cost of their project.

For ACE grants, the match requirement depends on the location of the easement. If the easement is located within a disadvantaged community, applicants must match a minimum of 10% of the total easement value with local resources. If the easement is located outside a disadvantaged community, then the minimum match increases to 25%. Matches can come in the form of financial contributions from grantees and local and federal partners, or donations in property value from landowners (i.e., the landowner accepts a fi-

[10] California Air Resources Board (2015). "Greenhouse Gas Reduction Fund: Expenditure Record, Fiscal Year: 2014-2015." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-sgc-ahsc-expenditure-record.pdf

[11] California Air Resources Board (2016). "Greenhouse Gas Reduction Fund: Expenditure Record, Fiscal Year: 2015-2016." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/sgc_salc_second_revision_expenditure_record.pdf

[12] California Department of Conservation. "Agricultural Land Conservation Easement Summary, Project Recommended for FY 2014-15 Funding." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/SALC_Attachment_1D_Easement_Summaries.pdf

[13] California Department of Conservation. "Agricultural Land Conservation Easement Summary, Project Recommended for FY 2015-16 Funding." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/ACEProjectSummaries-Aug9-2016_revised.pdf

[14] California Department of Conservation. "SALCP Strategy Grant Recommendations FY 2014-15." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/SALC_Attachment_2_Strategy_Grant_Recommendations.pdf

[15] California Department of Conservation. "Agricultural Land Conservation Strategies and Outcomes Summary, Project Recommended for FY 2015-16 Funding." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/S-OProjectSummary-Aug9-2016.pdf

nancial offer that is less than the appraised value of their property).[16] For the purposes of this study, only financial contributions are modeled in IMPLAN to determine the employment benefits of ACE grants. Land donations may also support jobs, since donors can count the value of donated land as a charitable donation on their tax returns, thus reducing their federal income tax obligation, and creating more spendable income. However, without knowing the effect of donated land on the tax obligation for each donor, the potential economic impacts of land donations were excluded from the study.

During the study period, the minimum match for ACE grants was greatly exceeded, with applicants providing a cumulative match of 41% of the total easement value.[17] Of these matches, around $18 million came in the form of financial contributions and $10 million came in the form of donated land committed by the landowner.[18,19] All of these funds are considered induced by the program because ACE applicants depend on state financial assistance to secure their proposed easements. In other words, without an ACE grant, it is unlikely that a landowner would sell a smaller portion of their property to an ACE applicant. Thus, it is assumed that all locally matched funds would be put toward some other purpose in the absence of California Climate Investment funding.

For ALCSO grants, applicants must match a minimum of 10% of the total requested grant amount with local resources.[20] Despite the match requirement, it is not known which of share of locally matched funds were specifically induced by the program and which would have likely been secured for the planning projects even in the absence of an ALCSO award. Without detailed data on how grantees would have spent matching funds in the absence of an ALCSO award, only the employment benefits of California Climate Investment funding (described above) were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the SALC Program, funds must be tracked according to how they are spent. Grant funds are spent in two ways: (1) ACE projects that pay for the cost of agricultural conservation easements and (2) ALCSO projects that pay for the cost of developing an agricultural conservation strategy.

With respect to ACE projects, around 98.4% of California Climate Investment funding was modeled as an increase in property-owner income, rather than an investment in any particular industry.[21] Since ease-

[16] California Department of Conservation (2015). "Sustainable Agricultural Lands Conservation Program Final Program Guidelines." Retrieved from http://www.conservation.ca.gov/dlrp/Documents/FY2015%20SALCP%20Final%20Guidelines_12.18.2015.pdf

[17] The local match was determined by subtracting SALC Program award amounts (less the amount of SALC funds that went toward real estate transactions costs) from the total value of the easement. See **Appendix 5.2** for a summary of matching funds that were determined for each project.

[18] California Department of Conservation. "Agricultural Land Conservation Easement Summary, Project Recommended for FY 2014-15 Funding." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/SALC_Attachment_1D_Easement_Summaries.pdf

[19] California Department of Conservation. "Agricultural Land Conservation Easement Summary, Project Recommended for FY 2015-16 Funding." Retrieved from http://www.conservation.ca.gov/dlrp/SALCP/Documents/ACEProjectSummaries-Aug9-2016_revised.pdf

[20] California Department of Conservation (2015). "Sustainable Agricultural Lands Conservation Program Final Program Guidelines." Retrieved from http://www.conservation.ca.gov/dlrp/Documents/FY2015%20SALCP%20Final%20Guidelines_12.18.2015.pdf

[21] Department of Conservation (Email correspondence, June 8, 2017).

ments compensate landowners for the development rights to their land, landowners are free to spend that compensation however they choose. Without detailed data on how landowners have spent easement funds, it is assumed that they will spend them on a variety of goods of services. To model this spending in IMPLAN, easement funds were coded as "proprietor income," which is a unique economic activity within the model that averages together the many ways in which a self-employed individual may spend an increase in income, including both savings and the purchase of goods and services. In other words, an increase in "proprietor income" represents a basket of industries that reflect typical spending patterns of self-employed individuals.

The remaining 1.6% of California Climate Investment funding was modeled as spending on real estate transaction costs (modeled in IMPLAN as "real estate establishments"). The percentage of funds assigned to real estate costs was based on data directly provided by the Department of Conservation.[22] See **Appendix 5.2** for a summary of the project funds that were spent on real estate costs.

All induced co-investment for ACE grants was modeled as an increase in property-owner income. Typically, a land trust will also spend some matching funds on real estate transaction costs. However, at the time of writing this report, the sum total of land trust spending on transaction costs could not be determined and were not modeled toward the employment benefits of the SALC Program.

With respect to ALSCO grants, California Climate Investment funding was modeled in IMPLAN as an investment in environmental consulting services (listed in IMPLAN as "environmental and other technical consulting services") and local government staffing (listed in IMPLAN as "employment and payroll only (local government, non-education)"). Based on input from the Department of Conservation, an average of 75% of ALSCO funds are used for consultants and 25% are used to support local government staff.[23]

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators.

The spending timeline modeled for ACE grants begins in 2016 and ends in 2017. Based on feedback from the Department of Conservation, all FY 2014-15 grants were assumed to be expended during the 2016 calendar year, and all FY 2015-16 grants were assumed to be expended during the 2017 calendar year.[24] It is assumed that the easement payment will be dispersed in full upon recordation of the easement.

The spending timeline modeled for ALSCO grants begins in 2015 and ends in 2018. ALSCO grants are assumed to begin at the end of the fiscal year in which they were awarded and have a maximum duration of two years.[25] Thus, all FY 2014-15 grants were assumed to be spent between 2015 and 2017, and all FY 2015-16 grants were assumed to be spent between 2016 and 2018. It is assumed that funds are equally spent each year during those timelines. Funds are assumed to be spent in equal amounts each year during each project's assumed timeline.

[22] Department of Conservation (Email correspondence, June 8, 2017).
[23] Department of Conservation (Email correspondence, June 8, 2017).
[24] Department of Conservation (Email correspondence, June 8, 2017).
[25] California Department of Conservation (2015). "Sustainable Agricultural Lands Conservation Program Final Program Guidelines." Retrieved from http://www.conservation.ca.gov/dlrp/Documents/FY2015%20SALCP%20Final%20Guidelines_12.18.2015.pdf

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins. In the case of the SALC Program, environmental and other technical consulting services are not purchased through a third-party retailer, so pricing margins were not applicable for this industry. Similarly, pricing margins were not applied to spending on local government staff.

The pricing margins for an increase proprietor income varies because an increase in income represents spending on a basket of industries, some of which involve pricing margins, while others do not. Spending on goods typically involves pricing margins because the goods are purchased from retail locations (e.g., grocery stores, department stores, etc.). Spending on services, on the other hand, typically does not involve pricing margins because services are purchased directly from a provider (e.g., medical services, dining establishments, etc.). IMPLAN has built-in assumptions that account for this variability, and those assumptions were used in this analysis.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project level sourcing information for the SALC Program, the default local purchase rate in IMPLAN was assumed for industrial sectors.

Table 5.3. Summary of Modeling Inputs for Agricultural Conservation Easements (ACE)

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($42 Million)	Proprietor income	98.4%	2016-2017	Default (Varies)	Default (100%)
	Real estate establishments	1.6%	2016-2017	N/A	Default (100%)
Induced Co-investment ($18 Million)	Proprietor income	100%	2016-2017	Default (Varies)	Default (100%)

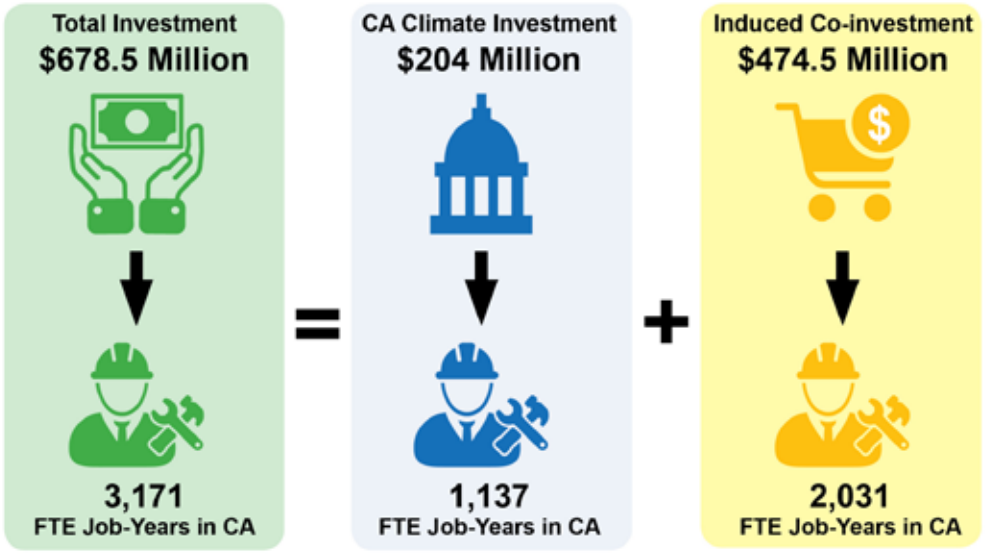
Table 5.4. Summary of Modeling Inputs for Agricultural Land Conservation Strategies and Outcomes (ALCSO) Grants

Input	Funded Industries	Share of Total Funds	Spending Timeline	Margins	Local Purchase Rate
California Climate Investment ($675,000)	Environmental and other technical consulting services	75%	2015-2018	N/A	Default (100%)
	Employment and payroll only (local government, non-education)	25%	2015-2018	N/A	100%
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

6. Clean Vehicle Rebate Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Clean Vehicle Rebate Project (CVRP) provides rebates for the purchase or lease of a battery electric vehicle (BEV), plug-in hybrid electric vehicle (PHEV), fuel-cell electric vehicle (FCEV), neighborhood electric vehicle (NEV), and zero-emission motorcycles (ZEM). The program is intended to promote the development and commercialization of advanced vehicle technologies that are necessary to meet California's air quality and climate goals. One of those goals is to help advanced technologies transition from prototype and small-scale production to higher volume production, thereby reducing vehicle costs.[1]

[1] California Air Resources Board (2014). "Final Approved Fiscal Year 2014-15 Funding Plan for the Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund Investments." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/final_fy1415_aqip_ggrf_fundingplan.pdf

Only California residents, businesses, government agencies, and nonprofit organizations are eligible to receive a rebate through CVRP. When the program was launched, rebates ranged from $900 to $5,000, depending on the type of vehicle.[2] Between March 29, 2016 and October 31, 2016 rebates for BEVs, PHEVs, and FCEVs were increased by $1,500 for consumers with household incomes less than or equal to 300% of the federal poverty level. During this time, an income cap for higher income consumers was applied to households with an annual income equal or greater than $500,000 (married filing taxes jointly), $340,000 (filing as head of household), and individual filers with a household income greater than $250,000. Starting November 1, 2016, the increase on rebates for consumers with household incomes less than or equal to 300% of the federal poverty level became $2,000, and an income cap for higher income consumers was lowered to $300,000 (married filing jointly), $204,000 (head-of-household) and $150,000 (single filers).[3] See **Table 6.1** for the range of rebates that have been offered.

Since the launch of the program in 2010 through the end of 2016, the state has issued or approved rebates for the purchase or lease of 179,725 zero-emission or near zero-emission vehicles.[4] Of those rebates, individuals have accounted for around 96.7%, businesses and nonprofits have accounted for 2.9%, and local, state, and federal government agencies have accounted for a little over 0.3%.

Program Administration

The California Air Resources Board (CARB) administers CVRP in partnership with the nonprofit, Center for Sustainable Energy (CSE). CARB provides program oversight, while CSE is tasked with implementing the program and processing rebate applications. CARB and CSE have jointly administered the program since its launch in 2010. Prior to the availability of California Climate Investment dollars in 2013, funding for the rebates came exclusively from fees on new vehicles and from the California Energy Commission. Beginning in 2013, California Climate Investments have provided an additional source of funding for CVRP rebates. By the end of 2016, California Climate Investments had paid for around 64% of CVRP rebates.[5]

[2] California Air Resources Board (2014). "Implementation Manual for the FY 2014-15 Clean Vehicle Rebate Project (CVRP)." Retrieved from https://www.arb.ca.gov/msprog/aqip/meetings/CVRP_wg_IM_handout_030916.pdf

[3] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Income Eligibility." Retrieved from https://cleanvehiclerebate.org/eng/income-eligibility

[4] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics." Retrieved from https://cleanvehiclerebate.org/rebate-statistics

[5] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics." Retrieved from https://cleanvehiclerebate.org/rebate-statistics

Table 6.1. CVRP Rebates by Vehicle Type[6]

Rebate Type	NEV / ZEM	PHEV	BEV	FCEV
Prior to March 29, 2016[7]				
Standard Rebates No income guidelines	$900	$1,500	$2,500	$5,000
March 29, 2016 – October 31, 2016				
Increased Rebates Household income ≤ 300% of FPL	N/A	$3,000	$4,000	$6,500
Standard Rebates (Below Income Cap) Household Income below the following: • $250,000 for single filers • $340,000 for head-of-household filers • $500,000 for joint filers	$900	$1,500	$2,500	$5,000
Standard Rebates (Above Income Cap) Household income ≥ to caps from above	Not eligible	Not eligible	Not eligible	$5,000
November 1, 2016 – Present				
Increased Rebates Household income ≤ 300% of FPL	N/A	$3,500	$4,500	$7,000
Standard Rebates (Below Income Cap) Household income below the following: • $150,000 for single filers • $204,000 for head-of-household filers • $300,000 for joint filers	$900	$1,500	$2,500	$5,000
Standard Rebates (Above Income Cap) Household income ≥ to caps from above	Not eligible	Not eligible	Not eligible	$5,000

Results

After modeling the program in IMPLAN, we estimate that appropriations for CVRP between FY 2013-14 and FY 2015-16, totaling $204 million, are supporting a total of **1,137 full-time equivalent (FTE) job-years** in California.[8] We estimate that these appropriations induced $474.5 million in co-investment, supporting an additional **2,031 FTE job-years**.[9] When modeled together, appropriated funds and induced co-investment support a total of **3,171 FTE job-years**.[10,11] See **Table 6.2** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[12]

[6] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Income Eligibility." Retrieved from https://cleanvehiclerebate.org/eng/income-eligibility

[7] Standard rebates were reduced in FY 2011-12 (e.g., early-market BEVs previously received a $5,000 incentive), but this update was outside the study period (FY 2013-14 through FY 2015-16).

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] Ibid.

[10] Ibid.

[11] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[12] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 6.2 Direct, Indirect, and Induced Jobs Supported by CVRP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	116	10%	1,038	51%
Indirect Jobs	46	4%	383	19%
Induced Jobs	975	86%	609	30%
Total	**1,137**	**100%**	**2,031**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The largest share of direct jobs supported by appropriations for CVRP occur in the management consulting services sector, which is explained by the program funds that go to CSE for administration and project management. The remaining direct jobs are located in industries that manufacture, sell, or transport advanced technology vehicles from production sites to retail locations (see **Table 6.3** for a percentage breakdown). Even though most of the program funds (96%) are spent on rebates, California Climate Investment dollars support more direct jobs in the management consulting services than in automobile manufacturing because service sectors tend to be more labor intensive. Additionally, all of the program funds dedicated to program administration are spent in the California economy, whereas many of the rebates funds are ultimately spent out of state (see the following **Methodology** section for more details on how rebate funds were modeled in IMPLAN).

In contrast to appropriated funds, all co-investment induced by CVRP goes toward the purchase of advanced technology vehicles. Thus, all of the direct jobs supported by induced co-investment are located in industries that manufacture, sell, or transport advanced technology vehicles (see **Table 6.3** for a percentage breakdown).

Table 6.3. Direct Jobs Supported by CVRP (by Industry)[13]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Management consulting services	56.2	48.6%
Retail - Motor vehicle and parts dealers	32.5	28.1%
Automobile manufacturing	16.0	13.9%
Wholesale trade	8.4	7.2%
Truck transportation	1.9	1.6%
Rail transportation	0.7	0.6%
Total of All Industries	**115.6**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail - Motor vehicle and parts dealers	568.2	54.8%
Automobile manufacturing	279.8	27.0%
Wholesale trade	145.5	14.0%
Truck transportation	32.5	3.1%
Rail transportation	11.3	1.1%
Air transportation	0.4	0.0%
Total of All Industries	**1,037.7**	**100%**

[13] A summary of the indirect and induced jobs, by industry, supported by TIRCP can be found in **Appendix 6.1.**

Methodology

In order to model CVRP in IMPLAN, all financial flows associated with program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of CVRP. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 6.4.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $204 million in California Climate Investment funding was allocated to CVRP.[14] Of this funding, around $8 million was allocated to CSE for program administration. The remaining $196 million was spent on vehicle rebates between November 4, 2013 and June 21, 2016.[15]

Induced Co-investment

In order to receive a rebate under CVRP, applicants must have purchased a clean vehicle by investing funds out of their own pocket. Consumers, therefore, are considered co-investors (with the state) in the purchase of clean vehicles. The co-investment that each consumer contributes to the program is assumed to be equal to the difference between the manufacturer's suggested retail price (MSRP) of the purchased vehicle and the rebate amount that was awarded for that vehicle. Based on the mix of vehicles that were awarded rebates with the $196 million in California Climate Investment funding allocated to CVRP, it is estimated that consumers have co-invested $3.7 billion in total funds toward the purchase of clean vehicles.[16]

To determine the share of consumer co-investment that was induced by the rebate program, this study relies on findings from outside literature on electric vehicle adoption. Research has shown that rebates have a significant impact on electric vehicle adoption.[17,18,19,20,21] However, some rebate recipients may be more strongly motivated by other factors, such as the availability of charging stations and access to

[14] California Air Resources Board (2016). "Proposed Fiscal Year 2016-17 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf

[15] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics." Retrieved from https://cleanvehiclerebate.org/rebate-statistics

[16] See **Appendix 6.2** for the amount of co-investment that was determined for each vehicle make and year, including a breakdown of the assumed MSRP, the average rebate amount, and the total number of rebates that were awarded.

[17] Sierzchula, William, Sjoerd Bakker, Kees Maat, and Bert van Wee (2014). "The influence of financial incentives and other socio-economic factors on electric vehicle adoption," *Energy Policy* 68: 183-194.

[18] Clinton, Bentley, and Daniel Steinberg (2016). *Providing the Spark: Impact of Financial Incentives on Battery Electric Vehicle Adoption*, Association of Environmental and Resource Economists 5th Annual Summer Conference 9–11, June 2016, Beaver Run, Breckenridge, Colorado.

[19] DeShazo, J.R., Tamara Sheldon, and Richard Carson (2017). "Designing policy incentives for cleaner technologies: Lessons from California's plug-in electric vehicle rebate program." *Journal of Environmental Economics and Management* 84: 18-43.

[20] Adepetu, Adedamola, Srinivasan Keshav, and Vijay Arya (2016). "An agent-based electric vehicle ecosystem model: San Francisco case study." Transport Policy 46: 109-122.

[21] Center for Sustainable Energy (2016). "California Air Resources Board Clean Vehicle Rebate Project, EV Consumer Survey Dashboard." Retrieved from http://cleanvehiclerebate.org/survey-dashboard/ev

high-occupancy vehicle lanes.[22,23]

The incremental effect of rebates relative to other motivators varies from study to study. A study on new car buyers in California found that rebates increased the sales of BEVs and PHEVs by 7% during fall of 2013, which translates to a 3.8% increase per $1,000 of subsidy (assuming a weighted rebate value of $1,838 across BEVs and PHEVs), and a 0.2% increase in the total market share of BEVs and PHEVs.[24] In contrast, a global study on electric vehicle adoption across 30 countries in 2012 found that a $1,000 increase in financial incentives would cause a country's electric vehicle market share to increase by 0.06%.[25] Alternatively, a national study on the impact of financial incentives on BEV adoption found that rebates increase the number of BEV purchases by 7.2% per $1,000 of subsidy.[26] Of these three studies, the national study's estimate of a 7.2% increase in BEV vehicle adoption per $1,000 of subsidy is applied to the CVRP job model for two reasons.[27] First, this value is based on the U.S. vehicle market rather than the global market. Second, it was based on the most recent and expansive time period of the three studies, spanning from the fourth quarter of 2010 through the fourth quarter of 2014.

Based on the mix of rebates that were distributed to recipients with the $196 million in California Climate Investment funding that was allocated to CVRP during the study period, and assuming that each $1,000 of subsidy increased clean vehicle purchases by 7.2%, it is estimated that 13.2% of vehicle sales were induced directly by the rebate program.[28] These induced vehicle sales translate to $474 million in induced co-investment.[29] Without the CVRP rebate program, it is assumed that these funds would have been spent elsewhere in the economy.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by CVRP, funds must be tracked according to how they are spent. As discussed, CVRP funds are spent in two primary ways: (1) rebates and (2) program administration. The industrial sectors impacted by these two expenditure types are described below.

CVRP rebates generate two different kinds of economic activity depending on how they are ultimately used by the applicant. For those who purchased a clean vehicle in direct response to a rebate, their rebate is considered an investment in the clean vehicle industry (13.9% of rebate funds).[30] For applicants that purchased a clean vehicle in response to some other motivator, their rebate is considered an increase in the applicants'

[22] Sierzchula et al. (2014).
[23] DeShazo et al. (2017).
[24] DeShazo et al. (2017).
[25] Sierzchula et al. (2014).
[26] Clinton and Steinberg (2016).
[27] While the 7.2% figure was specific to BEV adoption, it is assumed that this figure is also applicable to all other eligible vehicles in the CVRP program (i.e., PHEVs, FCEVs, NEVs, and ZEMs).
[28] The induced rate of 13.2% is a weighted average based on the number of rebates that were given out at each rebate tier (see **Table 6.1** for a summary of rebate tiers). This weighted average also accounts for the increased incentives provided to low-income households.
[29] See **Appendix 6.2** for the amount of induced co-investment that was determined for each vehicle make and year, including a breakdown of the assumed MSRP, average rebate amounts, and total number of rebates awarded.
[30] This percentage represents the ratio of spending on induced purchases to total spending on rebates ($27.2 million versus $196 million, respectively). See **Appendix 6.2** for a breakdown of state spending on induced purchases by vehicle make and year.

household income that will ultimately be spent on a variety of goods and services (86.1% of rebate funds). Additionally, 100% of induced co-investment was modeled as an investment in the clean vehicle industry (listed as "automobile manufacturing" in IMPLAN).

Clean vehicle purchases were modeled as spending in "automobile manufacturing" in IMPLAN. There is no unique industry code in IMPLAN to distinguish the purchase of a clean vehicle from a conventional vehicle that relies exclusively on fossil fuels. While clean vehicles certainly require different inputs for their engines and batteries, the gliders of each vehicle (i.e., the vehicle without the power train) are near perfect substitutes.[31] Assessing the employment impacts of substituting an electric motor in place of an internal combustion engine is outside the scope of this study. Thus, in modeling the employment benefits of CVRP, we implicitly assume that the manufacturing of an advanced technology vehicle will generate the same amount of jobs as a conventional vehicle.

Household spending on goods and services was modeled as an increase in "household income" in IMPLAN, which is a unique economic activity within the model. This economic activity averages together the many ways in which an increase in household income may be spent, including both savings and the purchase of goods and services. In other words, an increase in "household income" represents a basket of industries that reflect typical consumer spending patterns. Since housing spending patterns vary by income, IMPLAN allows the user to build in assumptions about the income levels of rebate recipients according to annual groupings: under $10,000, $10,000 to $14,999, $15,000 to $24,999, $25,000 to $34,999, $35,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, $100,000 to $149,999, and over $150,000. According to survey data obtained from CVRP rebate recipients between September 2012 and June 2015, annual household income varies according to the following groupings: under $25,000 (1%), $25,000 to $49,999 (4%), $50,000 to $74,999(8%), $75,000 to $99,999 (11%), $100,000 to $124,999 (14%), $125,000 to $149,000 (11%), and over $150,000 (51%).[32] To harmonize the income groupings from the CVRP survey with those in IMPLAN, CVRP survey results were proportionally allocated to the relevant IMPLAN income groupings (e.g., the 4% of survey respondents that earned $25,000 to $50,000 annually were distributed between the $25,000 to $34,999 and $35,000 to $50,000 groupings in IMPLAN, with 1.6% and 2.4% within each, respectively).

In reality, not all rebates are distributed to "households." Businesses, government institutions, and nonprofit organizations make up around 3% of the rebate pool. Without data on how these entities would spend their supplemental income, they are not distinguished in the model (i.e., their expenditures are assumed to match those of a typical household). Since households constitute most of the rebate recipient pool, any differences in spending among other recipient types will be minor in terms of employment benefits.

Lastly, program administration costs were modeled as "management consulting services" in IMPLAN because this industry represents technical assistance providers, such as CSE, that help with marketing, data collection, and reporting.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline modeled for CVRP

[31] Hawkings, T., Singh, B., Majeau-Bettez, G., Hammer Stromman, A. (2012). "Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles." Journal of Industrial Ecology, 17(1), 158-160.

[32] Center for Sustainable Energy (2017). "The Clean Vehicle Rebate Project Summary Documentation of the Electric Vehicle Consumer Survey, 2013-2015 Edition." Retrieved from https://cleanvehiclerebate.org/sites/default/files/attachments/CVRP-ConsumerSurvey2013-15Reference.pdf

begins in 2013 and ends in 2016, the period over which California Climate Investment funding for rebates reached a cumulative total of $196 million. Rebates are assumed to be spent within the same year that they were issued. Thus, the $196 million in rebates that received California Climate Investment funding between FY 2013-14 and FY 2015-16 are assumed to be spent in the following amounts between 2013 and 2016: $7.7 million in 2013, $80.4 million in 2014, $63.3 million in 2015, and $44.5 million in 2016.[33]

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g. retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins. Since CVRP is a consumer-facing program, all vehicle purchases induced by the program are assumed to be purchased at the retail price rather than at the producer price, so margins were assumed for all spending on automobile manufacturing.

The pricing margins for household income varies because an increase in income represents spending on a basket of industries and some of the industries in that basket involve pricing margins, while others do not. Spending on goods typically involve pricing margins because they are purchased from retail locations (e.g., grocery stores, department stores, etc.). Spending on services, on the other hand, typically do not involve pricing margins because they are purchased directly from the service provider (e.g., medical services, dining establishments, etc.). IMPLAN has built-in assumptions that account for this variability, and those assumptions were used in this analysis.

Since management and consulting services are not purchased through a third-party retailer, pricing margins were not applicable for this industry in IMPLAN.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm.

The local purchase rate modeled for automobile manufacturing was extrapolated from the rebate statistics mainlined by CSE. Tesla Inc. is the only light-duty auto manufacturer with production facilities located in California and accounted for 17% of the total number of CVRP rebates funded through California Climate Investments during the study period (i.e., November 4, 2013, and June 21, 2016).[34] This purchase rate translates to approximately 22% of rebate funds that went toward induced purchases and 35% of the co-investment associated with those induced purchases. To account for this local manufacturing activity, Tesla expenditures were modeled separately from all other vehicles. For Tesla purchases, the local purchasing rate was adjusted to 100% at the manufacturing stage of the supply chain. For all other vehicle purchases, the local purchase rate was adjusted to 0% at the manufacturing stage. In both models, the default local purchasing rate was utilized at the wholesale and retail stages, thus capturing economic activity at local dealerships, even if the cars were manufactured out of state.

[33] Center for Sustainable Energy (2017). "California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics." Retrieved from https://cleanvehiclerebate.org/rebate-statistics

[34] Ibid.

When modeling investment flows for household spending, the default local purchase rate (100%) in IMPLAN was used. Since CSE is located in California, all spending on management consulting serves was modeled as in-state spending.

Table 6.4. Summary of Methodological Assumptions for CVRP Analysis

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($204 Million)	Automobile manufacturing	13.3%	2013-2016	Default (30%)*	22%**
	Household income	82.8%	2013-2016	Default (Varies)	Default (100%)
	Management consulting services	3.9%	2013-2016	N/A	100%
Induced Co-investment ($474.5 Million)	Automobile manufacturing	100%	2013-2016	Default (30%)*	35%**

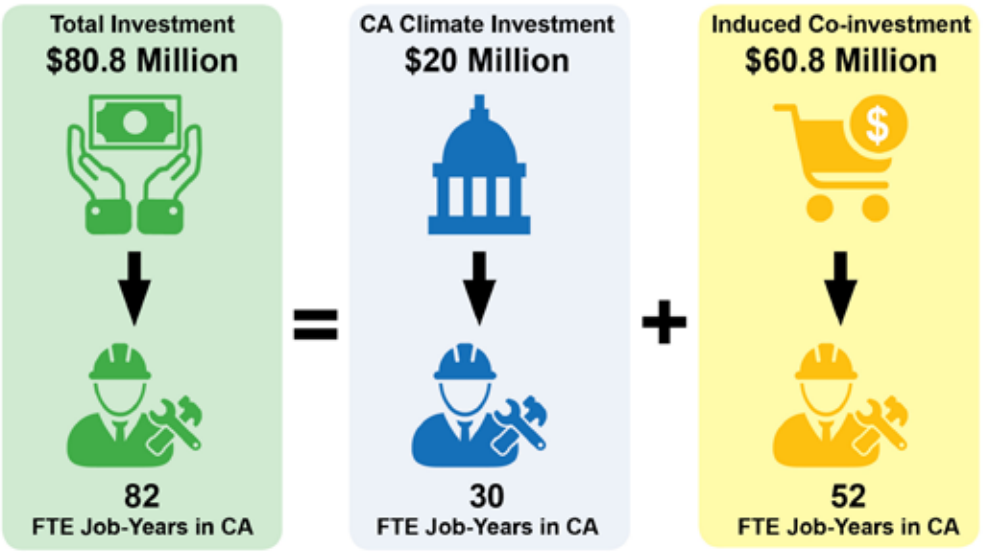
*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

** These local purchase rates represent spending on Tesla Inc.-made vehicles and apply only to the manufacturing stage of the supply chain. Default local purchase rates were used for all other stages (i.e., retail, wholesale, and transport).

7. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) provides vouchers for the purchase of hybrid and zero-emission trucks or buses to help accelerate the market introduction of low-carbon vehicles. Trucks and buses produce disproportionately higher greenhouse gas (GHG) and air pollution emissions than passenger cars. New electric, hybrid, and natural gas trucks and buses can significantly reduce emissions.

A public or private fleet, large or small, operating vehicles in the state of California are eligible to receive a voucher incentive through HVIP. All vehicle purchasers must apply for a voucher through one of HVIP's approved vendors or dealers. Once the vehicle purchaser has selected an eligible vehicle, he or she will

receive an incentive discount at the point of sale. Thus, voucher beneficiaries do not need to wait to receive a rebate check or file a tax credit. The approved vendor or dealer is responsible for submitting the voucher request and required vehicle sales documentation on behalf of the vehicle purchaser. The dealer is paid for the voucher when the vehicle is registered.

Eligible vehicles include utility, delivery, refuse, and mass transit vehicles.[1] These vehicles use a range of advanced technologies, including battery-electric, fuel cell, hybrid, electric power take-off (PTO) and ultra-low NOx natural gas engines. Vouchers range from $20,000 to $110,000 for eligible vehicles, depending upon whether the vehicle is hybrid or zero-emission, its gross vehicle weight rating (GVWR), and whether or not it is located in a disadvantaged community.[2] When the program first launched in 2010, voucher amounts were targeted to offset about half the incremental cost associated with purchasing an eligible vehicle.[3] Voucher amounts have since risen to cover 80% to 100% of the incremental cost.[4]

California Climate Investment funding allocated to HVIP between FY 2013-14 and FY 2015-16 has supported 665 vouchers to truck and bus operators. Most of the vehicles purchased with HIVP vouchers have been delivery trucks (89.3%), followed by buses (8.1%), refuse trucks (1.5%), and utility trucks (0.9%).[5] The demand for incentives was so great that a waitlist had to be developed until additional funding from FY 2016-17 appropriations was made available.[6]

Administration

The California Air Resources Board (CARB) administers HVIP in collaboration with CALSTART, a national clean transportation industry consortium. CALSTART was selected by CARB to implement the program via a competitive grant solicitation. CARB launched the program in 2010 as part of the state's Air Quality Improvement Program.

Results

After modeling the program in IMPLAN, we estimate that appropriations for HVIP between FY 2013-14 and FY 2015-16, totaling $20 million, are supporting a total of **30 full-time equivalent (FTE) job-years** in California.[7] We estimate that these appropriations induced $60.8 million, supporting an additional **52 FTE job-years**.[8] When modeled together, appropriated funds and induced co-investment support a total of **82 FTE job-years**.[9] See **Table 7.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[10]

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[1] Hybrid and Zero-Emission Truck And Bus Voucher Incentive Project (HVIP) (2017). "Hybrid and Zero Emission Vehicles." Retrieved from https://www.californiahvip.org/docs/HVIP_EligibleVehicles.pdf

[2] Hybrid and Zero-Emission Truck And Bus Voucher Incentive Project (HVIP) (2017). "Frequently Asked Questions." Retrieved from https://www.californiahvip.org/faq

[3] Hybrid and Zero-Emission Truck And Bus Voucher Incentive Project (HVIP) (2017). "Making the Case for Hybrid and Electric Trucks and Buses." Retrieved from https://www.californiahvip.org/making-the-case

[4] CALSTART (Personal communication, March 17, 2017)

[5] Incentive data was provided by CALSTART on March 28, 2017.

[6] Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) (2016). "CARB Announces an Additional $3,487,500 in FY16 Voucher Funding is Now Available for HVIP." Retrieved from https://www.californiahvip.org/carb-announces-an-additional-3487500-in

[7] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development on counterfactual scenarios was outside the scope of this study.

[8] Ibid.

[9] Ibid.

[10] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 7.1. Direct, Indirect, and Induced Jobs Supported by HVIP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	13	45%	15	29%
Indirect Jobs	8	27%	23	44%
Induced Jobs	8	28%	14	28%
Total	**30**	**100%**	**52**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by California Climate Investment dollars occur in the management consulting services sector, which is explained by program funds that go to CALSTART for administration and project management. The remaining direct jobs occur in the heavy-duty truck manufacturing industry, an industry which broadly includes the manufacture of heavy-duty motor vehicles, including buses. Even though most of the program funds (93%) are spent on vehicle incentives, the program supports more direct jobs in the management consulting services sector than in heavy-duty truck manufacturing sector because the latter is far less labor intensive. Additionally, all of the program funds dedicated to administration are spent in the California economy, whereas many of the vehicle incentives go to vehicle manufacturers located outside of California. See **Table 7.2** for a summary of the direct jobs supported by appropriations for HVIP.

In contrast to California Climate Investment dollars, all induced co-investment dollars are spent on vehicles. Thus, all of the jobs supported by induced co-investment are located in the heavy-duty truck manufacturing sector. See the **Methodology** chapter for more information on how the induced co-investment dollars were coded for this particular program.

Table 7.2. Direct Jobs Supported by HVIP (by Industry)[11]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Management consulting services	9.2	73.3%
Heavy-duty truck manufacturing	3.4	26.7%
Total of All Industries	**12.6**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Heavy-duty truck manufacturing	14.9	100%
Total of All Industries	**14.9**	**100%**

[11] A summary of the indirect and induced jobs by industry, supported by HVIP can be found in **Appendix 7.1.**

Methodology

In order to model HVIP in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of HVIP. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 7.3**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $20 million in California Climate Investment funding was allocated to HVIP.[12] Approximately 7% of these funds ($1.4 million) go to CALSTART for program administration.[13] The remaining 93% ($18.6 million) in funding was reserved for financial incentives. As of March 28, 2017, all of the funding for financial incentives ($18.6 million) was exhausted.[14]

Induced Co-investment

To receive a voucher through HVIP, truck and bus operators must pay the difference between the financial incentive and the retail price of the vehicle. HVIP participants, therefore, are considered co-investors (with the state) in the purchase of a cleaner vehicle. Based on the mix of vehicles that have been purchased using voucher funds from FY 2013-14 through FY 2015-16, a total of $60.8 million has been co-invested in HVIP.

All of the funds that HVIP participants contribute to the program are considered induced because it is unlikely truck and bus operators would purchase an advanced technology vehicle without the state's financial support. This assessment is based on two key characteristics of the heavy-duty vehicle market. First, hybrid and zero-emission heavy-duty vehicles are more costly than conventional heavy-duty vehicles. Second, since hybrid and zero-emission trucks and buses are relatively new technologies, there are more perceived risks in adopting those new technologies (e.g., access to charging, qualified mechanics, spare parts, etc.). The HVIP voucher is priced to compensate truck and bus operators for the increased cost and perceived risk associated with switching to hybrid and zero-emission technologies. In summary, without the financial incentives provided through HVIP, it is assumed that truck and bus operators would have opted for the least cost alternative, which would have been a conventional truck or bus that relies exclusively on fossil fuels.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the HVIP, funds must be tracked according to how they are spent. As discussed, HVIP funds are spent in two ways: (1) program administration and (2) financial incentives for vehicles.

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[12] California Air Resources Board (CARB) (2016). "Proposed Fiscal Year 2016-17 Funding Plan For Low Carbon Transportation And Fuels Investments And The Air Quality Improvement Program." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf

[13] CALSTART (Personal communication, March 17, 2017).

[14] This is the date in which data was made available to the UCLA Luskin Center for Innovation.

Administration costs were modeled as "management consulting services" in IMPLAN because this industry represents technical assistance providers, such as CALSTART, that help with marketing, data collection, and reporting. Advanced technology truck and bus purchases were modeled in IMPLAN as spending in "heavy-duty truck manufacturing" because this industry represents the manufacture of all heavy-duty vehicles, including trucks, buses, motor homes, and other special purpose heavy-duty vehicles for highway use. There is no unique industry code in IMPLAN to distinguish the purchase of an advanced technology truck or bus from a conventional one that relies exclusively on fossil fuels. Assessing the employment impacts of producing an advanced-technology truck or bus compared to that of a conventional truck or bus is outside the scope of this study. Thus, in modeling the employment benefits of HVIP, we implicitly assume that the manufacturing of an advanced technology truck or bus will support the same amount of jobs as a conventional truck or bus.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline modeled for HVIP is based on actual voucher data maintained by CALSTART. In 2014, $5.2 million in vouchers were distributed to truck and bus operators, followed by $6.2 million in 2015, $4 million in 2016, and $2.5 million in 2017 (as of March 28, 2017). The spending timeline for induced co-investment is based upon this same data.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Heavy-duty truck and bus orders are typically placed directly through the manufacturer rather than a third-party retailer, so pricing margins were not applicable for these purchases in IMPLAN. Similarly, since management consulting services costs are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm.

The local purchase rate for heavy-duty truck manufacturing was based on the actual mix of vehicles purchased during the study period (i.e., vouchers distributed between June 2014 and March 2017). A number of truck and bus manufacturers have assembly plants in California, including BYD Motors, Inc., ElDorado National, Electric Vehicles International (EVI), GreenPower Motor Company Inc., Motiv Power Systems, Phoenix Motor Cars LLC., and Proterra. However, during the study period Proterra assembled all of its qualifying vehicles in South Carolina and no ElDorado or GreenPower vehicles were sold through the voucher program. Thus, approximately 18.9% of voucher funds, and 25.5% of co-invested funds, paid for vehicles assembled in California (i.e., vehicles manufactured by BYD, EVI, and Motiv Power). See **Appendix 7.2** for a count of the vehicles that were manufactured in California during the study period, broken out by manufacturer. All project administration activities are assumed to be completed by CALSTART, which is located in Pasadena, California.

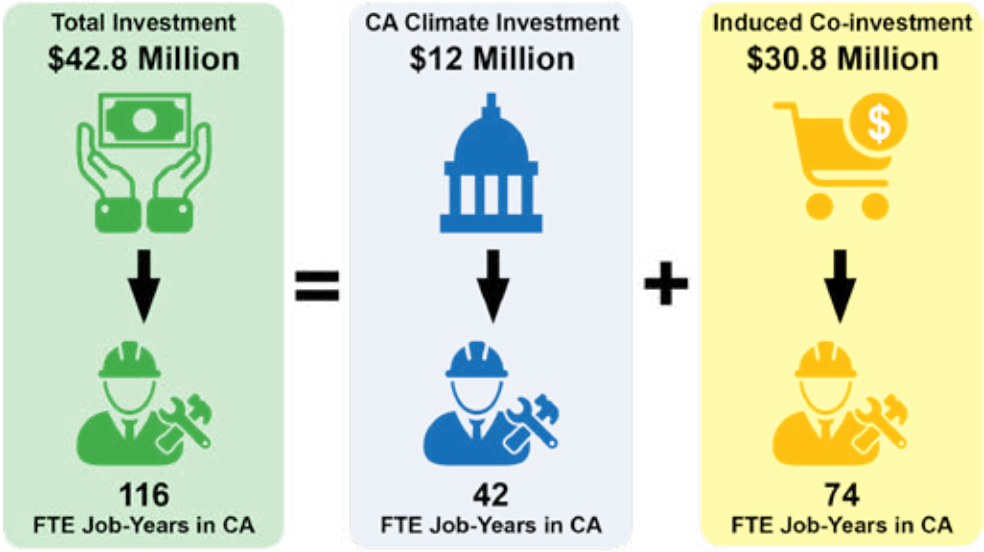
Table 7.3. Summary of Modeling Inputs for HVIP

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($20 Million)	Heavy-duty truck manufacturing	93%	2014-2017	N/A	18.9%
	Management consulting services	7%	2014-2017	N/A	100%
Induced Co-investment ($60.8 Million)	Heavy-duty truck manufacturing	100%	2014-2017	N/A	25.5%

8. Enhanced Fleet Modernization Program Plus-Up

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Enhanced Fleet Modernization Program (EFMP) Plus-Up provides financial assistance to lower-income individuals who replace their vehicles with cleaner ones (new or used). The Plus-Up program is a supplement to California's existing EFMP, a voluntary vehicle retirement and replacement program that provides base incentives ranging from $2,500 to $4,500 to lower-income individuals who scrap old vehicles and buy more fuel-efficient replacements.[1] Alternative transportation mobility options, such as transit passes, are also available in lieu of a replacement vehicle purchase through EFMP. The Plus-Up portion of the program offers additional incentives ranging from $1,500 to $5,000 to individuals who live in or near disadvantaged communities and who purchase a hybrid electric vehicle (HEV), plug-in hybrid electric vehicle

[1] California Air Resources Board (2017). "Enhanced Fleet Modernization Program – Car Scrap." Retrieved from https://www.arb.ca.gov/msprog/aqip/efmp/efmp.htm

(PHEV), or battery electric vehicle (BEV).[2] These additional Plus-Up incentives are exclusively funded by California Climate Investments.

To qualify for EFMP Plus-Up, an applicant must have a household income below 400% of the federal poverty level (FPL), live in a ZIP code that includes a disadvantaged community census tract and agree to purchase an advanced technology replacement vehicle.[3] Additionally, an applicant must retire a vehicle that exceeds emission levels set by the air district in which an applicant resides.

Financial incentives vary by household income and replacement vehicle type. Depending on the vehicle type, applicants may also be eligible to supplement their EFMP Plus-Up incentive with a rebate through the Clean Vehicle Rebate Program (CVRP). To qualify for a CVRP rebate, the replacement vehicle must be new. Individuals purchasing a BEV are also eligible for an additional incentive of up to $2,000 for a charging unit within a single residence or multiunit dwelling. See **Table 8.1** for a list of eligible vehicles and financial incentive amounts.[4]

The EFMP Plus-Up program has been piloted in two regions, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVACPCD). These districts were selected because they have some of the poorest air quality in the state and have disproportionately high numbers of low-income households.

Administration

The California Air Resources Board (CARB) administers EFMP Plus-Up in partnership with the SCAQMD and SJVAPCD. Each district has adapted the program to meet the individual needs of their service area.[5] SCAQMD, for example, has used EFMP Plus-Up funds to launch the Replace Your Ride program.[6] Similarly, SJVACPCD has partnered with Valley Clean Air Now (Valley CAN) to integrate EFMP Plus-Up incentives into its Tune-In and Tune-Up program.[7]

Table 8.1. EFMP Plus-Up Incentive Amounts for New and Used Hybrids or EVs

Income Group	Funding Source	Hybrid Electric Vehicle(HEV) 20 MPG +	Hybrid Electric Vehicle (HEV) 35 MPG +	Plug-in Hybrid Electric Vehicle (PHEV)	Battery Electric Vehicle(BEV)
Low Income ≤ 225% of FPL	Plus-Up*	$2,500	$2,500	$5,000	$5,000**
	EFMP	$4,000	$4,500	$4,500	$4,500
	CVRP	N/A	N/A	$1,500***	$2,500***
	Total	**$6,500**	**$7,000**	**$11,000**	**$12,000**

Continues next page.

[2] California Air Resources Board (2015). "Making the Cleanest Cars Available." Retrieved from http://www.arb.ca.gov/newsrel/efmp_plus_up.pdf

[3] Ibid.

[4] California Air Resources Board (2017). "Enhanced Fleet Modernization Program – Car Scrap." Retrieved from https://www.arb.ca.gov/msprog/aqip/efmp/efmp.htm

[5] California Air Resources Board (2015). "California Helps Low-Income Families Afford the Cleanest Cars, Saving Them Money on Gas, Cutting Pollution, Greenhouse Gases." Retrieved from http://www.arb.ca.gov/newsrel/newsrelease.php?id=730

[6] South Coast Air Quality Management District (2016). "Replace My Car." Retrieved from https://xappprod.aqmd.gov/ryr

[7] San Joaquin Valley Air Pollution Control District 2015). "Accept And Appropriate $2,400,000 From the California Air Resources Board to Add a Vehicle Replacement Component to the District's Ongoing Tune-In Tune-Up Program." Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2015/April/final/08.pdf

Table 8.1. EFMP Plus-Up Incentive Amounts for New and Used Hybrids or EVs

Income Group	Funding Source	Hybrid Electric Vehicle(HEV) 20 MPG +	Hybrid Electric Vehicle (HEV) 35 MPG +	Plug-in Hybrid Electric Vehicle (PHEV)	Battery Electric Vehicle(BEV)
Moderate Income 226% - 300% of FPL	Plus-Up*	N/A	$1,500	$4,000	$4,000**
	EFMP	N/A	$3,500	$3,500	$3,500
	CVRP	N/A	N/A	$1,500***	$2,500***
	Total	N/A	**$5,000**	**$9,000**	**$10,000**
Above Moderate Income 301% - 400% of FPL	Plus-Up*	N/A	N/A	$3,000	$3,000**
	EFMP	N/A	N/A	$2,500	$2,500
	CVRP	N/A	N/A	$1,500	$2,500
	Total	**N/A**	**N/A**	**$7,000**	**$8,000**

* California Climate Investment dollars exclusively fund the Plus-Up portion of the EFMP program.

** Low- to above moderate-income households who purchase a BEV are also eligible for an additional incentive of up to $2,000 for a charging unit within a single residence or multiunit dwelling.

*** In November 2016, low- to moderate-income households became eligible for an additional $2,000 in rebate funding for new vehicles through CVRP (not included in the summations provided in the table).

Results

After modeling the program in IMPLAN, we estimate that appropriations for the EFMP Plus-Up program between FY 2013-14 and FY 2015-16, totaling $12 million, are supporting a total of **42 full-time equivalent (FTE) job-years** in California.[8] We estimate that once these appropriated dollars are fully spent, they will induce $30.8 million in co-investment, supporting an additional **74 FTE job-years.**[9] When modeled together, appropriated funds and induced co-investment support a total of **116 FTE job-years**.[10,11] See **Table 8.2** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[12]

Table 8.2. Direct, Indirect, and Induced Jobs Supported by EFMP Plus-Up*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	26	62%	44	60%
Indirect Jobs	2	5%	9	12%
Induced Jobs	14	32%	20	27%
Total	**42**	**100%**	**74**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

Most direct jobs supported by appropriations for EFMP Plus-Up occur in local government, which is explained by the program funds that go to air districts for administration and project management.

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] Ibid.

[10] Ibid.

[11] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[12] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

The retail industry for motor vehicles is the second most directly impacted industry, which is explained by the program funds that go to incentives for used vehicles purchased at car dealerships. Automobile manufacturing is the third most directly impacted industry, which is explained by the smaller subset of participants who use program funds to purchase new vehicles. The remaining direct jobs are supported in industries that provide transportation and trade services to automobile dealerships and manufacturers (i.e., wholesale trade, truck transportation, rail transportation, etc.). Even though most of the program funds (85%) are spent on vehicle incentives, California Climate Investment dollars support more direct jobs in local government than the other directly impacted industries because it is the most labor intensive among the group. See **Table 8.3** for a summary of the direct jobs supported by appropriations for EFMP Plus-Up.

In contrast to appropriated funds, all co-investment induced by EFMP Plus-Up goes toward the purchase of new and used vehicles. Thus, all of the direct jobs supported by induced co-investment are located in industries that sell, manufacture, or transport vehicles. See **Table 8.3** for a summary of the direct jobs supported by induced co-investment for EFMP Plus-Up.

Table 8.3. Direct Jobs Supported by EFMP Plus-Up (by Industry)[13]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment and payroll of local government, non-education	13.1	50.1%
Retail - Motor vehicle and parts dealers	11.8	45.4%
Automobile manufacturing	0.7	2.7%
Wholesale trade	0.4	1.5%
Truck transportation	0.1	0.4%
Total of All Industries	**26.1**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail - Motor vehicle and parts dealers	35.6	81.3%
Automobile manufacturing	4.9	11.3%
Wholesale trade	2.5	5.7%
Truck transportation	0.6	1.3%
Rail transportation	0.2	0.4%
Total of All Industries	**43.8**	**100%**

Methodology

In order to model EFMP Plus-Up in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of EFMP Plus-Up. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 8.4.**

[13] A summary of the indirect and induced jobs, by industry, supported by EFMP Plus-Up can be found in **Appendix 8.1**.

California Climate Investments

From FY 2013-14 through FY 2015-16, $12 million in California Climate Investment funding was allocated to EFMP Plus-Up.[14] Approximately 15% of this funding ($1.8 million) goes toward program administration and implementation in the two air districts selected to pilot the program, SCAQMD and SJVACPCD. The remaining 85% of funding ($10.2 million) is reserved for financial incentives for vehicle purchases. By November 8, 2016, a total of $4.6 million in California Climate Investment funding was spent on Plus-Up incentives for vehicle purchases.[15] It is assumed that the remaining $5.6 million in funding reserved for financial incentives will be completely spent according to its intended use.

Induced Co-investment

To purchase a vehicle through EFMP Plus-Up, participants must pay the difference between the financial incentive and the retail price of the vehicle. EFMP Plus-Up participants, therefore, are considered co-investors (with the state) in the purchase of a cleaner vehicle. By November 8, 2016, program participants had contributed a total of $13.9 million toward the purchase of their vehicles.[16] Assuming that the observed ratio between California Climate Investment funding and co-investment (1 to 3.3) will continue into the future, it is projected that the full $10.2 million in funding for financial incentives will generate $30.8 million in co-investment.

All of the funds that program participants contribute toward their vehicle purchase are considered induced by the EFMP Plus-Up incentive. In other words, we assume that without the EFMP Plus-Up incentive, program participants would have opted for the least cost alternative, which would have been to purchase a conventional vehicle or repair their trade-in vehicle. Low-income households are often constrained to go with the lowest cost option for their means of transportation, and HEVs, PHEVs, and BEVs are typically more expensive than conventional vehicles, whether they are used or new. The financial assistance provided through the Plus-Up pilot reduces the differential between advanced technology vehicles and their conventional alternatives.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employments benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by EFMP Plus-Up, funds must be tracked according to how they are spent. As discussed, EFMP Plus-Up funds are spent in two ways: (1) financial incentives for advanced technology vehicles and (2) program administration and implementation. The program also funds the purchase and installation of electric vehicle supply equipment (EVSE), but these costs have been negligible relative to the other industries involved in the program and were not distinguished in the model.

Spending on financial incentives for new advanced technology vehicles was modeled in IMPLAN as spending in "automobile manufacturing" because a new vehicle was produced for that particular purchase. There is no unique industry code in IMPLAN to distinguish the purchase of an advanced technology vehicle from a conventional vehicle that relies exclusively on fossil fuels. While advanced technology vehicles

[14] California Air Resources Board (2016). "Proposed Fiscal Year 2016-2017 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf

[15] This is the time period in which incentive data was made available by CARB. The UCLA Luskin Center for Innovation filtered the data to exclude program participants who received an EFMP incentive but not a Plus-Up incentive.

[16] Ibid.

certainly require different inputs for their engines and batteries, the gliders of each vehicle (i.e., the vehicle without the power train) are near perfect substitutes.[17] Assessing the employment impacts of substituting an electric motor in place of an internal combustion engine is outside the scope of this study. Thus, in modeling the employment benefits of EFMP Plus-Up, we implicitly assume that the manufacturing of an advanced technology vehicle will support the same amount of jobs as a conventional vehicle.

Spending on financial incentives for used advanced technology vehicle purchases, on the other hand, was modeled in IMPLAN as "retail stores - motor vehicle and parts" because a new vehicle was not being produced and instead a used vehicle was purchased from a dealership. As with new advanced technology vehicles, there is no unique industry code in IMPLAN to distinguish the purchase of a used advanced technology vehicle from a conventional vehicle that relies exclusively on fossil fuels. Assessing the employment impacts on used car dealerships in retailing advancing technology vehicles versus conventional vehicles is outside of the scope of this study.

The split between spending on new and used vehicles was based on incentive data provided by CARB. The UCLA Luskin Center for Innovation assumed that all replacement vehicles with less than 300 miles were new vehicles. See **Appendix 8.2** and **Appendix 8.3** for a breakdown of the kinds of vehicles that have been purchased through EFMP Plus-Up as of November 8, 2016.[18]

Project administration and implementation costs were modeled as "employment and payroll only (local government, non-education)" in IMPLAN because this industry represents government air districts, such as SCAQMD and SJVACPCD. According to CARB, project administration and implementation make up 15% of the state funds.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline for EFMP Plus-UP begins in 2015 and ends in 2018. The $4.6 million in funds that have been spent on incentives have occurred over the 2015 and 2016 calendar years. It is assumed that the remaining $5.6 million will occur over the following two calendar years (2017 and 2018). Funds are equally divided within each two-year period.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins. In the case of EFMP Plus-Up, pricing margins were assumed for both the purchase of used and new vehicles, since they were purchased through dealerships. Since program administration and implementation costs are primarily spent on labor, pricing margins were not applicable for these activities.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Since

[17] Hawkings, T., Singh, B., Majeau-Bettez, G., Hammer Stromman, A. (2012). "Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles." Journal of Industrial Ecology, 17(1), 158-160.
[18] Ibid.

Tesla Inc. — the only light-duty auto manufacturer with production facilities located in California — did not supply any of the new vehicles purchased, the local purchase rate for automobile manufacturing was adjusted to 0%, (i.e., all new vehicles were manufactured out of state). All used vehicles are assumed to be purchased from California-based dealerships. All local-level administrative activities are assumed to be completed by the awarded air districts, SCAQMD and SJVACPCD, which are located in the state of California.

Table 8.4. Summary of Modeling Inputs for EFMP Plus-Up

Input	Industrial Sector in IMPLAN	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
State Investment ($12 Million)	Retail Stores - Motor vehicle and parts	75.6%	2015-2018	Default (19.4%)*	100%
	Employment and payroll only (local government, non-education)	15%	2015-2018	N/A	100%
	Automobile manufacturing	9.4%	2015-2018	Default (30%)*	0%**
Induced Co-investment ($30.8 Million)	Retail Stores - Motor vehicle and parts	73.1%	2015-2018	Default (19.4%)*	100%
	Automobile manufacturing	26.9%	2015-2018	Default (30%)*	0%**

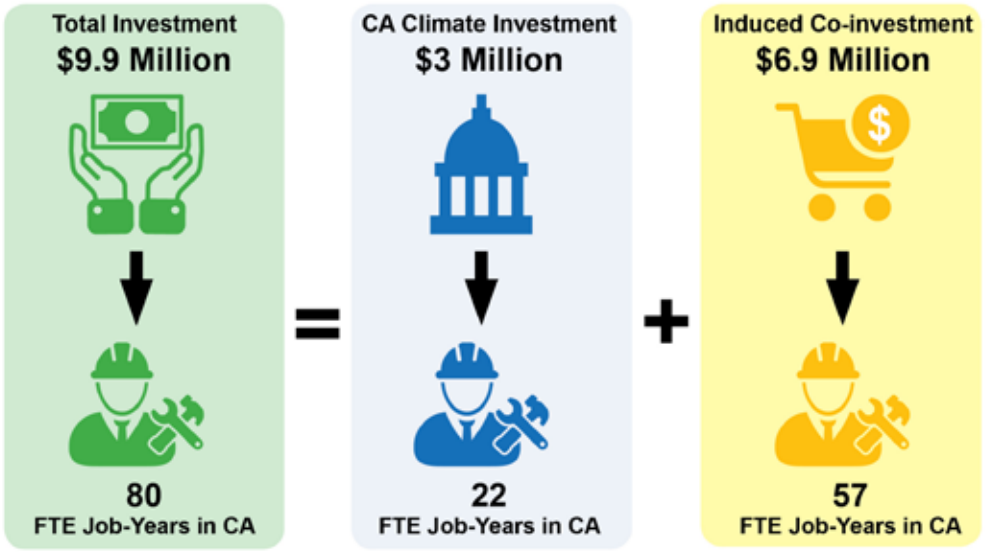
*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

** The local purchase rate of 0% only applies to the manufacturing stage of the supply chain, default local purchase rates were used for all other stages (e.g., retailer services, wholesaler services, etc.).

9. Car Sharing and Mobility Options Pilot Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Car Sharing and Mobility Options Pilot Project provides funds for the establishment of plug-in hybrid electric vehicle and zero-emissions car sharing fleets and mobility options in disadvantaged communities. The pilot is designed to result in immediate emission reduction benefits and allow residents of these communities to become familiar with advanced clean vehicle technologies without the responsibility of car ownership. The project will also gather data that could help support future larger-scale advanced technology car sharing projects.[1]

[1] California Air Resources Board (2015). "Targeted Car Sharing and Mobility Options in Disadvantaged Communities Pilot Project Fiscal Year 2014-2015 Low Carbon Transportation Investments." Retrieved from http://www.arb.ca.gov/msprog/aqip/solicitations/msc1504solicit.pdf

The following car sharing project types are consistent with the goals of the pilot and may be eligible for funding:[2]

- **Traditional Car Sharing:** A network of drivers who rent a vehicle for short amounts of time (often by the hour) from a fleet of designated vehicles. Users are preapproved to drive and may be alone or have passengers with them. Users reserve a car typically online, through a smart phone application, or via a phone call and then pick up the reserved car from a designated public location. Electric vehicle supply equipment (EVSE) is also typically located in a public environment.
- **Vanpooling:** This model is similar to carpooling, but on a larger scale. A group of users meet at a common location and travel together to a common destination. In this model, there is typically a regular driver and backup driver with a set of passengers. The van travels on a fixed route with a regular schedule appropriated by the riders.
- **Combination Car Sharing and Vanpool:** A passenger vehicle would be used to transport a group of riders to a common destination such as work, then — during what would typically be a long period of vehicle non-use — the vehicle would be open to members for use throughout the day until the vanpool return trip. Members of the car sharing portion may include just the vanpool commuters, other employees at the workplace, or other eligible members of the public in the area.
- **Ride-sharing/Carpooling:** A fleet of vehicles with set, preapproved, and trained drivers transporting members of a community to various locations upon request. This model would likely reside within a disadvantaged community with inadequate public transportation and be used for group commutes to work, school, hospitals, and errands.
- **Subsidies, Mobility, and Other Alternatives:** Innovative alternative advanced technology solutions that meet the goals of the pilot, such as subsidies for the use of an advanced technology car share project (e.g., cost of a ride, membership fees, etc.), subsidized use of public transportation, assistance for first/last-mile connections to shared transit options, and assistance for para-transit, senior communities, or other underserved groups to benefit from advanced technology car sharing.

Using FY 2014-15 funds, two projects were launched in 2015:[3]

- **Los Angeles Leading by Example (City of Los Angeles):** $1.7 million awarded to provide 100 zero-emission vehicles and 200 charging stations (five charging sites at a minimum of 40 locations) for a car sharing system in the neighborhoods of Westlake, Pico-Union, those north of the University of Southern California, and portions of the downtown, Hollywood, and Koreatown disadvantaged communities currently not served by car sharing. Commercial launch is expected at the end of summer 2017 and eventually serve over 7,000 residents.[4]
- **Our Community Car Share Sacramento (Sacramento Metropolitan Air Quality Management District):** $1.3 million awarded to provide eight electric vehicles and charging stations for a car sharing system for three Sacramento-area subsidized multiunit housing neighborhoods: Alder Grove, Edgewater, and Mutual Housing at Lemon Hill. Service began in May 2017 with a goal to provide free Zipcar Inc. memberships for 300 drivers, providing increased mobility options for up to 2,000 residents.[5]

[2] Ibid.

[3] California Air Resources Board (2016). "Summary of the Car Sharing and Mobility Options Pilot Project." Retrieved from http://www.arb.ca.gov/msprog/aqip/ldv_pilots/car_sharing_faq.pdf

[4] Los Angeles Department of Transportation (2017). "Blue LA." Retrieved from https://www.bluela.com/

[5] California Air Resources Board (2017). "Sacramento AQMD Launches State's First Vehicle Car Share Program for Disadvantaged Communities." Retrieved from https://www.arb.ca.gov/newsrel/newsrelease.php?id=917

Administration

The California Air Resources Board (CARB) oversees the administration of the Car Sharing and Mobility Options Pilot Project. CARB awarded three projects via a competitive solicitation process, however one project could not meet the requirement of being a primarily zero-emission fleet and was therefore terminated. The two pilot administrators are the City of Los Angeles and the Sacramento Metropolitan Air Quality Management District (SMAQMD).

Results

After modeling the pilot in IMPLAN, we estimate that appropriations for the Car Sharing and Mobility Options Pilot Project between FY 2013-14 and FY 2015-16, totaling $3 million, are supporting a total of **22 full-time equivalent (FTE) job-years** in California.[6] We estimate that these appropriations induced $6.9 million in co-investment, supporting and additional **56 FTE job-years.**[7] When modeled together, appropriated funds and induced co-investment support a total of **80 FTE job-years**.[8,9] See **Table 9.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[10]

Table 9.1. Direct, Indirect, and Induced Jobs Supported by the Car Sharing and Mobility Option Pilot Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	12	58%	30	54%
Indirect Jobs	3	14%	10	17%
Induced Jobs	6	28%	16	29%
Total	**22**	**100%**	**57**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The largest share of direct jobs supported by appropriations for the Car Sharing and Mobility Option Pilot Project occur in local government. These jobs are partly explained by the project funds that go to SMAQMD for project administration, outreach and education, reporting, and expansion planning. Local government jobs are also explained by the funds that reimburse the City of Los Angeles for lost parking revenue (i.e., credits for the Special Parking Revenue Fund), due to the removal of metered parking spots for car sharing vehicles.[11] Automotive equipment rental and leasing is the second most directly impacted industry, which is explained by funds that go to car share companies such as Zipcar and BlueCalifornia for startup costs and participant subsidies. The remaining direct jobs are supported by funds that go toward technical assistance (modeled in IMPLAN as "management consulting services"), advertising and outreach (modeled in IMPLAN as "advertising, public relations, and related services"), parking space conversion (modeled in IMPLAN

[6] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[7] Ibid.

[8] Ibid.

[9] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[10] See the **Methodology** chapter in Part I for definitions of direct, indirect, and induced jobs.

[11] Without detailed information on how the City of Los Angeles will spend this reimbursement, a generic local government industry code in IMPLAN was used to represent this expenditure (i.e., employment and payroll of local government, non-education).

as "maintenance and repair construction of highways, streets, bridges, and tunnels"), reservation access points (modeled in IMPLAN as "all other miscellaneous electrical equipment and component manufacturing), and retail services related to the purchase of new vehicles (modeled in IMPLAN as "retail - motor vehicle and parts dealers" and "wholesale trade"). See **Table 9.2** for a summary of the direct jobs supported by appropriations for the pilot.

Co-investment induced by the Car Sharing and Mobility Option Pilot Project supports direct jobs in a mix of industries similar to those described above. This is explained by the matching funds that the city of Los Angeles and SMAQMD put toward project implementation. See **Table 9.2** for a summary of the direct jobs supported by induced co-investment for the pilot.

Table 9.2. Direct Jobs Supported by the Car Sharing and Mobility Options Pilot Project (by Industry)[12]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment and payroll of local government, non-education	4.9	39.9%
Automotive equipment rental and leasing	3.2	26.4%
Management consulting services	1.5	12.4%
Advertising, public relations, and related services	1.4	11.6%
Maintenance and repair construction of highways, streets, bridges, and tunnels	0.5	3.9%
Retail - Motor vehicle and parts dealers	0.4	3.5%
All other miscellaneous electrical equipment and component manufacturing	0.2	1.6%
Wholesale trade	0.1	0.8%
Total of All Industries	**12.3**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment and payroll of local government, non-education	9.1	30.3%
Automotive equipment rental and leasing	7.7	25.6%
Management consulting services	5.6	18.7%
Advertising, public relations, and related services	5.5	18.3%
Maintenance and repair construction of highways, streets, bridges, and tunnels	1.8	6.1%
All other miscellaneous electrical equipment and component manufacturing	0.3	1.0%
Total of All Industries	**42**	**100%**

Methodology

In order to model the Car Sharing and Mobility Options Pilot Project in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

[12] A summary of the indirect and induced jobs, by industry, supported by the Car Sharing and Mobility Options Pilot Project can be found in **Appendix 9.1**.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the pilot. Before reading the following section, we recommend readers first review **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 9.3**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $3 million in California Climate Investment funding was allocated to the Car Sharing and Mobility Options Pilot Project.[13] All available funding was awarded to two grantees. Around $1.3 million was awarded to SMAQMD to partner with Zipcar Inc. in implementing their pilot project, and $1.7 million was awarded to the city of Los Angeles to partner with BlueCalifornia, a subsidiary of Bollorè Group, in implementing their pilot project.

Induced Co-investment

To receive an award, applicants were not required to submit matching funds, but those that did were considered positively in scoring.[14] Since both grantees committed to providing a match, they are considered co-investors (with the state) in the piloting of car sharing programs. Based on the proposed budgets submitted for the two pilot projects, grantees committed a combined total of $6.9 million toward in co-investment.

All of the funds that grantees and their project partners contribute to the program are considered induced because it is unlikely that these pilot projects would occur without state support. Car sharing projects that utilize advanced technology vehicles can be costly and require significant upfront capital investments. Without the state's financial support, it is assumed that the grantees and their project partners would have used their matching funds for other purposes.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years.

Table 9.3 summarizes the industries directly impacted by the Car Sharing and Mobility Options Pilot Project. These industry codes and their percentage share of total spending were based on the proposed budgets and work plans submitted by the two awarded projects (City of Los Angeles and SMAQMD). The budget submitted for the pilot in the City of Los Angeles did not contain a breakdown of how matching funds would be spent, so they were proportionally allocated to all of the same expenses that grant funds support. For line-item level information on how each expenditure was coded, refer to **Appendix 9.2**. Since the pilot projects have not been fully implemented, the percentage breakdown of funds allocated to each industrial sector reflect proposed, rather than final costs.

[13] California Air Resources Board (2016). "Proposed Fiscal Year 2016-17 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf

[14] California Air Resources Board (2015). "Targeted Car Sharing and Mobility Options in Disadvantaged Communities Pilot Project Fiscal Year 2014-2015 Low Carbon Transportation Investments." Retrieved from http://www.arb.ca.gov/msprog/aqip/solicitations/msc1504solicit.pdf

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline modeled for the Car Sharing and Mobility Options Pilot Project begins in 2016 and ends in 2018. Awards were announced in April 2015, but expenditures did not begin until 2016. The two pilots are expected to complete implementation in 2018. It is assumed that funds are equally spent each year between 2016 and 2018.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins.

In the case of the Car Sharing and Mobility Operations Pilot Project, pricing margins were assumed for spending on new vehicles, which are assumed to be purchased through auto dealerships. It is assumed that all other materials are purchased directly from manufacturers, so no margins were applied for manufacturing related industries (e.g., electrical equipment, broadcast and wireless communications equipment, etc.). All other spending occurs in service related industries, and since services are not purchased through third party retailers, margins were not applicable for these industries.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., the California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the pilot when sourcing information could be determined, based on project proposals. When a supplier or vendor was not known, the default rate was assumed.

Of particular note, the default rate was also assumed for all operational costs contracted out to ZipCar and BlueCalifornia (modeled in IMPLAN as spending in the "automotive equipment rental and leasing" sector). Even though these companies have affiliated offices and staff in California, each is headquartered out of state and assessing what share of each company's activities occurs in state was outside the scope of this study. Additionally, since none of the shared vehicles are purchased from Tesla Inc. — the only light-duty auto manufacturer with production facilities located in California — the default local purchase rate for spending in the "automobile manufacturing" sector in IMPLAN was set to 0% at the manufacturing stage of the supply chain. However, the default rate was utilized at the wholesale and retail stages of the supply chain for this sector, thus capturing economic activity at local dealerships, even though the cars were manufactured out of state. For line-item level sourcing information, refer to **Appendix 9.2.**

Table 9.3. Summary of Modeling Inputs for the Car Sharing and Mobility Options Pilot Project

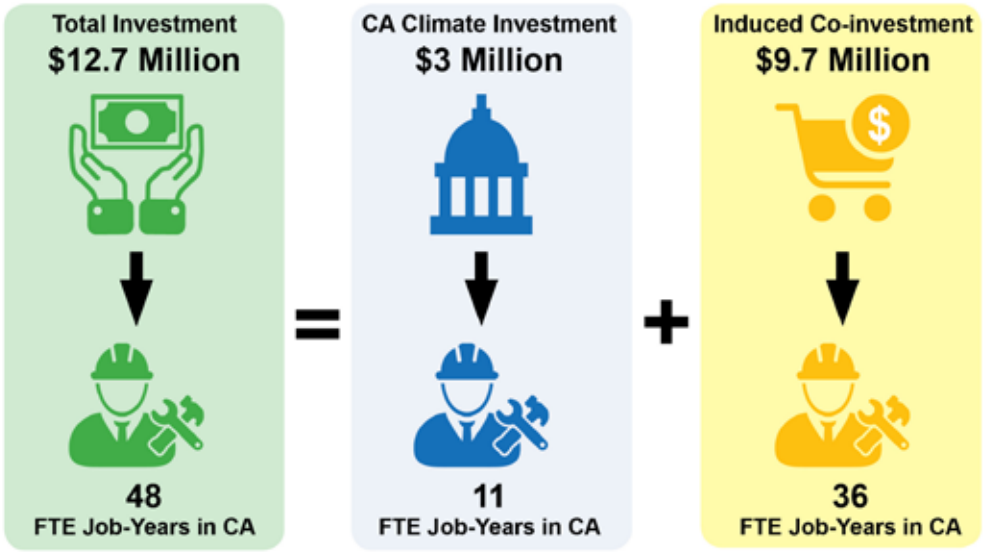
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($3 Million)	Automotive equipment rental and leasing	32%	2016-2018	N/A	Default (88.82%)
	Employment and payroll only (local government, non-education)	22.5%	2016-2018	N/A	100%
	Advertising and related services	13.8%	2016-2018	N/A	Default (98.28%)
	Automobile manufacturing	11.9%	2016-2018	Default (30%)*	0%
	All other miscellaneous electrical equipment and component manufacturing	7.8%	2016-2018	None	Default (21.7%)
	Management consulting services	7.2%	2016-2018	N/A	100%
	Maintenance and repair construction of highways, streets, bridges, and tunnels	3.5%	2016-2018	N/A	Default (82.7%)
	Broadcast and wireless communications equipment manufacturing	1.3%	2016-2018	None	Default (0.8%)
Induced Co-investment ($6.9 Million)	Automotive equipment rental and leasing	33.4%	2016-2018	N/A	Default (88.8%)
	Advertising and related services	23.4%	2016-2018	N/A	Default (98.3%)
	Employment and payroll only (local government, non-education)	14.1%	2016-2018	N/A	100%
	Management consulting services	12.2%	2016-2018	N/A	100%
	All other miscellaneous electrical equipment and component manufacturing	6.5%	2016-2018	None	Default (21.7%)
	Maintenance and repair construction of highways, streets, bridges, and tunnels	5.9%	2016-2018	N/A	Default (82.7%)
	Real estate establishments	0.1%	2016-2018	N/A	Default (100%)

* These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

10. Public Fleet Pilot Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Public Fleet Pilot Project provides rebates for purchased plug-in hybrid electric vehicles, battery electric vehicles, and fuel-cell vehicles for public fleets that operate in and near disadvantaged communities. The program is administered in parallel with the Clean Vehicle Rebate Program (CVRP) and provides increased incentives to public entities within the state of California. Non-California public entities that have offices in California (e.g., federal, tribal, international) are not eligible to participate in the incentive program.[1]

Public fleets are not eligible for federal tax credits, which greatly reduce the higher cost associated with advanced technology vehicles. As a result, local and state government fleets make up a very small number of the CVRP rebate pool. This program seeks to reduce the financial barriers that public agencies face in acquiring electric vehicles, particularly in disadvantaged communities where residents are disproportionately impacted by pollution and socioeconomic burdens.

[1] California Air Resources Board (2017). "Public Fleet Pilot Project." Retrieved from https://cleanvehiclerebate.org/eng/pfp

The pilot project offers rebates up to $5,250 for the purchase of a plug-in hybrid electric vehicle, up to $10,000 for a battery electric vehicle, and up to $15,000 for fuel cell electric vehicles. All vehicles incentivized through the Public Fleet Pilot Project must be domiciled in a ZIP code containing a designated disadvantaged community census tract. Each public entity is eligible for 30 rebates per year. The Public Fleet Pilot Project cannot be combined with a standard CVRP rebate, but can be combined with other federal, state, or local agency incentives.[2]

The California Climate Investment funds allocated to the Public Fleet Pilot Project between FY 2013-14 and FY 2015-16 have funded 374 vouchers to fleet operators. Most of the vehicles purchased through pilot program vouchers have been plug-in hybrid electric vehicles (56.7%), followed by battery electric vehicles (42.2%), and fuel-cell vehicles (1.1%).[3] See **Appendix 10.2** for a breakdown of the types of vehicles that have been purchased through the Public Fleet Pilot Project during the study period.

Administration

The California Air Resources Board (CARB) administers the Public Fleet Pilot Project in partnership with the nonprofit Center for Sustainable Energy (CSE). CARB provides program oversight, while CSE is tasked with administration, providing outreach and technical assistance to public agencies operating in disadvantaged communities, and processing all of the rebate applications.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Public Fleet Pilot Project between FY 2013-14 and FY 2015-16, totaling $3 million, are supporting a total of **11 full-time equivalent (FTE) job-years** in California.[4] We estimate that once these appropriated dollars are fully spent, they will induce $9.3 million in co-investment, supporting an additional **36 FTE job-years.**[5] When modeled together, appropriated funds and induced co-investment support a total of **48 FTE job-years**.[6,7] See **Table 10.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[8]

Table 10.1. Direct, Indirect, and Induced Jobs Supported by the Public Fleet Pilot Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	Percent of Total	FTE Job-Years	Percent of Total
Direct Jobs	7	70%	21	60%
Indirect Jobs	1	9%	4	12%
Induced Jobs	2	21%	10	28%
Total	**11**	**100%**	**36**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

[2] Ibid.
[3] Incentive data was provided by Center for Sustainable Energy (CSE) on March 29, 2017.
[4] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.
[5] Ibid.
[6] Ibid.
[7] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.
[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

The majority of direct jobs supported by California Climate Investment funding are located in the automobile industry, such as retail services for motor vehicles and automobile manufacturing. The remaining direct jobs are located in industries that provide transportation and trade services to automobile dealerships (i.e., truck transportation, rail transportation, wholesale trade), as well as program administration (i.e., management consulting services). Induced co-investment supports jobs in a similar mix of industries, excluding management consulting services because induced co-investment is not spent on program administration. See **Table 10.2** for a summary of the direct jobs supported by the Public Fleet Pilot Project.

Table 10.2. Direct Jobs Supported by the Public Fleet Pilot Project (by Industry)[9]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail - Motor vehicle and parts dealers	3.4	51.8%
Automobile manufacturing	1.2	17.9%
Wholesale trade	0.9	13.1%
Management consulting services	0.9	12.9%
Truck transportation	0.2	2.8%
Rail transportation	0.1	1.4%
Total of All Industries	**6.6**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail - Motor vehicle and parts dealers	11.6	55.0%
Automobile manufacturing	5.6	26.8%
Wholesale trade	3.1	14.2%
Truck transportation	0.7	3.1%
Rail transportation	0.2	0.9%
Total of All Industries	**21**	**100%**

Methodology

In order to model the Public Fleet Pilot Project in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the project. Before reading the following section, we recommend readers first review **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 10.3.**

[9] A summary of the indirect and induced jobs by industry, supported by the Public Fleet Pilot Project can be found in **Appendix 10.1**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $3 million in California Climate Investment funding was allocated to the Public Fleet Pilot Project. Approximately 4.1% of the funding ($123,000) went to CSE for program administration and implementation, as well as targeted outreach and technical assistance for public agencies operating in disadvantaged communities. The remaining 95.9% of funding ($2.9 million) is reserved for financial incentives for advanced technology vehicles. As of March 29, 2017, 95.7% of available funding for incentives was exhausted ($2.8 million).[10] The leftover funding for vehicle incentives was primarily due to reservations that were canceled after the program stopped accepting new applications. These funds will be rolled over into the next fiscal year, but are analyzed here for their employment benefits. It is assumed that the $124,000 in leftover funds will be spent on the same mix of vehicles that have been historically purchased through the program.

Induced Co-investment

To receive a voucher through the Public Fleet Pilot Project, fleet operators must pay the difference between the financial incentive and the retail price of the vehicle. Participants in the pilot are therefore considered co-investors (with the state) in the purchase of an advanced technology vehicle. Based on the mix of vehicles that have been purchased using incentive funds from FY 2013-14 through FY 2015-16, a total of $9.3 million has been co-invested in the program (see **Appendix 10.2** for a summary co-investment by model and vehicle type). Assuming that the observed ratio between state funded incentives and co-investment (1 to 3.4) will continue into the future, it is projected that the full $2.9 million in California Climate Investment funding for financial incentives will generate $9.7 million in co-investment.

All of the funds that public fleet operators contribute are considered induced because it is unlikely that these fleet operators would purchase an advanced technology vehicle without the state's financial support. This assessment is based on two key characteristics of public purchasing practices. First, public agencies are often constrained to go with the lowest-cost option. The financial incentives compensate for the price differential between an electric vehicle and a conventional vehicle. Second, since electric vehicle are not widely adopted technologies, there are more perceived risks in adopting them (e.g., access to charging, access to hydrogen refueling infrastructure, qualified mechanics, spare parts, etc.). To address these perceived risks, CSE conducted targeted outreach to public agencies to raise their awareness of the program, and provided technical assistance to help public agencies assess electric vehicle replacement suitability in the disadvantaged communities in which they work. The increased incentives and outreach efforts contributed to total public agency rebate applications nearly tripling from 2014 to 2015.[11] In summary, without the incentives provided through this program, it is assumed that public fleet operators would have purchased conventional vehicles that rely exclusively on fossil fuels, or spent their funds on an entirely different set of economic activities.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Public Fleet Pilot Project, funds must be tracked according to how they are spent. As discussed, funds for the pilot project are spent in three ways: (1) program administration and

[10] This is the time period in which data was made available to the UCLA Luskin Center for Innovation.

[11] Center for Sustainable Energy (2017). "Program Deploys Hundreds of Electric Vehicles in Disadvantaged Communities." Retrieved from https://energycenter.org/blog/program-deploys-hundreds-electric-vehicles-disadvantaged-communities

implementation; (2) targeted outreach and technical assistance; and (3) financial incentives for advanced technology vehicles.

Program administration and target outreach and technical assistance were modeled as "management consulting services" in IMPLAN because this industry includes technical assistance providers, such as CSE, that help with marketing, data collection, and reporting. Advanced technology vehicle purchases were modeled in IMPLAN as spending in "automobile manufacturing" because this industry represents the manufacture of all light-duty vehicles. There is no unique industry code in IMPLAN to distinguish the purchase of an advanced technology vehicle from a conventional vehicle that relies exclusively on fossil fuels. While advanced technology vehicles certainly require different inputs for their engines and batteries, the gliders of each vehicle (i.e., the vehicle without the power train) are near perfect substitutes.[12] Assessing the employment impacts of substituting an electric motor in place of an internal combustion engine is outside the scope of this study. Thus, in modeling the employment benefits of the Public Fleet Pilot Project, we implicitly assume that the manufacturing of an advanced technology vehicle will support the same amount of jobs as a conventional vehicle.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending timeline modeled for the Public Fleet Pilot Project is based on actual voucher data maintained by CSE. In 2014, $0.9 million in vouchers were distributed to public fleet operators, followed by $1.1 million in 2015, and $0.8 million in 2016. Leftover funds are modeled in 2017. The spending timeline for induced co-investment is based upon this same data.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions for pricing margins. In the case of the Public Fleet Pilot Project, pricing margins were assumed for the purchase of all vehicles, since they were purchased through dealerships. Since management consulting services costs are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Since Tesla Inc. is the only light-duty automobile manufacturer with production facilities located in California, and did not account for any of the vehicle sales through the Public Fleet Pilot Project, the local purchase rate was adjusted to 0% at the manufacturing stage of the supply chain when modeling expenditures in the automobile manufacturing sector. However, the default local purchasing rate was utilized at the wholesale and retail stages (100% for each stage), thus capturing economic activity at local dealerships, even if the cars were manufactured out of state. All administration, outreach, and technical assistance related activities are completed by CSE, which is located in San Diego, California.

[12] Hawkings, T., Singh, B., Majeau-Bettez, G., Hammer Stromman, A. (2012). "Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles." Journal of Industrial Ecology, 17(1), 158-160.

Table 10.3. Summary of Modeling Inputs for the Public Fleet Pilot Project

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($3 Million)	Automobile manufacturing	95.9%	2014-2016	Default (30%)*	0%**
	Management consulting services	4.1%	2014-2016	N/A	100%
Induced Co-investment ($9.7 Million)	Automobile manufacturing	100%	2014-2016	Default (30%)*	0%**

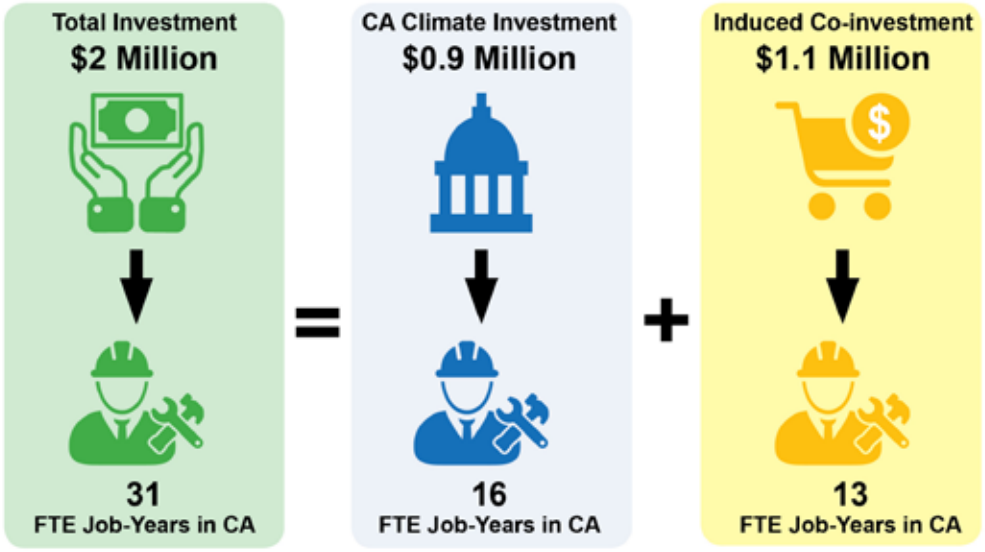
*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

**The local purchase rate of 0% only applies to the manufacturing stage of the supply chain, default local purchase rates were used for all other stages (e.g., retailer services, wholesaler services, etc.).

11. Financing Assistance Pilot Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Financing Assistance Pilot Project provides funding to lending institutions, auto dealerships, community groups, and other organizations that help low-income individuals in disadvantaged communities finance the cost of a cleaner vehicle (new or used), including hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), and fuel-cell electric vehicles (FCEVs). Even with incentives like rebates and tax credits, the cost of financing a car is prohibitively expensive for many low-income consumers. To address this issue, this project seeks to improve the availability of low-interest loans and lines of credit for low-income consumers interested in purchasing or leasing an advanced technology vehicle.

As a pilot project, innovation is encouraged, and applicants are permitted to propose any number of financing mechanisms, so long as they are consistent with the goals of the pilot project, as described above.

If lending directly to consumers, the maximum interest rate a lender may charge is 15% annually.[1] Example projects include, but are not limited to, the following financing models[2]:

- **Direct Consumer Loans:** A new loan program at a lending institution that is specifically dedicated to assisting lower income individuals living in disadvantaged communities obtain funds for the purchase or lease of advanced technology vehicles.
- **Price Buy-Down Assistance:** A program that assists with offsetting the difference in additional costs that a lower-income consumer would incur when purchasing an advanced technology vehicle instead of a conventional vehicle. For a hybrid electric vehicle, new or used, the maximum buy-down amount is $2,500. For a PHEV or zero-emission vehicle, the maximum buy-down amount is $5,000.
- **Loan Loss Reserves:** A program at a lending institution in which funds are set aside to cover loan losses. The lender is liable for any defaults on loans that it enrolls, but all or a portion of those losses are reimbursable through a loan loss reserve account, which is funded by a percentage of the initial loan amount of each enrolled advanced technology vehicle loan.

All pilot projects must serve individuals who have a household income less than or equal to 400% of the federal poverty level, and reside in a ZIP code containing a disadvantaged community census tract. Financing assistance can be used in tandem with Clean Vehicle Rebate Project rebates and/or Enhanced Fleet Modernization Program Plus-Up incentives to further bring down costs for low-income consumers.[3]

Since the launch of the pilot, one project has been implemented in partnership with the Community Housing Development Corporation (CHDC) in Richmond, California. CHDC provides services to enable low- to moderate-income residents to secure better housing and financial stability, and establish car ownership.[4] The project serves residents in disadvantaged communities located in six Bay Area counties (Alameda, Contra Costa, San Francisco, Santa Clara, Santa Cruz, and Solano).[5] The project provides loans of up to $8,000, and grants of up to $5,000 for financing new and used HEVs, PHEVs, BEVs, and FCEVs.[6]

During the first five quarters of the CHDC's pilot, a total of 11 vehicles had been financed through the project, including seven HEVs, three BEVs, and one PHEV.[7] Only 13% of the funds that CHDC has budgeted for price-downs has been spent, so significantly more vehicles are expected to be purchased in the remaining two years of the project's implementation. See **Appendix 11.1** for more details on the types of vehicles that have been purchased through the Financing Assistance Pilot Project during the study period.

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[1] California Air Resources Board (2015). "Light-Duty Financing Assistance in Disadvantaged Communities Pilot Project Fiscal Year 2014-15 Low Carbon Transportation Investments." Retrieved from https://www.arb.ca.gov/msprog/mailouts/msc1507/msc1507attach1.pdf

[2] Ibid.

[3] Ibid.

[4] Community Housing Development Corporation (2016). "Community Housing Development Corporation Pilots New Light-Duty Financing Assistance Program in Targeted Markets." Retrieved from https://drivingcleandotchdcnrdotcom.files.wordpress.com/2016/01/final-january-21-2016-chdc_fapp_press-releases-and-media-advisories-arb_pio1.pdf

[5] Community Housing Development Corporation (2016). "Cap-and-Trade money to support clean cars for low-income families in Bay Area." Retrieved from https://drivingcleandotchdcnrdotcom.files.wordpress.com/2016/01/final-january-14-2016-chdc_fapp_press-releases-and-media-advisories-arb_pio1.pdf

[6] Community Housing Development Corporation. "Moving Communities Toward a Green Future." Retrieved from https://drivingclean.chdcnr.com/

[7] This is the time period in which data was made available to the UCLA Luskin Center for Innovation.

Administration

The California Air Resources Board (CARB) administers the Financing Assistance Pilot Project. The pilot projects will be implemented in partnership with selected grantees, once chosen. The solicitation for pilot projects was open to federal, state, or local government entities, nonprofit organizations, and organizations or companies with expertise implementing financial assistance programs, grant programs, or community outreach and education programs.[8]

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Financing Assistance Pilot Project between FY 2013-14 and FY 2015-16, totaling $0.9 million, are supporting a total of **16 full-time equivalent (FTE) job-years** in California.[9] We estimate that once these appropriated dollars are fully spent, they will induce $1.1 million in co-investment, supporting an additional **13 FTE job-years**.[10] When modeled together, appropriated funds and induced co-investment support a total of **31 FTE job-years**.[11,12] See **Table 11.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[13]

Table 11.1. Direct, Indirect, and Induced Jobs Supported by the Financing Assistance Pilot Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	13.4	89%	11.5	90%
Indirect Jobs	0.6	4%	0.4	3%
Induced Jobs	1.1	7%	0.9	7%
Total	**15.7**	**100%**	**13.3**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by appropriations for the Financing Assistance Pilot Project occur in the individual and family services sector. These jobs are explained by funds that go toward administration and implementation, which to date, have been conducted by CHDC (modeled as "individual and family services" in IMPLAN). The remaining direct jobs are supported by the funds that go to dealerships for used car purchases (modeled in IMPLAN as "retail stores - motor vehicle and parts"), payments to lenders to cover any potential costs associated with defaulted loans (modeled in IMPLAN as "monetary authorities and depository credit intermediation"), the purchase of electric vehicle supply equipment (modeled in IMPLAN as "all other miscellaneous electrical equipment and component manufacturing"), office equipment for CHDC (modeled in IMPLAN as "retail - electronics and appliance stores"), and marketing expenses (modeled in IMPLAN as "advertising and related services"). See **Table 11.2** for a summary of the direct jobs

[8] California Air Resources Board (2015). "Light-Duty Financing Assistance in Disadvantaged Communities Pilot Project Fiscal Year 2014-15 Low Carbon Transportation Investments." Retrieved from https://www.arb.ca.gov/msprog/mailouts/msc1507/msc1507attach1.pdf

[9] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[10] Ibid.

[11] Ibid.

[12] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[13] See the **Methodology** chapter in Part I for definitions of direct, indirect, and induced jobs.

supported by appropriations for the Financing Assistance Pilot Project.

Co-investment induced by the Financing Assistance Pilot Project supports direct jobs in a similar mix of industries to those described above. This is explained by the matching funds that CHDC puts toward administration, and the matching funds that participants put toward vehicle purchases. See **Table 11.2** for a summary of the direct jobs supported by induced co-investment for the project.

Table 11.2. Direct Jobs Supported by the Financing Assistance Pilot Project (by Industry)[14]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Individual and family services	12.4	92.6%
Retail - Motor vehicle and parts dealers	0.3	2.6%
Monetary authorities and depository credit intermediation	0.3	2.2%
Retail - Electronics and appliance stores	0.3	1.9%
All other miscellaneous electrical equipment and component manufacturing	0.1	0.7%
Total of All Industries	**13.4**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Individual and family services	10.8	93.1%
Retail - Motor vehicle and parts dealers	0.7	6.1%
Monetary authorities and depository credit intermediation	0.1	0.8%
Total of All Industries	**11.5**	**100%**

Methodology

In order to model the Financing Assistance Pilot Project in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending timeline of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the pilot project. Before reading the following section, we recommend readers first review **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 11.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, a total of $932,000 in California Climate Investment funding was allocated to the Financing Assistance Pilot Project.[15] With this funding, a $932,000 grant was awarded to CHDC.

[14] A summary of the indirect and induced jobs by industry, supported by the Financing Assistance Pilot Project can be found in Appendix 11.1.

[15] CARB (Personal Communication, May 4, 2017).

Induced Co-investment

To purchase a vehicle through the Financing Assistance Pilot Project, participants must pay the difference between the buy-down amount provided by CHDC and the retail price of the vehicle. While CHDC provides low-cost loans to participants for their out-of-pocket expenses, participants must ultimately pay these loans back, and are therefore considered co-investors (with the state) in the purchase of a cleaner vehicle. By February 28, 2017, CHDC had provided a total of $37,500 in buy-down assistance to project participants, and over the course of repaying their loan, participants will have contributed a total of $79,000 toward the purchase of their replacement vehicles.[16] Assuming CHDC spends all of the funds that it has budgeted for buy-down assistance ($300,000), and that the observed ratio between state assistance and participant co-investment (1 to 2.1) will continue into the future, it is projected that CHDC's pilot project will generate $632,000 in co-investment from participants.

All of the funds that project participants contribute toward their vehicle purchase are considered induced because it is unlikely that these participants would purchase a BEV, PHEV, or HEV without the state's financial support. Low-income households are often constrained to go with the lowest-cost option for their means of transportation, and BEVs, PHEVs, and HEVs are typically more expensive than conventional vehicles. The financial assistance provided through the pilot project reduces the differential between these cleaner vehicles and a conventional vehicle. Without the financial assistance provided through this pilot project, it is assumed that project participants would have purchased a conventional vehicle.

In addition to participant co-investment, the Financing Assistance Pilot Project also generates co-investment from grantees. While no matching funds were required for a successful grant application, CHDC has committed $426,800 in matching funds (35.8% of the total project cost). All of the matching funds that grantees contribute are considered induced because it is unlikely that the pilot project would be launched without state support. Providing loans involves financial risk for a community benefit organization (CBO), and the pilot project helps mitigate that risk by providing CBOs with funds for loan loss reserve accounts.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall job employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 11.3** summarizes the industrial sectors directly impacted by the Financing Assistance Pilot Project. These industry codes and their percentage share of total spending were based on the proposed budget submitted by CHDC. Since the pilot project has not been fully implemented, the percentage breakdown of funds allocated to each industrial sector reflect proposed costs, rather than final costs.

Most of the grant funds go toward administration, outreach, and financial counseling services, all of which were modeled as "individual and family services" in IMPLAN. The "individual and family services" sector represents community action services agencies and multipurpose social services centers, such as CHDC, that provide social assistance services to individuals and families. Price buy-down assistance is the second greatest expense, and was modeled in IMPLAN as spending in "retail stores - motor vehicle and parts" because this sector represents used car dealerships (all project participants purchased used vehicles during the study period). Borrower incentives for timely loan repayments were also modeled as spending in "retail stores - motor vehicle and parts" because borrower incentives come in the form of coupons related to vehicle maintenance. The remaining project funds go to lenders to cover potential costs associated with

[16] This is the time period in which data was made available to the UCLA Luskin Center for Innovation.

defaulted loans (modeled in IMPLAN as "monetary authorities and depository credit intermediation"), electric vehicle supply equipment for borrowers who purchase a PHEV or BEV (modeled in IMPLAN as "all other miscellaneous electrical equipment and component manufacturing"), marketing expenses (modeled in IMPLAN as "advertising and related services"), office equipment (modeled in IMPLAN as "retail - electronics and appliance stores"), and credit report fees for borrowers (modeled in IMPLAN as "business support services"). For line-item level information on how each expenditure was coded, refer to **Appendix 11.2**.

Induced co-investment from CHDC goes toward a similar mix of industries as those discussed above. In contrast, all of the induced co-investment from project participants goes toward the cost of acquiring a vehicle, which was modeled in IMPLAN as "retail stores - motor vehicle and parts" because all of the vehicles have been used.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. According to the solicitation for the Financing Assistance Pilot Project, funds must be expended three years after the grant agreement is signed.[17] CHDC signed a grant agreement with CARB to administer the Light-Duty Financing Assistance in Disadvantaged Communities Pilot Project on November 4, 2015, so funds are assumed to be completely expended by November 4, 2018.[18] CHDC did not begin providing financing assistance until 2016, so funds are assumed to be spent evenly in 2016, 2017, and 2018.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

Pricing margins were assumed for the purchase of all used vehicles, since they were purchased through dealerships (coded in IMPLAN as "retail stores - motor vehicle and parts"). Similarly, pricing margins were assumed for the purchase of electric vehicle supply equipment (coded in IMPLAN as "other miscellaneous electrical equipment and component manufacturing") and office equipment for CHDC (coded in IMPLAN as "retail stores - electronics and appliances").

Since individual and family services are not purchased through a retailer, pricing margins were not applicable for this sector in IMPLAN. Similarly, pricing margins were not applicable to monetary authorities and depository credit intermediation activities (i.e., lenders), business support services (i.e., credit reporting bureaus), or any other service-related industries (i.e., printing shops, phone companies, mail service providers, etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each

[17] California Air Resources Board (2015). "Light-Duty Financing Assistance in Disadvantaged Communities Pilot Project Fiscal Year 2014-15 Low Carbon Transportation Investments." Retrieved from https://www.arb.ca.gov/msprog/mailouts/msc1507/msc1507attach1.pdf

[18] Community Housing Development Corporation (2016). "Cap-and-Trade money to support clean cars for low-income families in Bay Area." Retrieved from https://drivingcleandotchdcnrdotcom.files.wordpress.com/2016/01/final-january-14-2016-chdc_fapp_press-releases-and-media-advisories-arb_pio1.pdf

industry, so the user needs to adjust this percentage only when there is an exception to the norm. All used vehicles are assumed to be purchased from California-based dealerships (i.e., 100% local purchase rate). All administration, outreach, and financial counseling related activities for the initial pilot project are completed by CHDC, which is located in Richmond, California (i.e., 100% local purchase rate). The default local purchase rate was used for all expenses in which the vendor as not known.

Table 11.3. Summary of Modeling Inputs for the Financing Assistance Pilot Project

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($932,000)	Individual and family services	44.9%	2016-2018	N/A	100%
	Retail stores - Motor vehicle and parts	32.4%	2016-2018	Default (19.4%)*	100%
	Monetary authorities and depository credit intermediation activities	11.8%	2016-2018	N/A	Default (79.6%)
	Other miscellaneous electrical equipment and component manufacturing	8.0%	2016-2018	Default (52.4%)*	Default (21.7%)
	Advertising and related services	1.1%	2016-2018	N/A	Default (98.3%)
	Retail stores - Electronics and app	0.7%	2016-2018	Default (29.9%)*	Default (99.7%)
	Printing	0.4%	2016-2018	N/A	Default (51.7 %)
	Retail stores - Miscellaneous	0.3%	2016-2018	Default (47.2%)*	Default (99.7%)
	Wired telecommunications carriers	0.2%	2016-2018	N/A	Default (93.9%)
	Postal service	0.2%	2016-2018	N/A	Default (90.2%)
	Business support services	0.1%	2016-2018	N/A	Default (66.6%)
Induced Co-investment From Grantee ($427,000)	Individual and family services	84.8%	2016-2018	N/A	100%
	Monetary authorities and depository credit intermediation activities	11.7%	2016-2018	N/A	Default (79.6%)
	Retail stores - Electronics and appliances	1.5%	2016-2018	Default (29.9%)*	Default (99.7%)
	Advertising and related services	1.1%	2016-2018	N/A	Default (98.3%)
	Printing	0.3%	2016-2018	N/A	Default (51.7%)
	Retail stores - Motor vehicle and parts	0.2%	2016-2018	Default (19.4%)*	100%

Continues next page.

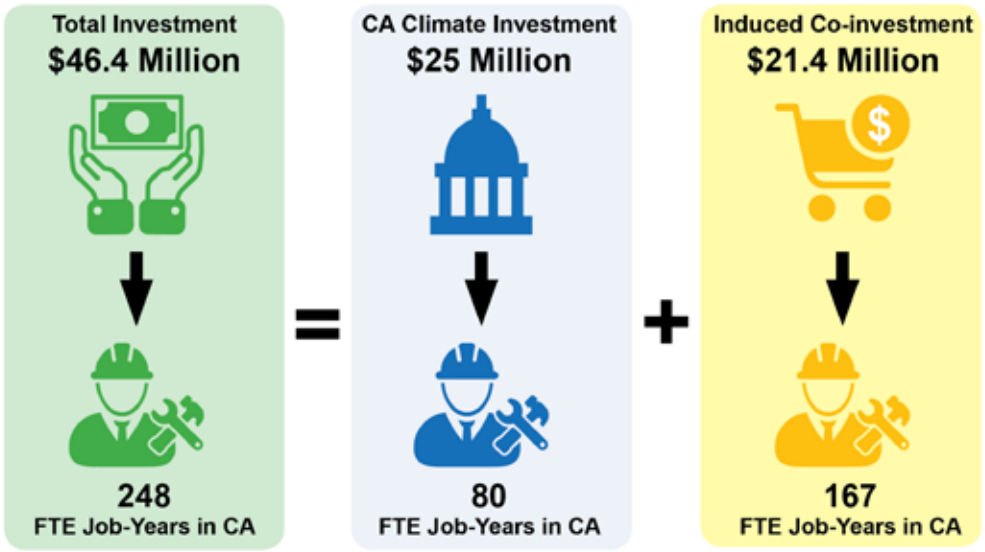
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
Induced Co-investment From Grantee ($427,000)	Retail stores - Miscellaneous	0.2%	2016-2018	Default (47.2%)*	Default (99.7%)
	Postal service	0.1%	2016-2018	N/A	Default (90.2%)
	Wired telecommunications carriers	0.1%	2016-2018	N/A	Default (93.9%)
	Business support services	0.1%	2016-2018	N/A	Default (66.6%)
Induced Co-investment From Participants ($632,000)	Retail stores - Motor vehicle and parts	100%	2016-2018	Default (19.4%)*	100%

*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

12. Zero-Emission Truck and Bus Pilot Projects

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

Zero-Emission Truck and Bus Pilot Projects provided competitive grants to truck and bus operators to replace or expand their fleets with commercially available zero-emission vehicles and place them in strategic hubs. The program was intended to address the challenges facing widespread commercialization of available medium- and heavy-duty zero-emissions vehicles (i.e., economies of scale production, workforce training, vehicle maintenance and repair, and refueling infrastructure).

The hub concept was central to the design of the program. Zero-emission truck and bus hubs bring down per-vehicle costs by maximizing the use of shared infrastructure, mechanics, spare parts, workforce training, and marketing services across a large vehicle fleet. Organizations that are well-suited to benefit from zero-emission truck and bus hubs include transit agencies, school districts, shuttle operators, and companies that offer delivery and hauling services.

To qualify, the lead applicant must have been a local air district, transit agency, school district, or some other California-based public entity or nonprofit organization. Private sector parties, such as delivery or hauling service providers, must partner with a qualifying applicant in order submit a proposal. While the grant program focused primarily on deploying zero-emission technologies like battery electric and fuel-cell electric vehicles, the program was also open to near zero-emission vehicles with the capability to operate in zero-emission only mode (i.e., plug-in hybrid electric vehicles). Near zero-emission vehicles were required to operate in zero-emission mode while in a disadvantaged community census tract or ZIP code.[1]

Successful applicants could use funds for a variety of activities, including the purchase of trucks and buses, refueling infrastructure, facility upgrades, operation and maintenance, and workforce training. With respect to bus projects, at least half of the funding must have gone toward projects located within disadvantaged communities. With respect to truck projects, at least half of the funding must have gone toward projects that benefit disadvantaged communities.[2]

During the study period, a total of $23.7 million in funds was awarded to three projects. The projects include the purchase of battery electric transit buses and transit facility upgrades in the City of Porterville, the deployment of battery electric transit buses and fast-chargers along transit routes in the San Joaquin Valley, and the purchase of fuel-cell electric buses and hydrogen refueling infrastructure in Thousand Palms.[3,4]

Administration

The California Air Resources Board (CARB) administers the Zero-Emission Truck and Bus Pilot Projects. Selected grantees are responsible for implementation. The grantee must demonstrate expertise implementing advanced technology transportation projects and providing administration and oversight.[5]

Results

After modeling the program in IMPLAN, we estimate that appropriations for Zero-Emission Truck and Bus Pilot Projects between FY 2013-14 and FY 2015-16, totaling $25 million, are supporting a total of **80 full-time equivalent (FTE) job-years** in California.[6] We estimate that these appropriations induced $21.4 million in co-investment, supporting an additional **167 FTE job-years**.[7] When modeled together, appropriated funds and induced co-investment support a total of **248 FTE job-years**.[8,9] See **Table 12.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[10]

[1] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

[2] Ibid.

[3] California Air Resources Board (2016). "Zero-Emission Truck and Bus Pilot Commercial Deployment Project Selections." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/zetbpilot_prelim_selections.pdf

[4] California Air Resources Board (2016). "Zero-Emission Truck and Bus Pilot Commercial Deployment Project Applications." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/tbpilotsumms.pdf

[5] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

[6] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[7] Ibid.

[8] Ibid.

[9] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[10] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 12.1. Direct, Indirect, and Induced Jobs Supported by Zero-Emission Truck and Bus Pilot Projects*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	33	42%	101	61%
Indirect Jobs	24	30%	33	20%
Induced Jobs	22	28%	32	19%
Total	**80**	**100%**	**167**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The largest share of direct jobs supported by appropriated funds for the pilot projects occur in the heavy-duty truck manufacturing sector, an industry which broadly includes the manufacture of heavy-duty motor vehicles, including buses. The construction of new power and communication structures is the second most directly impacted industry, which is explained by grant funds that go toward the construction of electric charging and hydrogen refueling infrastructure. The remaining direct jobs occur in industries that support the administration of project grants (i.e., local government, state government, and management consulting services), as well as vehicle inspections (i.e., transit and ground passenger transportation). See **Table 12.2** for a summary of the direct jobs supported by appropriations for the pilot projects.

Co-investment induced by the pilot projects supports direct jobs in a similar mix of industries to those described above. However, far more jobs are supported in the transit and ground passenger transportation sector, which is explained by the significant co-investment that goes to transit agencies for operational costs (e.g., transit mechanics, bus operators, project managers, etc.). Additionally, some co-investment goes toward the procurement of renewable energy for producing hydrogen fuel, supporting jobs in the solar power sector. See **Table 12.2** for a summary of the direct jobs supported by induced co-investment for the pilot projects.

Table 12.2. Direct Jobs Supported by Zero-Emission Truck and Bus Pilot Projects (by Industry)[11]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Heavy-duty truck manufacturing	13.6	41.2%
Construction of new power and communication structures	6.2	19.0%
Employment and payroll of local government, non-education	5.5	16.7%
Management consulting services	4.8	14.7%
Employment and payroll of state government, non-education	2.6	7.8%
Transit and ground passenger transportation	0.2	0.6%
Total of All Industries	**32.9**	**100%**

Continues next page.

[11] A summary of the indirect and induced jobs by industry, supported by Zero-Emission Truck and Bus Pilot Projects can be found in **Appendix 12.1**.

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Transit and ground passenger transportation	81.4	80.8%
Construction of new power and communication structures	9.1	9.0%
Heavy-duty truck manufacturing	8.8	8.7%
Electric power generation - Solar	1.5	1.5%
Total of All Industries	**100.8**	**100%**

Methodology

In order to model Zero-Emission Truck and Bus Pilot Projects in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the pilot projects. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 12.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $25 million in California Climate Investment funding was allocated to Zero-Emission Truck and Bus Pilot Projects.[12] Of this funding, around $23.7 million was awarded to the City of Porterville, the San Joaquin Valley Air Pollution Control District (SJVAPCD), and SunLine Transit Agency.[13] According to CARB, the remaining program funds were reserved for state operations, including data analysis (around $1 million) and program administration (around $0.4 million).[14]

Induced Co-investment

To receive an award, grantees must match a minimum of 25% of the total project cost.[15] Grantees and their project partners, therefore, are considered co-investors (with the state) in the piloting of zero-emission truck and bus projects. Based on the proposed budgets submitted for the three awarded projects, grantees and their partners exceeded that threshold with a 38% funding match across all three projects, committing a total of $21.4 million toward the total cost of all three projects ($46.4 million).

All of the funds that grantees and their project partners contribute to the program are considered induced because it is unlikely that these pilot projects would occur without state support. Switching from conventional trucks and buses to advanced technology trucks and buses can be costly and requires significant

[12] California Air Resources Board (2016). "Proposed Fiscal Year 2016-17 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program." Retrieved from https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_fy16-17_fundingplan_full.pdf

[13] California Air Resources Board (2016). "Zero-Emission Truck and Bus Pilot Commercial Deployment Project Selections." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/zetbpilot_prelim_selections.pdf

[14] CARB (Personal Communication, March 9, 2017).

[15] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

upfront capital investments. Without the state's financial support, it is assumed that the grantees and their project partners would have used their matching funds for other purposes.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by Zero-Emission Truck and Bus Pilot Projects, funds must be tracked according to how they are spent. As discussed, funds are spent in three ways: (1) implementation of pilot projects, (2) data analysis, and (3) program administration.

The industry codes assigned to implementation-related costs were based on the proposed budgets and work plans submitted by the three awarded projects (i.e., city of Porterville Transit Electrification, the San Joaquin Valley Transit Electrification Project, and SunLine Fuel Cell Buses and Hydrogen Onsite Generation Refueling Station Pilot Commercial Deployment Project). For line-item level information on how each expenditure was coded, refer to **Appendix 12.2**. Since the pilot projects have not been fully implemented at the time of writing this report, the percentage breakdown of funds allocated to each industrial sector reflects proposed costs, rather than final costs.

State-level operational costs were split between data analysis and program administration. Spending on data analysis was modeled in IMPLAN as "management consulting services" because this industry represents technical assistance providers that assist with data collection and reporting. Spending on program administration was modeled as "employment and payroll only (state government, non-education)" because this industry represents labor costs incurred by government agencies.

For a summary of the industries impacted by Zero-Emission Truck and Bus Pilot Projects, and their percentage share of total funding, see **Table 12.3**.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for Zero-Emission Truck and Bus Pilot Projects begins in 2016 and ends in 2020. Awards were announced in April 2016 and all funds must be liquidated by June 2020. It is assumed that funds will be spent in equal amounts each year between 2016 and 2020.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Heavy-duty truck and bus orders are typically placed directly through the manufacturer rather than a third-party retailer, so pricing margins were not applicable for these purchases in IMPLAN. Similarly, margins were not assumed for spending on vehicle parts manufacturing (i.e., spending on hydrogen refueling technologies), since this spending represents highly specialized purchases, which are likely to be placed directly through the manufacturer rather than a third-party retailer. Margins were not applicable for any of the other industries impacted by this program because they provide services that are not purchased through a third-party retailer (e.g., management consulting services, construction, government administration, etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for Zero-Emission Truck and Bus Pilot Projects when sourcing information could be determined, based on project proposals submitted by the three grantees.

With respect to spending on zero-emission buses, vehicles will be acquired from three manufacturers: GreenPower Motor Company Inc., Proterra, and NewFlyer Industries Inc. It is assumed that GreenPower will build all of its electric buses for the City of Porterville at its manufacturing facility located in Porterville. According to Proterra, 13 of its 15 electric buses will be built at its manufacturing facility located in the San Gabriel Valley of Southern California. NewFlyer will build its buses in Canada. A weighted local purchase rate was developed for California Climate Investment funding (80.6%) and co-investment (73.3%) based on each manufacturer's share of each of those funding streams.

With respect to spending on energy to produce hydrogen fuel, SunLine Transit Agency, proposed spending $0.8 million in matching funds on the procurement of renewable energy credits ("RECs"). According to the state's agreement with SunLine Transit Agency, all RECs must be purchased through a program with eligibility requirements that match or are more stringent than the Green Tariff Shared Renewables (GTSR) program, enacted through Senate Bill (SB) 43. The GTSR program stipulates that, to the extent possible, a participating utility shall seek to procure eligible renewable energy resources that are located in reasonable proximity to enrolled participants.[16] Although SB 43 contemplates including all types of renewables in the GTSR program, at this time the record only addresses solar generation.[17] Thus, we assume that SunLine Transit Agency will purchase all RECs from solar facilities located in California.

When a supplier or vendor was not known, the default local purchase rate was assumed. For line-item level sourcing information, refer to **Appendix 12.2.**

[16] Sen. Bill 43, 2013-2014 Reg. Sess. (Cal 2013). Retrieved from http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?-bill_id=201320140SB43

[17] California Public Utilities Commission (2015). "Decision Approving Green Tariff Shared Renewables Program For San Diego Gas & Electric Company, Pacific Gas And Electric Company, And Southern California Edison Company Pursuant To Senate Bill 43." Retrieved from http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF.

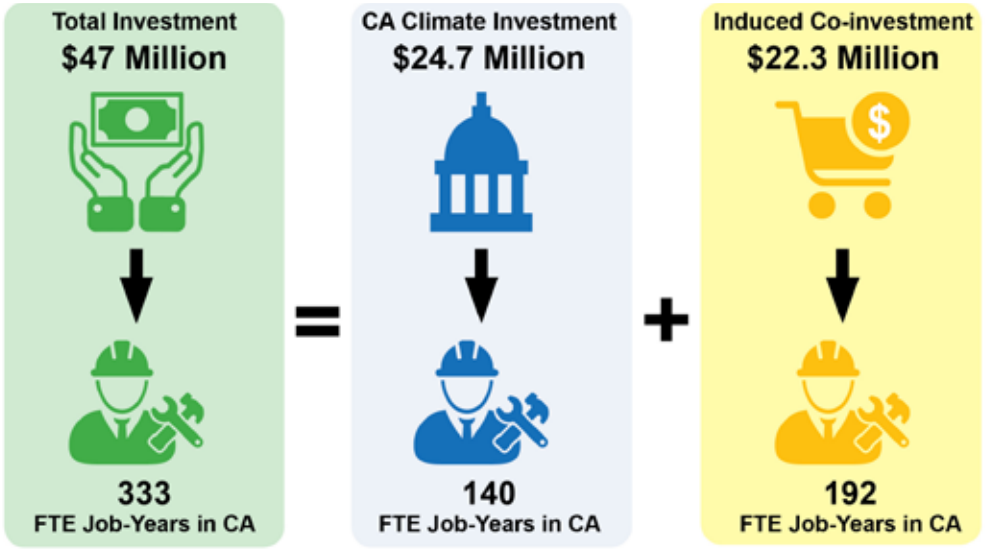
Table 12.3. Summary of Modeling Inputs for Zero-Emission Truck and Bus Pilot Projects

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($25 Million)	Heavy-duty truck manufacturing	69.2%	2016-2020	N/A	80.6%
	Motor vehicle parts manufacturing	18.3%	2016-2020	None	0.0%
	Management consulting services	4.0%	2016-2020	N/A	Default (71.6)%
	Construction of new power and communication structures	3.8%	2016-2020	N/A	Default (100%)
	Employment and payroll only (local government, non-education)	3.0%	2016-2020	N/A	100.0%
	Employment and payroll only (state government, non-education)	1.6%	2016-2020	N/A	100.0%
	Transit and ground passenger transportation	0.1%	2016-2020	N/A	100.0%
Induced Co-investment ($21.4 Million)	Heavy-duty truck manufacturing	57.8%	2016-2020	N/A	73.3%
	Transit and ground passenger transportation	31.6%	2016-2020	N/A	100.0%
	Construction of new power and communication structures	6.5%	2016-2020	N/A	Default (100%)
	Electric power generation - solar	4.0%	2016-2020	N/A	100%
	Water, sewage, and other treatment and delivery systems	0.003%	2016-2020	N/A	Default (100)%

13. Multi-Source Facility Demonstration Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Multi-Source Facility Demonstration Project provides competitive grants that support the adoption of pre-commercial zero-emission (or near zero-emission) technologies at freight facilities with multiple sources of emissions. The purpose of the project is to accelerate the deployment of clean technologies on the cusp of commercialization, reduce greenhouse gas emissions, and improve air quality in disadvantaged communities.

To qualify, proposed facilities must contain multiple sources of emissions and be located within a disadvantaged community or directly benefit one. Examples of multi-source facilities include distribution centers, warehouses, ports, intermodal rail yards, or other similar freight support facilities. The lead applicant must be a local air district, transit agency, school district, or some other California-based public entity or nonprofit organization. Private sector parties, such as technology developers, must partner with a qualifying applicant in order to apply. Proposed technologies must not yet be commercially available,

but projected to be within three years.[1]

Funds can be used toward the construction and deployment of prototypes, infrastructure, emissions testing, and practical demonstrations of technologies with a high potential to be commercialized. Proposed technologies can be used to reduce emissions from a wide variety of equipment and vehicle types, including, but not limited to, on-road heavy-duty trucks, yard trucks, forklifts, boom lifts, transport refrigeration units, marine vessels, locomotives, cargo handling equipment, and ground support equipment.[2]

During the study period, two grants were awarded in Southern California, totaling $23.7 million. One award went to the Los Angeles Harbor Department (Port of Los Angeles) to launch the Green Omni Terminal Project, a full-scale marine terminal that will meet all of its energy needs from renewable sources once it is fully built out. Grant funds will fund nine pre-commercial zero-emission electric vehicles, an at-berth vessel control system, a micro-grid with battery storage, as well as engineering, construction, infrastructure, and project management.[3] The other award went to the San Bernardino Associated Governments (SANBAG) to test pre-commercial battery electric technologies in replacing yard and service trucks at freight support facilities. Grant funds will be used to purchase a total of 27 trucks spread across three facilities in the cities of San Bernardino, Commerce, and Fontana.[4]

Administration

The California Air Resources Board (CARB) administers the Multi-Source Facility Demonstration Project. Selected grantees are responsible for implementation. The grantee must demonstrate expertise implementing advanced technology transportation projects and providing administration and oversight.[5]

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Multi-Source Facility Demonstration Project between FY 2013-14 and FY 2015-16, totaling $24.7 million, are supporting a total of **140 full-time equivalent (FTE) job-years** in California.[6] We estimate that these appropriations induced $22.3 million in co-investment, supporting an additional **192 FTE job-years**.[7] When modeled together, appropriated funds and induced co-investment support a total of **333 FTE job-years**.[8,9] See **Table 13.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[10]

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[1] California Air Resources Board (2015). "2014-2015 Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Advanced Technology Freight Demonstrations: Multi-Source Facility Demonstration Project." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1514solicit.pdf

[2] Ibid.

[3] The Port of Los Angeles (2016). "California Air Resources Grant Acceptance." Retrieved from https://www.portoflosangeles.org/Board/2016/May%202016/051916_Agenda_Item_9.pdf

[4] San Bernardino Associated Governments. "SANBAGnews." Retrieved from http://archive.constantcontact.com/fs144/1115666283112/archive/1123709067997.html

[5] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

[6] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[7] Ibid.

[8] Ibid.

[9] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[10] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 13.1. Direct, Indirect, and Induced Jobs Supported by the Multi-Source Facility Demonstration Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	59	42%	94	49%
Indirect Jobs	42	30%	49	26%
Induced Jobs	39	28%	48	25%
Total	**140**	**100%**	**192**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

Appropriations for the Multi-Source Facility Demonstration Project support direct jobs in a wide variety of sectors. Heavy-duty truck manufacturing is the most impacted industry, which is explained by the portion of grant funds specifically dedicated to the production of new yard and service trucks. Industrial machinery manufacturing is the second most impacted sector, which is explained by the grant funds that go toward the procurement of an on-dock vessel emissions capture and treatment system for the Green Omni Terminal Project. The remaining direct jobs are located in industries that support the installation of clean technologies at freight facilities (i.e., construction of new power and communication structures; architectural, engineering, and related services; environmental and other technical consulting services), the production of supporting materials (i.e., all other miscellaneous electrical equipment and component manufacturing; other electronic component manufacturing; hardware manufacturing; etc.), and the collection and evaluation of performance data (i.e., management consulting services; scientific research and development services). See **Table 13.2** for a summary of the direct jobs supported by appropriated funds for the Multi-Source Facility Demonstration Project.

Table 13.2. Direct Jobs Supported by Appropriations for the Multi-Source Facility Demonstration Project (by Industry)[11]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Heavy-duty truck manufacturing	14.1	24.0%
All other industrial machinery manufacturing	12.5	21.1%
Construction of new power and communication structures	10.7	18.1%
Architectural, engineering, and related services	8.2	13.8%
Environmental and other technical consulting services	5.5	9.3%
Management consulting services	4.9	8.4%
All other miscellaneous electrical equipment and component manufacturing	1.0	1.7%
Other electronic component manufacturing	0.9	1.5%
Hardware manufacturing	0.4	0.7%
Scientific research and development services	0.4	0.6%
Subtotal of Top 10 Industries	**58.5**	**99.2%**
Total of All Industries	**59.0**	**100%**

[11] A summary of the indirect and induced jobs, by industry, supported by the Multi-Source Facility Demonstration Project can be found in **Appendix 13.1**.

Co-investment induced by Multi-Source Facility Demonstration Project supports direct jobs in a mix of industries similar to those described above, with a few key exceptions. First, many of the direct jobs supported by the project's induced co-investment are located in truck transportation. These jobs are explained by the matching funds that Daylight Transport and BNSF Railway Company have committed toward paying drivers to operate the demonstration trucks at the freight facilities in San Bernardino, Commerce, and Fontana. Second, a significant number of the direct jobs supported by the project's induced co-investment are located in port operations (modeled in IMPLAN as "support activities for transportation"). These jobs are explained by the matching funds that Pasha Stevedoring & Terminals L.P. have committed toward operating demonstration equipment at the Port of Los Angeles. See **Table 13.3** for a summary of the direct jobs supported by induced co-investment for the demonstration project.

Table 13.2. Direct Jobs Supported by Induced Co-investment for the Multi-Source Facility Demonstration Project[12]

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Truck transportation	44.1	47.2%
Support activities for transportation	27.4	29.3%
Environmental and other technical consulting services	6.3	6.7%
Construction of new power and communication structures	5.9	6.4%
Heavy-duty truck manufacturing	3.2	3.4%
Other electronic component manufacturing	2.0	2.1%
All other miscellaneous electrical equipment and component manufacturing	1.8	1.9%
Hardware manufacturing	1.4	1.5%
Employment and payroll of local government, non-education	1.1	1.2%
Electric power generation, transmission, and distribution	0.3	0.3%
Subtotal of Top 10 Industries	**93.5**	**99.9%**
Total of All Industries	**93.6**	**100%**

[12] A summary of the indirect and induced jobs, by industry, supported by the Multi-Source Facility Demonstration Project can be found in **Appendix 13.1**.

Methodology

In order to model the Multi-Source Facilities Demonstration Project in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Tables 13.4** and **13.5.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $47 million in California Climate Investment funding was allocated to advanced technology freight demonstration projects.[13] Of this funding, half was allocated to the Multi-Source Facilities Demonstration Project and half was allocated to the Zero-Emission Drayage Truck Demonstration Project. Of the funding allocated to the former, around $24.7 million was awarded to demonstration projects and around $1 million will be spent on data collection and analysis. Of the funding for demonstration projects, around $14.5 million went to the Los Port of Los Angeles to launch the Green Omni Terminal Demonstration Project[14] and $9.1 million was awarded to SANBAG to launch the Multi-Class Heavy-Duty Zero-Emission Truck Development Project for Intermodal and Warehouse Facilities.[15]

Induced Co-investment

To receive a demonstration grant, multi-source freight facilities must match a minimum of 25% of the total project cost.[16] Grantees and their project partners, therefore, are considered co-investors (with the state) in the deployment of advanced technologies at multi-source facilities. The Port of Los Angeles and other partners exceeded that threshold with a 45% funding match, committing $12.1 million to the total cost of the project ($26.6 million).[17] Similarly, SANBAG and their partners exceeded the match requirement with a 53% contribution in matching funds, committing $10.2 million to the total cost of the project ($22.3 million).[18]

All of the funds that grantees and their project partners contribute to the program are considered induced because it is unlikely that these demonstration projects would occur without state support. Technologies that are not commercially available tend to be costlier than commercially available technologies, due to

[13] CARB (Email correspondence, May 15,2017).

[14] The Port of Los Angeles (2016). "Pasha, Port Of Los Angeles and California Air Resources Board Partner on Green Omni Terminal Demonstration Project." Retrieved from https://www.portoflosangeles.org/newsroom/2016_releases/news_052616_green_omni.asp

[15] San Bernardino Associated Governments. "SANBAGnews." Retrieved from http://archive.constantcontact.com/fs144/1115666283112/archive/1123709067997.html

[16] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

[17] The Port of Los Angeles (2016). "Pasha, Port Of Los Angeles and California Air Resources Board Partner on Green Omni Terminal Demonstration Project." Retrieved from https://www.portoflosangeles.org/newsroom/2016_releases/news_052616_green_omni.asp

[18] San Bernardino Associated Governments. "SANBAGnews.." Retrieved from http://archive.constantcontact.com/fs144/1115666283112/archive/1123709067997.html

scalability constraints. Thus, without the state's financial support, it is assumed that the grantees and project partners would have used their matching funds for other purposes.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Multi-Source Facilities Demonstration Project, funds must be tracked according to how they are spent. Funds for this project are primarily spent in two ways: (1) implementation of pilot projects and (2) data collection and analysis.

The industry codes assigned to implementation-related costs were based on the proposed budgets and work plans submitted by the two awarded projects (i.e., Green Omni Terminal Project and the Multi-Class Heavy-Duty Zero-Emission Truck Development Project for Intermodal and Warehouse Facilities). For line-item level information on how each expenditure was coded, refer to **Appendix 13.2**. Since the demonstration projects have not been fully implemented, the percentage breakdown of funds allocated to each industrial sector reflect proposed costs, rather than final costs.

Of particular note, the solar PV basket is a mix of industries, based on the industry basket assigned to the solar sector in *The Economic Benefits of Investing in Clean Energy* authored by the Center for American Progress.[19] The mix of industries included in this basket include: construction of new power and communication structures (30%); hardware manufacturing (17.5%); miscellaneous electrical equipment and component manufacturing (17.5%); other electronic component manufacturing (17.5%); other miscellaneous professional, scientific, and technical services (17.5%).

State spending on data analysis was modeled in IMPLAN as "management consulting services" in IMPLAN because this industry represents technical assistance providers that assist with data collection and reporting.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Multi-Source Facility Demonstration Project begins in 2016 (when awards were announced) and ends in 2019 (when all work must be completed, per the solicitation).[20] Without a detailed breakdown of expenditures each year, all projects funds are assumed to be distributed equally each year between 2016 and 2019. In reality, project expenses are likely to vary from year to year.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). In the case of the Multi-Source Facility Demonstration Project, all materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Since service-related expenditures are not purchased through a third-party retailer, margins were not applicable for all service-related industries (e.g., architecture and

[19] Pollin, Robert, Heintz, James, Garrett-Peltier, Heidi, (2009). "The Economic Benefits of Investigating in Clean Energy." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf

[20] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

engineering, environmental and other technical consulting services, scientific research and development services, etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Multi-Source Facility Demonstration Project when sourcing information could be determined, based on public documents and news clips found online. When a supplier or vendor was not known, the default local purchase rate was assumed. For line-item level sourcing information across both awarded projects, refer to **Appendix 13.2.**

Table 13.4. Summary of Modeling Inputs for the Multi-Source Facility Demonstration Project (Appropriated Funds)

Input	Funded Industries	Share of Total Funds	Spending Timeline	Margins	Local Purchase Rate
California Climate Investment ($24.7 Million)	Heavy-duty truck manufacturing	58.8%	2016-2019	N/A	100%
	Other industrial machinery manufacturing	14.7%	2016-2019	None	100%
	Architectural, engineering, and related services	6.0%	2016-2019	N/A	100%
	Construction of new power and communication structures	5.6%	2016-2019	N/A	100%
	Management consulting services	4.1%	2016-2019	N/A	Default (71.6)%
	Solar PV basket	3.3%	2016-2019	None	100%
	Other electrical equipment and component manufacturing	2.4%	2016-2019	None	28.3%
	Power, distribution, and specialty transformer manufacturing	1.5%	2016-2019	None	Default (22.8%)
	Environmental and other technical consulting services	1.4%	2016-2019	N/A	100%
	Switchgear and switchboard apparatus manufacturing	0.7%	2016-2019	None	Default (20.6%)
	Scientific research and development services	0.5%	2016-2019	N/A	100%
	Wiring device manufacturing	0.5%	2016-2019	None	Default (45.8%)
	Other electronic component manufacturing	0.4%	2016-2019	None	100.0%
	Hardware manufacturing	0.1%	2016-2019	None	Default (16.1%)

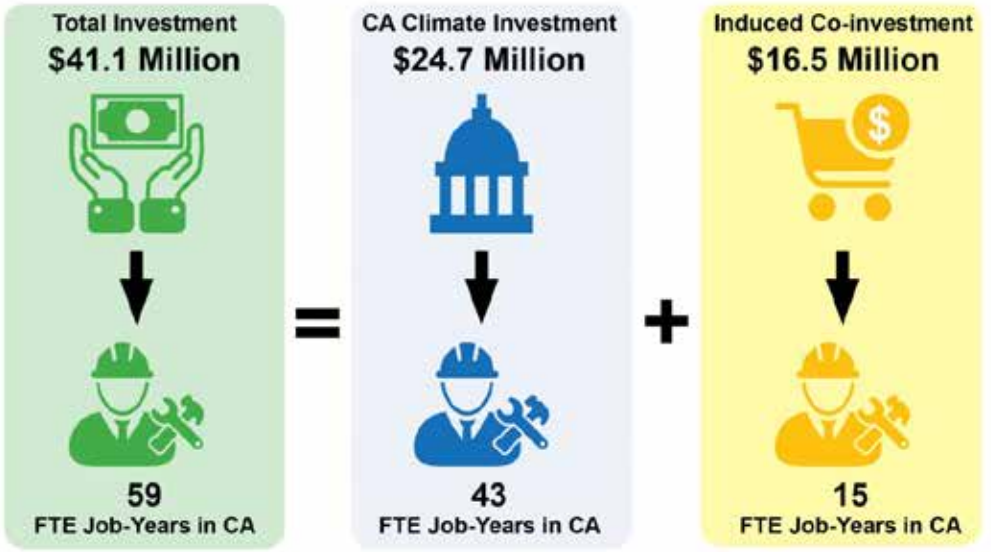
Table 13.5. Summary of Modeling Inputs for the Multi-Source Facility Demonstration Project (Induced Co-investment)

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
Induced Co-investment ($22.3 Million)	Transport by truck	33.6%	2016-2019	N/A	100%
	Support activities for transportation	23.3%	2016-2019	N/A	100%
	Heavy-duty truck manufacturing	14.8%	2016-2019	N/A	100%
	Solar PV basket	13.7%	2016-2019	None	100%
	Other electrical equipment and component manufacturing	11.2%	2016-2019	None	0%
	Electric power generation, transmission, and distribution	2.5%	2016-2019	N/A	100%
	Employment and payroll only (local government, non-education)	0.7%	2 016-2019	N/A	100%
	Transport by rail	0.1%	2016-2019	N/A	100%
	Environmental/ technical consulting services	0.1%	2016-2019	N/A	100%
	Other electronic component manufacturing	0.1%	2016-2019	None	100%

14. Zero-Emission Drayage Truck Demonstration Project

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Zero-Emission Drayage Truck Demonstration Project provides competitive grants to support the large-scale deployment of drayage trucks that utilize pre-commercial zero-emission (or near zero-emission) technologies. The project is intended to complement the Multi-Source Facility Demonstration Project by reducing emissions during the transport of goods between freight facilities. Like the Multi-Source Facility Demonstration Project, this project is also intended to accelerate the deployment of zero-emission technologies on the cusp of commercialization, and improve air quality in disadvantaged communities.

Within the context of this program, drayage trucks are defined as Class 8 heavy-duty on-road trucks (>33,000 pounds gross vehicle weight rating) that are used to transport cargo to or from California's ports and intermodal rail yards, regional warehouses, distribution centers, or other logistical operation sites. Eligible technologies include, but are not limited to, battery electric trucks, fuel-cell trucks, and battery electric

trucks utilizing fuel-cells or internal combustion engines acting as range extenders. Trucks with combustion engines must achieve zero-emission miles while operating in disadvantaged communities and on port, rail yard, intermodal facility, distribution center, or warehouse property. In order to do so, these trucks must utilize automated geo-referencing systems that ensure the vehicle is operating in zero-emission mode in required areas.[1]

In order to qualify for funds, the lead applicant must be a local air district, transit agency, school district, or some other California-based public entity or nonprofit organization. Private sector parties, such as technology developers, must partner with a qualifying applicant in order submit a proposal. All proposed technologies must not yet be commercially available (i.e., not yet produced for sale), but projected to be within three years.[2]

Funds can be used toward the construction and deployment of prototypes, infrastructure, emissions testing, and practical demonstrations of technologies with a high potential to be commercialized. Since the program is aimed at the large-scale deployment of drayage trucks (i.e., 10 or more), proposed infrastructure should be capable of allowing a robust and significant field demonstration of the proposed technology.[3]

During the study period, one award for $23.7 million was granted to the South Coast Air Quality Management District (SCAQMD) for a statewide demonstration project.[4] The project is a collaboration between five air districts, which serve the Bay Area, Sacramento, San Diego, San Joaquin Valley, and South Coast. The project will deploy 43 zero-emission battery electric and plug-in hybrid drayage trucks and charging infrastructure across all five air districts.[5]

Administration

The California Air Resources Board (CARB) administers the Zero-Emission Drayage Truck Demonstration Project. Selected grantees are responsible for implementation. The grantee must demonstrate expertise implementing advanced technology transportation projects and providing administration and oversight.[6]

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Zero-Emission Drayage Truck Demonstration Project between FY 2013-14 and FY 2015-16, totaling $24.67 million, are supporting a total of **43 full-time equivalent (FTE) job-years** in California.[7] We estimate that these appropriations

[1] California Air Resources Board (2015). "2014-2015 Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments Advanced Technology Freight Demonstrations: Zero-Emission Drayage Truck Project." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1516solicit.pdf

[2] Ibid.

[3] Ibid.

[4] South Coast Air Quality Management District (2016). "Establish Special Revenue Fund, Recognize and Transfer Funds, and Execute Contracts to Develop and Demonstrate Zero Emission Capable Drayage Trucks." Retrieved from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2016/2016-mar4-004.pdf?sfvrsn=5

[5] California Air Resources Board (2016). "State to Award $23.6 Million for Zero-Emission Trucks at Seaports." Retrieved from https://www.arb.ca.gov/newsrel/newsrelease.php?id=809

[6] California Air Resources Board (2015). "2014-2015 GRANT SOLICITATION Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments Advanced Technology Freight Demonstrations: Zero-Emission Drayage Truck Project." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1516solicit.pdf

[7] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

induced $16.5 million in co-investment, supporting an additional **15 FTE job-years.**[8] When modeled together, appropriated funds and induced co-investment support a total of **59 FTE job-years**.[9,10] See **Table 14.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[11]

Table 14.1. Direct, Indirect, and Induced Jobs Supported by the Zero-Emission Drayage Truck Demonstration Project*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	20.1	47%	5.9	44%
Indirect Jobs	9.9	23%	4.4	33%
Induced Jobs	12.8	30%	3.1	23%
Total	**43.5**	**100%**	**14.6**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The largest share of direct jobs supported by appropriations for the Zero-Emission Drayage Truck Demonstration Project occur in local government, which is explained by the funds that go to SCAQMD for project management and administration. Heavy-duty truck manufacturing is the second most directly impacted industry, which is explained by the funds that go toward the procurement of zero-emission drayage trucks. Even though most of the awarded funds (90%) are spent on trucks, the program supports more direct jobs in local government than in heavy-duty truck manufacturing because the latter is far less labor intensive. Additionally, all of the program funds dedicated to administration are spent in California, whereas much of the funds for vehicles go to manufacturers located out of state. The remaining direct jobs are supported by program funds for data collection and analysis (modeled in IMPLAN as "management consult services") and the installation of charging infrastructure along trucking routes (modeled in IMPLAN as "construction of new power and communication structures"). See **Table 14.2** for a summary of the direct jobs supported by appropriations for the demonstration project.

In contrast to appropriated funds, all induced co-investment for the Zero-Emission Drayage Truck Demonstration Project is spent on drayage trucks and the installation of charging infrastructure. Thus, all of the jobs supported by induced co-investment are located in the heavy-duty truck manufacturing and the construction sectors. See **Table 14.2** for a summary of the direct jobs supported by induced co-investment for the demonstration project.

[8] Ibid.
[9] Ibid.
[10] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.
[11] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table continues next page

Table 14.2. Direct Jobs Supported by the Zero-Emission Drayage Truck Demonstration Project (by Industry)[12]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment and payroll of local government, non-education	6.9	34.1%
Heavy-duty truck manufacturing	5.4	27.0%
Management consulting services	4.9	24.5%
Construction of new power and communication structures	2.9	14.3%
Total of All Industries	**20.1**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Heavy-duty truck manufacturing	3.2	53.2%
Construction of new power and communication structures	2.8	46.8%
Total of All Industries	**5.9**	**100%**

Methodology

In order to model the Zero-Emission Drayage Truck Demonstration Project in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the demonstration project. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 14.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $49.3 million in California Climate Investment funding was allocated to advanced technology freight demonstration projects.[13] Of this funding, half was allocated to the Multi-Source Facilities Demonstration Project and half was allocated to the Zero-Emission Drayage Truck Demonstration Project. Of the funding allocated to the latter, around $23.7 million was awarded to SCAQMD for a statewide demonstration project.[14] The remaining program funds (around $1 million) will be spent on data collection and analysis.

[12] A summary of the indirect and induced jobs by industry, supported by the Zero-Emission Drayage Truck Demonstration Project can be found in Appendix 14.1.

[13] CARB (Email correspondence, May 15,2017).

[14] South Coast Air Quality Management District (2016). "Establish Special Revenue Fund, Recognize and Transfer Funds, and Execute Contracts to Develop and Demonstrate Zero Emission Capable Drayage Trucks." Retrieved from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2016/2016-mar4-004.pdf?sfvrsn=5

Induced Co-investment

To receive a demonstration grant, applicants must match a minimum of 25% of the total project cost.[15] Grantees and their project partners, therefore, are considered co-investors (with the state) in the deployment of advanced technology drayage trucks. SCAQMD and other partners exceeded that threshold with a 41% funding match, committing $16.5 million to the total cost of the project ($41.1 million).[16]

All of the funds that SCAQMD and their project partners contribute to the demonstration project are considered induced because it is unlikely that the project would occur without state support. Technologies that are not commercially available tend to be costlier than those that are commercially available, due to the higher marginal costs associated with goods and services that are produced at small scales. Thus, without the state's financial support, it is assumed that SCAQMD and project partners would have used their matching funds for other purposes.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Zero-Emission Drayage Truck Demonstration Project, funds must be tracked according to how they are spent. The demonstration project directly funds four activities: (1) the purchase of advanced technology drayage trucks; (2) the installation of electric vehicle charging infrastructure; (3) project administration, and (4) data collection and analysis.

Spending on advanced technology drayage trucks were modeled in IMPLAN as spending in "heavy-duty truck manufacturing" because this industry represents the manufacture of all heavy-duty vehicles, including trucks, buses, motor homes, and other special purpose heavy-duty vehicles for highway use. There is no unique industry code in IMPLAN to distinguish the purchase of an advanced technology truck from a conventional one that relies exclusively on fossil fuels. Assessing the employment impacts of producing an advanced technology truck compared to that of a conventional one is outside the scope of this study.

Spending on the electric vehicle charging infrastructure was modeled in IMPLAN as spending in "construction of new power and communication structures" because this industry includes specialty trade contractors that are engaged in activities related to power lines (e.g., underground cable laying, power line stringing, etc.). This industrial sector includes both labor and material costs. According to CARB, approximately $0.9 million of the total project cost was allocated to the installation of electric vehicle charging infrastructure. Without detailed information on which source of funds will pay for these costs, it assumed that they are equally covered by the state contribution and the match from SCAQMD and project partners.

Spending on project administration was modeled as "employment and payroll only (local government, non-education)" in IMPLAN because this industrial sector includes government air districts such as SCAQMD. According to a SCAQMD board meeting attachment posted on March 4, 2016, project administration costs total around $1 million and are entirely covered by the grant award.

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[15] California Air Resources Board (2015). "Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, Zero-Emission Truck and Bus Pilot Commercial Deployment Projects." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf

[16] South Coast Air Quality Management District (2016). "Establish Special Revenue Fund, Recognize and Transfer Funds, and Execute Contracts to Develop and Demonstrate Zero Emission Capable Drayage Trucks." Retrieved from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2016/2016-mar4-004.pdf?sfvrsn=5

Spending on data analysis was modeled in IMPLAN as "management consulting services" in IMPLAN because this industry represents technical assistance providers that assist with data collection and reporting. According to CARB, $1 million of program funds have been allocated for this purpose.

After accounting for the percentage of project funds that were distributed to electric vehicle charging infrastructure, project administration, and data collection and analysis, all remaining funds were modeled toward the production of advanced technology drayage trucks. Refer to **Table 14.3** for a summary of how project funds were distributed to impacted industries and **Appendix 14.2** for a detailed overview.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Zero-Emission Drayage Truck Demonstration Project begins in 2017 and ends in 2019. According to CARB, project spending is expected to begin in 2017. The project must be completed by 2019, per the solicitation.[17] It is assumed that funds will be spent in equal amounts each year between 2017 and 2019.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Heavy-duty truck and bus orders are typically placed directly through the manufacturer rather than a third-party retailer, so pricing margins were not applicable for these purchases in IMPLAN. Since construction services are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN. Similarly, pricing margins were not applicable for government administration or management consulting services.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm.

With respect to spending on zero-emission drayage trucks, the vehicles will be acquired from four manufacturers: BYD Motors Inc.; Kenworth Truck Company; Peterbilt Motors Company; and Volvo Technology of America Inc. Of these manufacturers, only BYD Motors has a manufacturing plant located in California. Peterbilt Motors is teaming up with San Diego-based Transportation Power Inc. (TransPower) to build their share of trucks, but it is unknown what percentage of those trucks will be built in California, so 0% was applied as conservative assumption. Thus, only drayage trucks purchased from BYD Motors are modeled as a local purchase, which comprise around 24.9% of state funds and 19.8% of matching funds.

All local level administrative activities are assumed to be completed by the awarded grantee (i.e., SCAQMD). Sourcing information was not known for spending on management consulting services (i.e., data collection analysis) or construction of new power and communication structures (i.e., installation of electric vehicle charging infrastructure), so the default local purchase rate was used for each of these impacted industries. For line-item level sourcing information, refer to **Appendix 14.2.**

[17] California Air Resources Board (2015). "2014-2015 Grant Solicitation Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments Advanced Technology Freight Demonstrations: Zero-Emission Drayage Truck Project." Retrieved from https://www.arb.ca.gov/msprog/aqip/solicitations/msc1516solicit.pdf

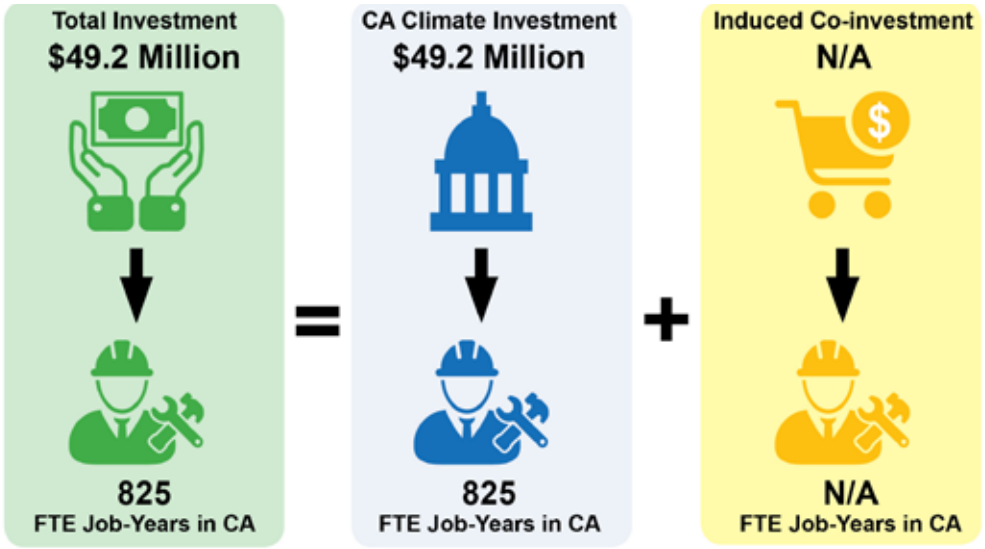
Table 14.3. Summary of Modeling Inputs for the Zero-Emission Drayage Truck Demonstration Project

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($24.7 Million)	Heavy-duty truck manufacturing	90%	2017-2019	N/A	24.9%
	Management consulting services	4.2%	2017-2019	N/A	Default (71.2%)
	Employment and payroll only (local government, non-education)	3.9%	2017-2019	N/A	100%
	Construction of new power and communication structures	1.8%	2017-2019	N/A	Default (100%)
Induced Co-investment ($16.5 Million)	Heavy-duty truck manufacturing	97.3%	2017-2019	N/A	19.8%
	Construction of new power and communication structures	2.7%	2017-2019	N/A	Default (100%)

15. Single Family/Small Multi-Family Energy Efficiency and Solar Water Heating

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program provides single-family and small multi-family low-income homeowners with weatherization and energy efficiency measures. The program supports an array of efficiency improvements, including weather stripping, insulation, caulking, water heater blankets, fixing or replacing windows, refrigerator replacement, water heater repair/replacement, heating and cooling system repair/replacement, and solar water heater installation.[1]

[1] California Air Resources Board (2016). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

Along with reducing greenhouse gas emissions, one of the major goals of the program is to lower energy costs for low-income households. The program also provides a number of co-benefits, including workforce development, health and safety, and improved air quality.[2]

The program was launched using FY 2014-15 funds and was designed to complement federally-funded weatherization programs already underway in California, namely, the Low-Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP).[3] Using California Climate Investment dollars, the state was able to broaden the scope of those federal programs to include non-weatherization measures such as solar water heating systems.[4]

During the program's launch year, FY 2014-15 state funds were awarded to the network of local providers that offer weatherization services under LIHEAP and WAP.[5] To qualify for the program during this period, the homeowner or renter was required to meet federal LIHEAP income guidelines of incomes equal to 60% of the state median income (SMI).[6] Additionally, the building had to be located within a disadvantaged community and be either a single-family dwelling (i.e., one to four units) or a small multi-family dwelling (five or more units, where each is served by its own water heater and heating/cooling system).[7] Once eligibility is confirmed, there are no costs for homeowners or renters to participate in the program.[8]

The program will adopt a different model for awarding FY 2015-16 funds. Regional administrators will be selected on a competitive basis to coordinate the program at larger geographic scales. Services under the revised program model will be limited to single-family dwellings occupied by households with incomes equal to 80% area median income (AMI), or 60% of SMI, whichever is higher. Buildings must still be located with disadvantaged communities in order to qualify.[9]

Administration

The California Department of Community Services and Development (CSD) administers the Single-Family/ Small Multi-Family Energy Efficiency and Solar Water Heating program. The program is part of a larger initiative at CSD, the Low-Income Weatherization Program (LIWP), which is aimed at providing low-income households with energy efficiency and renewable energy measures.

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[2] California Strategic Growth Council (2016). "Department of Community Services and Development (CSD) Low-Income Weatherization Program (LIWP)." Retrieved from http://www.sgc.ca.gov/pdf/April2016Council%20MeetingCSD-Presentation.pdf

[3] California Department of Community Services and Development (2015). "Residential Energy Efficiency." Retrieved from http://www.csd.ca.gov/services/residentialenergyefficiencyservices.aspx

[4] California Department of Community Services and Development (2015). "Low-Income Weatherization Program Guidelines." Retrieved from http://www.csd.ca.gov/LinkClick.aspx?fileticket=XQ-HrGfxnH0%3d&portalid=0

[5] Ibid.

[6] Ibid.

[7] Ibid.

[8] Local Government Commission (2016). "Department of Community Services and Development (CSD) Low-Income Weatherization Program (LIWP)." Retrieved from https://www.lgc.org/wordpress/wp-content/uploads/2016/02/Glen-Baird-Department-of-Community-Services-and-Development.pdf

[9] California Department of Community Services and Development (2017). "Fiscal Year 2015-15 Appropriation Procurements: Single-Family Energy Efficiency Single-Family Solar Photovoltaics." Retrieved from http://www.csd.ca.gov/Portals/0/Documents/LIWP/201516%20LIWP%20SF%20Program%20Guidelines%20013017.pdf

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program between FY 2013-14 and FY 2015-16, totaling $49.2 million, are supporting a total of **825 full-time equivalent (FTE) job-years** in California.[10] These job-years stem solely from California Climate Investment funding, since no induced co-investment was generated by the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 15.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[11]

Table 15.1. Direct, Indirect, and Induced Jobs Supported by the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	534	58%	N/A	N/A
Indirect Jobs	156	17%	N/A	N/A
Induced Jobs	135	25%	N/A	N/A
Total	**825**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by the program occur in the individual and family services sector. These jobs are explained by program funds that go toward program administration, which to date, have been conducted by community action agencies (designated as "individual and family services" in IMPLAN). Maintenance and repair construction of residential structures is the second most directly impacted sector in terms of jobs, which is explained by the weatherization services that are provided to low-income households. See **Table 15.2** for a summary of the direct jobs supported by program.

Table 15.2. Direct Jobs Supported by the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program (by Industry)[12]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Individual and family services	351.6	65.9%
Maintenance and repair construction of residential structures	182.3	34.1%
Total of All Industries	**533.9**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[10] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[11] See the **Methodology** chapter in Part I for definitions of direct, indirect, and induced jobs.

[12] A summary of the indirect and induced jobs by industry, supported by the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program can be found in **Appendix 15.1**.

Methodology

In order to model the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 15.4**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $49.2 million in California Climate Investment funding was allocated to the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program.[13] During FY 2014-15, around $14.5 million of this funding was awarded to network service providers to implement the program. Of these awarded funds, approximately $10 million was spent on energy efficiency measures (68.8% of funds), and $4.5 million was spent on program administration at the local level (31.2% of funds), which includes marketing and outreach activities.[14] The remaining $34.6 million in FY 2015-16 funding will be awarded to regional administrators. It is estimated that $27.4 million of this funding will be spent on efficiency measures (79% of funds), and $7.3 million will be spent on program administration at the regional level (21% of funds).[15] Thus, across both fiscal years, a total of $37.4 million in program funds will be spent on efficiency measures (76% of funds), and $11.8 million will be spent on administration (24% of funds).

Induced Co-investment

The Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program has leveraged a significant amount of federal funds from LIHEAP and WAP for weatherization costs. For example, for LIWP project-level data compiled through October 2016, approximately $8.7 million in LIHEAP funds had been leveraged with the $5.5 million in LIWP funds invested in these homes.[16] However, since these federally funded programs were already underway prior to the launch of the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program, none of these federal funding sources are considered induced. Additionally, there is no induced co-investment from program participants because the program is free for qualifying homeowners and renters. As a result, only the employment benefits of state funds (described above) were modeled for this program. Similarly, savings on household energy bills will increase the amount of disposable income available to program participants, but the employment benefits of these savings are beyond the scope of this study.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the o verall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors

[13] CSD (Email Correspondence, 3/30/2017).
[14] Ibid.
[15] CSD (Personal Communication, 6/8/2017).
[16] Ibid.

directly impacted by the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program, funds must be tracked according to how they are spent. Program funds spent in two primary ways: (1) energy efficiency upgrades and (2) program administration at the local level. The percentage split for spending on each of these two activities was based on data provided directly by CSD.

Energy efficiency upgrades were modeled as "maintenance and repair construction of residential structures" in IMPLAN. This assumption is consistent with how building weatherization activities were modeled in *The Economic Benefits of Investing in Clean Energy* authored by the Center for American Progress.[17]

Local level program administration activities were modeled as "individual and family services" in IMPLAN because this industry represents community action agencies, which were initially contracted to implement the program at the local level using FY 2014-15 funds. This same industry was used to represent the regional administrators, which will implement the program at more regional scale using FY 2015-16 funds. While the regional administrators may ultimately belong to a different industrial sector once they have been selected, the employment benefits of these dollars are unlikely to change from one fiscal year to another, since the same set of activities will be performed, just at different geographic scales.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program begins in 2015 and ends in 2018. Funds from FY 2014-15 will be spent between 2015 and 2017 and FY 2015-16 funds will be spent between 2017 and 2018. See **Table 15.3** for a detailed breakdown of how funds will be spent in each calendar year, according to information provided directly from CSD.

Table 15.3. Spending Time Line for the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program

	FY 2014-15	FY 2015-16
2015	14.5% ($2.1 million)	N/A
2016	54.5% ($7.9 million)	N/A
2017	31% ($4.5 million)	55% ($19 million)
2018	N/A	45% ($15.6 million)
Total	**100% ($14.5 million)**	**100% ($34.6 million)**

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Since maintenance and repair construction services are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN. Similarly, pricing margins were not applicable for individual and family services.

[17] Pollin, Robert, Heintz, James, Garrett-Peltier, Heidi (2009). "How the Economic Stimulus Program and New Legislation can Boost U.S. Economic Growth and Employment." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. All construction firms and service providers contracted through the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating program are assumed to be located in state.

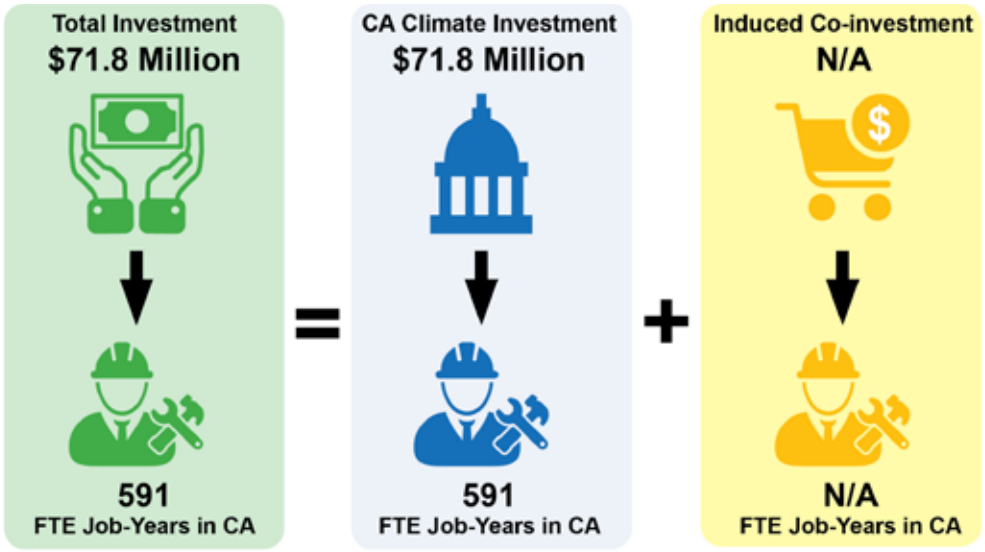
Table 15.4. Summary of Modeling Inputs for the Single-Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($49.2 Million)	Maintenance and repair construction of residential structures	76%	2015-2018	N/A	100%
	Individual and family services	24%	2015-2018	N/A	100%
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

16. Single-Family Solar Photovoltaics

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Single-Family Solar Photovoltaics program provides low-income households in single-family homes with solar photovoltaic (PV) systems to lower cost barriers to adopting renewable solar energy. The program seeks to reduce greenhouse gas emissions and energy costs for low-income households, while also achieving a number of co-benefits, such as workforce development, job training, health and safety, and improved air quality.

Using FY 2014-15 and FY 2015-16 funds, solar installations are performed statewide through a contract with GRID Alternatives, a nonprofit solar installation company. GRID Alternatives is also the California Public Utilities Commission's administrator for California Solar Initiative rebates.[1] GRID Alternatives installs solar PV

[1] Local Government Commission (2016). "Department of Community Services and Development (CSD) Low-Income Weatherization Program (LIWP)." Retrieved from https://www.lgc.org/wordpress/wp-content/uploads/2016/02/Glen-Baird-Department-of-Community-Services-and-Development.pdf

panels using a barn-raising model that gives volunteers and job trainees hands-on experience they can use to obtain jobs in the growing solar industry.[2]

A portion of FY 2014-15 funds was also awarded to Fresno Economic Opportunities Commission to administer a solar PV pilot project that involves a consortium of community action agencies providing weatherization services.[3] Similarly, a portion of FY 2015-16 funding was allocated to a group of regional administrators that will integrate solar PV installation services with weatherization services for residents in single-family homes.[4] Combined weatherization and solar PV installation will be the new program model in future fiscal years.

To qualify for solar PV panels through the program, applicants must own a home in a disadvantaged community, occupy that home, and have a household income that is equal to or less than 80% of the area median income (AMI), according to the U.S. Department of Housing and Urban Development's income guidelines[5]. The program covers both material and installation costs for the consumer, so that there is no financial obligation on the part of the homeowner.[6] All dwellings receiving solar PV systems will be assessed for eligibility to receive weatherization and solar water heating services, so as to further reduce greenhouse gas emissions.[7]

Administration

The California Department of Community Services and Development (CSD) administers the Single-Family Solar Photovoltaics program. The program is part of a larger initiative at CSD, the Low-Income Weatherization Program (LIWP), which is aimed at providing low-income households with energy efficiency and renewable energy measures.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Single-Family Solar Photovoltaics program between FY 2013-14 and FY 2015-16, totaling $71.8 million, are supporting a total of **591 full-time equivalent (FTE) job-years** in California.[8] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 16.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[9]

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[2] Grid Alternatives (2017). "Single-Family Solar." Retrieved from http://www.gridalternatives.org/programs/solar-affordable-housing-program

[3] California Department of Community Services and Development (2016). "Department Of Community Services And Development (CSD) Low-Income Weatherization Program (LIWP) For Single Family Energy Efficiency (EE) And Solar Photovoltaics (PV) Services." Retrieved from http://www.csd.ca.gov/Portals/0/Documents/ContractingOpportunities/2016-RFI-45%20LIWP%202016%20SF%20EE%20and%20Solar%20RFI.pdf

[4] CSD (Email Correspondence, June 19, 2017).

[5] California Department of Community Services and Development (2015). "Low-Income Weatherization Program Guidelines." Retrieved from http://www.csd.ca.gov/LinkClick.aspx?fileticket=XQ-HrGfxnH0%3d&portalid=0

[6] Grid Alternatives (2017). "Single-Family Solar." Retrieved from http://www.gridalternatives.org/programs/solar-affordable-housing-program

[7] California Department of Community Services and Development (2015). "Low-Income Weatherization Program Guidelines." Retrieved from http://www.csd.ca.gov/LinkClick.aspx?fileticket=XQ-HrGfxnH0%3d&portalid=0

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 16.1. Direct, Indirect, and Induced Jobs Supported by the Single-Family Solar Photovoltaics Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	330	56%	N/A	N/A
Indirect Jobs	105	18%	N/A	N/A
Induced Jobs	156	26%	N/A	N/A
Total	**591**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The Single-Family Solar Photovoltaics program supports direct jobs in a variety of sectors. The environmental and other technical consulting services sector is the most directly impacted industry, which is explained by the program funds that go toward energy evaluations. The second most impacted industry is the construction sector, which is explained by program funds that go toward installation labor. Management consulting services is the third most directly impacted sector, due to the program funds that go to technical assistance providers, such as GRID Alternatives, that assist with project management. The remaining direct jobs occur in manufacturing industries that provide the necessary materials for solar PV systems (i.e., other electronic component manufacturing, all other miscellaneous electrical equipment and component manufacturing, and hardware manufacturing). See **Table 16.2** for a summary of the direct jobs supported by the program.

Table 16.2. Direct Jobs Supported by the Single-Family Solar Photovoltaics Program (by Industry)[10]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Environmental and other technical consulting services	124.9	37.9%
Construction of new power and communication structures	124.2	37.7%
Management consulting services	48.3	14.7%
Other electronic component manufacturing	19.4	5.9%
All other miscellaneous electrical equipment and component manufacturing	8.0	2.4%
Hardware manufacturing	4.7	1.4%
Total of All Industries	**330**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[10] A summary of the indirect and induced jobs by industry, supported by the Single-Family Solar Photovoltaics program can be found in **Appendix 16.1**.

Methodology

In order to model the Single-Family Solar Photovoltaics program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 16.4**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $71.8 million in California Climate Investment funding was allocated to the Single-Family Solar Photovoltaics program.[11] During FY 2014-15, around $37.9 million of this funding was awarded to two program administrators (GRID Alternatives and Fresno Economic Opportunities Commission).[12] Of these awarded funds, approximately $32.2 million was spent on solar installations (85% of funds), and $5.7 million was spent on project management (15% of funds).[13] In the case of FY 2015-16 funds, approximately $10.9 million was awarded to GRID Alternatives and will be spent according to the same split between installation and project management (i.e., 85% and 15% of funds, respectively). The remaining $23 million in FY 2015-16 funds will entirely be dedicated to solar installations.[14] In summary, across both fiscal years, $64.6 million in program funds will be spent on solar installations (90% of funds), and $7.3 million will be spent on project management (10% of funds).

Induced Co-investment

Since the program covers both material and installation costs for qualifying participants, there is no induced co-investment from program. As a result, only the employment benefits of state funds (described above) were modeled for this program. Similarly, savings on household energy bills will increase the amount of disposable income available to program participants, but the employment benefits of these savings are beyond the scope of this study.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Single-Family Solar Photovoltaics program, funds must be tracked according to how they are spent. Funds for the program are spent in two ways: (1) the installation of solar PV panels and (2) project management.

To model the installation of solar PV panels in IMPLAN, a custom solar PV basket was created. The solar PV basket is a mix of industries, as based on the industry basket assigned to the solar sector in *The Economic*

[11] CSD (Email correspondence, 3/30/2017).
[12] CSD (Email correspondence, 6/8/2017).
[13] Ibid.
[14] Ibid.

Benefits of Investing in Clean Energy authored by the Center for American Progress.[15] The mix of industries included in the solar PV basket include: construction of new power and communication structures (30%); hardware manufacturing (17.5%); miscellaneous electrical equipment and component manufacturing (17.5%); other electronic component manufacturing (17.5%); and environmental and other technical consulting services (17.5%).

Spending on project management was modeled as "management consulting services" in IMPLAN. This industrial sector represents technical assistance providers, such as GRID Alternatives, that assist with the implementation of renewable energy-related projects. In addition to employing paid professionals, GRID Alternative works with volunteers and job trainees to implement the Single-Family Solar Photovoltaics program. Since these positions are not paid, they are not captured in GRID Alternative's spending flows, and as a result, are not embodied in the job-years reported for this program.

The percentage split between solar installation (i.e., the solar PV basket) and project management (i.e., management consulting services) was based on information provided directly by CSD. See **Table 16.4** for a summary of how these funds were split across each industry.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Single-Family Solar Photovoltaics program begins in 2015 and ends in 2018. Funds from FY 2014-15 will be spent between 2015 and 2017, and FY 2015-16 funds will be spent between 2017 and 2018. See **Table 16.3** for a detailed breakdown of how funds will be spent in each calendar year.

Table 16.3 Spending Timeline for the Single-Family Solar Photovoltaics Program

	FY 2014-15 Funds	FY 2015-16 Funds
2015	14.8% ($5.6 million)	N/A
2016	53.4% ($20.2 million)	N/A
2017	31.8% ($12.1 million)	58.7% ($19.9 million)
2018	N/A	41.3% ($14 million)
Total	**100% ($37.9 million)**	**100% ($33.9 million)**

Pricing Margins

Pricing margins refers to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Since management consulting services are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN. Spending on the solar PV basket, however, is more nuanced because it includes both service sectors and manufacturing related sectors (i.e., hardware manufacturing was, miscellaneous electrical equipment and component manufacturing, and other electronic component manufacturing). It is assumed that none of the materials purchased for the solar PV installation were purchased at consumer-facing retail locations, and were instead purchased directly from the manufacturers of the materials, so no margins were assumed for spending in the manufacturing sectors associated with the solar PV basket.

[15] Pollin, Robert, Heintz James, Garrett-Peltier Heidi (2009). "The Economic Benefits of Investing in Clean Energy." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. In the case of the Single-Family Solar Photovoltaics Program**,** all project management activities are completed by agencies based in California (100% default local purchase rate). The local purchasing rate for the solar PV basket varies between 16% and 100% because the basket represents five different industrial sectors. The default local purchase rate in IMPLAN was assumed for all five industries (hardware manufacturing was 16.1%; miscellaneous electrical equipment and component manufacturing was 21.7%; other electronic component manufacturing was 46.5%; environmental and other technical consulting services was 100%; and construction of new power and communication structures was 100%).

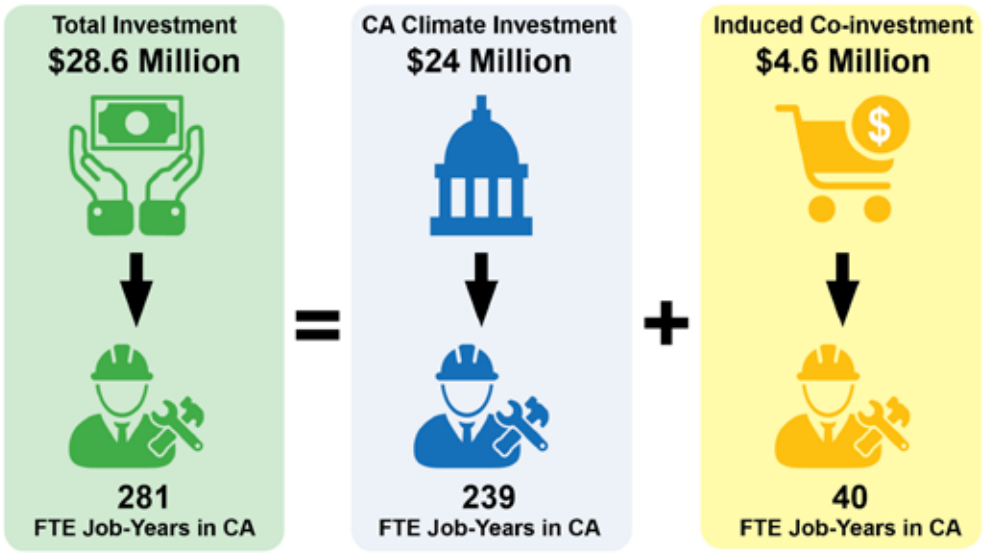
Table 16.3. Summary of Modeling Inputs for the Single-Family Solar Photovoltaics Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($71.8 Million)	Solar PV basket	90%	2015-2018	None	16-100%
	Management consulting services	10%	2015-2018	N/A	100%
Induced Co-Investment (N/A)	N/A	N/A	N/A	N/A	N/A

17. Large Multi-Family Energy Efficiency and Renewables

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Large Multi-Family Energy Efficiency and Renewables program provides large apartment buildings that house low-income residents with free energy audits and financial incentives for weatherization upgrades, energy efficiency measures, and renewable energy infrastructure. The financial incentives can contribute to or cover the cost of a number of improvements, including weather stripping, insulation, caulking, water heater blankets, fixing or replacing windows, refrigerator replacement, water heater repair/replacement, heating and cooling system repair/replacement, solar water heaters, and solar photovoltaic (PV) systems.

In addition to reducing greenhouse gas emissions (GHGs), another major goal of the program is to lower utility costs that are passed along to low-income residents. The program also provides a number of co-benefits, including workforce development, job training, health and safety, improved air quality, and preserving affordable housing.

To qualify, the building must be located in a disadvantaged community and contain 20 or more units. Additionally, at least 66% of the units must be occupied by households with incomes at or below 80% of area median income (AMI).[1] The building may have centralized hot water and heating/cooling systems or distributed systems (i.e., independent systems for each apartment).[2] Waivers are available for buildings with fewer than 20 units due to challenges with housing stock in some areas.[3] All properties must commit to installing upgrades that achieve at least 15% energy savings above current property conditions.[4]

Participation in the program begins with a free energy audit, conducted by the nonprofit Association for Energy Affordability Inc. (AEA), to assess the property for potential upgrades. Following the audit, AEA assists property owners with developing a scope of work, coordinating with local contractors to carry out construction activities, and providing financial incentives to subsidize the cost of the improvements. Financial incentives cover approximately 30% to 80% of energy efficiency upgrades and 50% to 100% of solar installations, depending on the final scope of work and GHG reduction potential.[5] The incentives can be used in conjunction with tax credits, utility programs, and other funding sources, but the energy savings requirement increases from 15% to 25% if additional funding is leveraged.[6] The final incentive amounts are distributed after approved installation of all upgrades.

Administration

The California Department of Community Services and Development (CSD) administers the Large Multi-Family Energy Efficiency and Renewables program. It is part of a larger initiative at CSD, the Low-Income Weatherization Program (LIWP), which is aimed at providing low-income households with energy efficiency and renewable energy measures. CSD has contracted with the AEA to implement the program.

AEA is also supported by three subcontractors: the California Housing Partnership Corporation (CHPC), TRC Energy Services, and GRID Alternatives. CHPC performs customer intake to determine if potential projects are appropriate candidates for program funding, provides expertise in the area of affordable housing finance, and works with AEA and TRC Energy Services to develop marketing campaigns and outreach strategies. TRC Energy Services assists in database management, benchmarking analysis, competitive bid exchange website management, and other recruitment and technical support components of the program. GRID Alternatives provides technical assistance to determine the project's estimated PV potential, sizing, system production, cost, and financing options.[7]

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Large Multi-Family Energy Efficiency and Renewables program between FY 2013-14 and FY 2015-16, totaling $24 million, are supporting

[1] Local Government Commission (2016). "Department of Community Services and Development (CSD) Low-Income Weatherization Program (LIWP)." Retrieved from https://www.lgc.org/wordpress/wp-content/uploads/2016/02/Glen-Baird-Department-of-Community-Services-and-Development.pdf
[2] Ibid.
[3] Ibid.
[4] California Multi Family Energy Efficiency (2016). "Low Income Weatherization Program Frequently Asked Questions." Retrieved from https://camultifamilyenergyefficiencydotorg.files.wordpress.com/2016/06/20160602_liwp-lmf_faq_.pdf
[5] California Multi Family Energy Efficiency. "Program Offerings." Retrieved from https://camultifamilyenergyefficiency.org/
[6] California Multi Family Energy Efficiency (2016). "Low Income Weatherization Program Frequently Asked Questions." Retrieved from https://camultifamilyenergyefficiencydotorg.files.wordpress.com/2016/06/20160602_liwp-lmf_faq_.pdf
[7] Ibid.

a total of **239 full-time equivalent (FTE) job-years** in California.[8] We estimate that these appropriations induced $4.6 million in co-investment, supporting an additional **40 FTE job-years**.[9] When modeled together, appropriated funds and induced co-investment support a total of **281 FTE job-years**.[10,11] See **Table 17.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[12]

Table 17.1. Direct, Indirect, and Induced Jobs Supported by the Large Multi-Family Energy Efficiency and Renewables Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	121.1	51%	21.3	54%
Indirect Jobs	56.6	24%	8.8	23%
Induced Jobs	60.5	25%	9.1	23%
Total	**100%**	**238.8**	**39.8**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

Appropriations for the Large Multi-Family Energy Efficiency and Renewables program support direct jobs in a mix of service- and manufacturing-related industries. Maintenance and repair construction is the most directly impacted industry, which is explained by the weatherization services provided through the program. Management consulting services is the second most impacted industry, which is explained by program funds that go toward project management. The remaining direct jobs are supported in industries that provide the necessary services and materials for installing solar PV systems (i.e., environmental and other technical consulting services, construction of new power and communication structures, other electronic component manufacturing, all other miscellaneous electrical equipment and component manufacturing, and hardware manufacturing). See **Table 17.1** for a summary of the direct jobs supported by appropriations for the program.

Co-investment induced by the Large Multi-Family Energy Efficiency and Renewables program supports direct jobs in a similar mix of industries to those described above. However, in contrast to appropriated funds, all of the program's induced co-investment is spent on energy efficiency upgrades and renewable energy measures, so no direct jobs are supported in the management consulting services sector. See **Table 17.2** for a summary of the direct jobs supported by induced co-investment for the Large Multi-Family Energy Efficiency and Renewables program.

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] Ibid.

[10] Ibid.

[11] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[12] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 17.2. Direct Jobs Supported by the Large Multi-Family Energy Efficiency and Renewables Program (by Industry)[13]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Maintenance and repair construction of residential structures	44.9	37.1%
Management consulting services	36.2	29.9%
Environmental and other technical consulting services	17.8	14.7%
Construction of new power and communication structures	17.7	14.6%
Other electronic component manufacturing	2.8	2.3%
All other miscellaneous electrical equipment and component manufacturing	1.2	1.0%
Hardware manufacturing	0.7	0.6%
Total of All Industries	**121.1**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Maintenance and repair construction of residential structures	9.1	42.8%
Management consulting services	5.4	25.4%
Environmental and other technical consulting services	5.4	25.3%
Other electronic component manufacturing	0.8	3.7%
All other miscellaneous electrical equipment and component manufacturing	0.4	1.8%
Hardware manufacturing	0.2	0.9%
Total of All Industries	**21.3**	**100%**

Methodology

In order to model the Large Multi-Family Energy Efficiency and Renewables program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 17.2.**

[13] A summary of the indirect and induced jobs by industry, supported by the Large Multi-Family Energy Efficiency and Renewables program can be found in **Appendix 17.1**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $24 million in California Climate Investment funding was allocated to the Large Multi-Family Energy Efficiency and Renewables program. Of these funds, CSD estimates that $9.2 million will be spent on the installation of solar PV panels, another $9.2 million will be spent on energy efficiency upgrades, and $5.5 million will be spent on energy audits and project management (i.e., AEA and all supporting subcontractors).

Induced Co-investment

At the time of writing this report, most projects were in the preconstruction, technical assistance phase, so no data on co-investment was available. Based on input from CSD, a co-investment of 30% was assumed for energy efficiency upgrades (i.e., 30% of $9.2 million in state funds, or $2.8 million), and a 20% co-investment was assumed for renewable energy measures (i.e., 20% of $9.2 million in state funds, or $1.8 million). Together, the total co-investment was assumed to be $4.6 million.[14]

It is assumed that all co-investment is induced because the program specifically targets building owners who would be unlikely to participate in major energy efficiency upgrades or renewable energy projects. These activities are particularly complex for large multiunit dwellings and require developing a scope of work, coordinating with local contractors to carry out construction activities, and securing other sources of financial incentives to further subsidize the cost of the improvements. The Large Multi-Family Energy Efficiency and Renewables program delivers many of these supporting services for free, so that property owners incur only a minor share of capital costs associated with upgrades. Thus, without the state's financial support, it is assumed that building owners would have used their matching funds for other purposes.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Large Multi-Family Energy Efficiency and Renewables program, funds must be tracked according to how they are spent. Program funds are spent in three primary ways: (1) installation of solar PV panels; (2) energy efficiency upgrades; and (3) energy audits and project management.

To model the installation of solar PV panels in IMPLAN, a custom solar PV basket was created. The basket is a mix of industries, based on the industry basket assigned to the solar sector in *The Economic Benefits of Investing in Clean Energy,* authored by the Center for American Progress.[15] The mix of industries included in the solar PV basket include: construction of new power and communication structures (30%); hardware manufacturing (17.5%); miscellaneous electrical equipment and component manufacturing (17.5%); other electronic component manufacturing (17.5%); and environmental and other technical consulting services (17.5%).

Spending on energy efficiency upgrades was modeled as "maintenance and repair construction of residential structures" in IMPLAN. This assumption is consistent with how building weatherization activities were modeled in *The Economic Benefits of Investing in Clean Energy*.[16]

[14] CSD (Email correspondence, June 21, 2017).
[15] Pollin, Robert, Heintz James, Garrett-Peltier Heidi (2009). "The Economic Benefits of Investing in Clean Energy." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf
[16] Ibid.

Spending on energy audits and project management was modeled as "management consulting services" in IMPLAN. This industrial sector represents technical assistance providers that deliver a wide variety of services related to project implementation, including assistance with administration, marketing, and logistics.[17] While this industrial code does not explicitly include activities such as energy audits, it does include activities related to financial planning and utilities management planning, and it is assumed that any difference between these activities is negligible in terms of employment benefits.

The percentage split between solar installation (i.e., solar PV basket), energy efficiency upgrades (i.e., maintenance and repair construction of residential structures), and energy audits and project management (i.e. management consulting services) was based on information provided directly by CSD. See **Table 17.2** for a summary of how these funds were split across each industry during the study period.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Large Multi-Family Energy Efficiency and Renewables program begins in 2016 and ends in 2018. Based on input from CSD, a small share of funds was modeled in 2016 (6.2% of funds), most funds were modeled in 2017 (70.4%), and the remainder of funds were modeled in 2018 (23.5%).

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). Since maintenance and repair construction services are not purchased through a retailer, pricing margins were not applicable for this economic sector in IMPLAN. Similarly, pricing margins were not applicable for management consulting services. Spending on the solar PV basket, however, is more nuanced because it includes both service sectors and manufacturing sectors (i.e., hardware manufacturing, miscellaneous electrical equipment and component manufacturing, and other electronic component manufacturing). It is assumed that none of the materials for solar PV installation are purchased at consumer-facing retail locations, and were instead purchased directly from the producers that manufacture the materials, so no margins were assumed for spending in the manufacturing sectors associated with the solar PV basket.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. In the case of this program, all energy efficiency upgrades are assumed to be completed by in-state firms. All project management activities (including energy audits) are assumed to be completed by AEA, CHPC, TRC Energy Services, and GRID Alternatives, all of which have headquarters or regional offices located in California. The local purchase rate for the solar PV basket varies between 16% and 100% because it represents five different industrial sectors. The default local purchase rate in IMPLAN was assumed for all five industries (hardware manufacturing was 16.1%; miscellaneous electrical equipment and component manufacturing was 21.7%; other electronic component manufacturing was 46.5%; environmental and other technical consulting services was 100%; and construction of new power and communication structures was 100%).

[17] United States Census Bureau (2017). "North American Industry Classification System." Retrieved from https://www.census.gov/eos/www/naics/2017NAICS/2017_NAICS_Manual.pdf

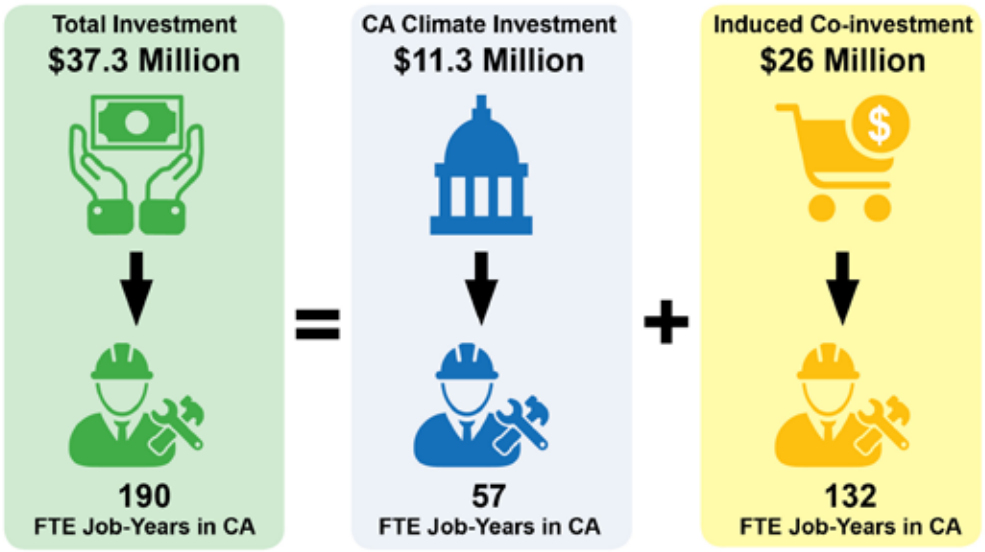
Table 17.3. Summary of Modeling Inputs for the Large Multi-Family Energy Efficiency and Renewables Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($24 Million)	Solar PV basket	38.5%	2016-2018	None	16-100%
	Maintenance and repair construction of residential structures	38.5%	2016-2018	N/A	100%
	Management consulting services	23%	2016-2018	N/A	100%
Induced Co-investment ($4.6 Million)	Solar PV basket	60%	2016-2018	None	16-100%
	Maintenance and repair construction of residential structures	40%	2016-2018	N/A	100%

18. Dairy Digester Research and Development Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Dairy Digester Research and Development Program (DDRDP) provides grants for dairy digesters that reduce methane emissions from dairy waste in California. The program also provides research and demonstration grants to better understand the scientific and technical aspects of dairy digesters and methods to enhance their economic feasibility. The grants are awarded on a competitive basis, and the maximum award is $3 million.[1]

Dairy digesters capture methane produced by microorganisms that digest animal waste in an anaerobic environment, usually a pond covered by a high-density polyethylene (HDPE) cover and liner. The methane

[1] California Department of Food and Agriculture (2016). "CDFA 2015 Dairy Digester Research and Development Program Phase I Projects Selected for Award of Funds." Retrieved from https://www.cdfa.ca.gov/oefi/ddrdp/docs/2014-15_Selected_Projects.pdf

released during the digestion process is funneled through a gas line, where it can be burned to generate electricity or stored as a transportation fuel, both of which offset energy costs for dairy operators.[2] In some cases, the electricity is sold back to the dairy operator's utility vis-à-vis the state's Bioenergy Market Adjusting Tariff (BioMAT), a feed-in tariff program.[3] Capturing methane also keeps it from escaping into the atmosphere, where it functions as a greenhouse gas with a global warming potential 25 times greater than carbon dioxide over a 100-year period.[4] Dairy digesters also reduce odors, pathogens, and waste.[5]

In 2015, six projects were awarded a total of $11.1 million in grants to implement digesters.[6] All of the projects proposed using a covered lagoon digester to capture methane from manure for the purposes of producing electricity, though two of the projects will integrate a transportation fuel component in the future. Five of the six requested funds for the cost of installing new digester systems, while one requested funds for the cost of recommissioning an existing digester that was no longer functional.

Administration

The California Department of Food and Agriculture (CDFA) administers DDRDP, in coordination with the California Federal Dairy Digester Working Group (Working Group). The Working Group is a collaborative partnership between state, federal, and local agencies and includes three subcommittees evaluating dairy digester economics, regulatory issues, and technologies. The goal of the Working Group is to facilitate widespread adoption of dairy digesters in California by identifying and removing regulatory and implementation barriers. In addition to government representatives, the subcommittees include stakeholders from academia, industry, nonprofit organizations, and utility suppliers.[7]

Results

After modeling the program in IMPLAN, we estimate that appropriations for DDRDP from FY 2013-14 through FY 2015-16, totaling $11.3 million, are supporting a total of **57 full-time equivalent (FTE) job-years** in California.[8] We estimate that these appropriations induced $26 million in co-investment, supporting an additional **132 FTE job-years**.[9] When modeled together, appropriated funds and induced co-investment support a total of **190 FTE job-years**.[10,11] See **Table 18.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[12]

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[2] California Department of Food and Agriculture (2016). "Dairy Digester Research & Development Program." Retrieved from https://www.cdfa.ca.gov/oefi/ddrdp/

[3] CDFA (Email correspondence, June 13, 2017).

[4] United States Environmental Protection Agency (2017). "Overview of Greenhouse Gases Methane Emissions." Retrieved from https://www.epa.gov/ghgemissions/overview-greenhouse-gases

[5] California Department of Food and Agriculture (2016). "Dairy Digester Research & Development Program." Retrieved from https://www.cdfa.ca.gov/oefi/ddrdp/docs/2016_Fact_Sheet.pdf

[6] Ibid.

[7] California Air Resources Board (2014). "Greenhouse Gas Reduction Fund: California Department of Food and Agriculture Expenditure Record for Fiscal Year 2014-15." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-cdfa-digesters-expenditure-record.pdf

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] Ibid.

[10] Ibid.

[11] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[12] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 18.1. Direct, Indirect, and Induced Jobs Supported by DDRDP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	32	56%	73	56%
Indirect Jobs	10	18%	24	19%
Induced Jobs	15	26%	34	26%
Total	**57**	**100%**	**132**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of the direct jobs supported by appropriations for DDRDP occur in the construction sector. These jobs are explained by the funds that go to dairy operators to build or to renovate digesters that convert methane into electricity. The second most impacted sector is architectural, engineering, and related services, which is explained by the design-related activities that go toward building or renovating dairy digesters. Nearly all of the remaining direct jobs are supported in manufacturing industries that supply the goods needed to build lagoon dairy digesters, except for the jobs supported in scientific research and development services, which are supported by program funding for research grants. See **Table 18.2** for a summary of the direct jobs supported by appropriations for DDRDP.

Co-investment induced by DDRDP supports direct jobs in a similar mix of industries to those described above, excluding scientific research and development services because no induced co-investment was recorded for the research and demonstration grants. See **Table 18.2** for a summary of the direct jobs supported by induced co-investment for DDRDP.

Table 18.2. Direct Jobs Supported by DDRDP (by Industry)[13]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new power and communication structures	17.3	54.4%
Architectural, engineering, and related services	6.3	19.7%
Textile bag and canvas mills	4.7	14.8%
Power, distribution, and specialty transformer manufacturing	2.1	6.5%
Heating equipment (except warm air furnaces) manufacturing	0.7	2.2%
Scientific research and development services	0.7	2.1%
Pump and pumping equipment manufacturing	0.1	0.3%
Construction of new power and communication structures	17.3	54.4%
Total of All Industries	**3.1.8**	**100%**

Continues next page.

[13] A summary of the indirect and induced jobs by industry, supported by DDRDP can be found in **Appendix 18.1**.

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new power and communication structures	40.4	55.4%
Architectural, engineering, and related services	14.6	20.0%
Textile bag and canvas mills	11.2	15.3%
Power, distribution, and specialty transformer manufacturing	4.9	6.7%
Heating equipment (except warm air furnaces) manufacturing	1.6	2.2%
Pump and pumping equipment manufacturing	0.3	0.4%
Construction of new power and communication structures	40.4	55.4%
Total of All Industries	**72.9**	**100%**

Methodology

In order to model DDRDP in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of DDRDP. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 18.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $12 million in California Climate Investment funding was allocated to DDRDP.[14] Of these funds, $11.1 million was awarded to digester projects, an additional $225,000 was awarded to a research project, and the remaining $675,000 was allocated to the CDFA for state-level program administration.[15] The job-years supported by the $675,000 in administrative funds were excluded from the job totals reported in this chapter, and are instead reported in the **chapter 3** of **Part I**.

Induced Co-investment

To receive a DDRDP award, grantees are required to provide a 50% cost share.[16] Grantees, therefore, are considered co-investors (with the state) in the development of dairy digester projects. Based on the six awarded projects in FY 2014-15, grants greatly exceeded the minimum cost-share requirement by contributing around $28.9 million in matching funds, or 72% of total projects costs.[17] CDFA estimates that 90% of these matching funds would be lost without DDRDP incentives.[18] Thus, $26 million in grantee co-investment is considered induced by DDRDP and is modeled toward the employment benefit the program.

[14] California Air Resources Board (2014). "Greenhouse Gas Reduction Fund: California Department of Food and Agriculture Expenditure Record for Fiscal Year 2014-15." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-cdfa-digesters-expenditure-record.pdf

[15] CDFA (Email correspondence, June 21, 2017).

[16] California Department of Food and Agriculture (2016). "Dairy Digester Research & Development Program." Retrieved from https://www.cdfa.ca.gov/oefi/ddrdp/docs/2016_Fact_Sheet.pdf

[17] Ibid.

[18] CDFA (Email correspondence, April 10, 2017).

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by DDRDP, funds must be tracked according to how they are spent. Program funds for DDRDP are spent in two primary ways: (1) grants for dairy digesters that reduce methane emissions from dairy waste and (2) research to improve understanding of the scientific and technical aspects of dairy digesters and methods to enhance their economic feasibility.

The grants for dairy digester projects directly impact a wide array of industrial sectors (see **Table 18.3**). These industrial sectors were based on a sample budget for a methane dairy digester at Haubenschild Farms in Minnesota, published in the report *Projected Economic Impacts of Green Jobs Development in the Appalachian Region (2010)*.[19] This sample budget was modified to better reflect the typical digester funded through DDRDP (i.e., lagoon digesters). Thus, spending on metal tanks was substituted with an equal amount of spending on additional fabric cover (modeled in IMPLAN as "textile bag and canvas mills").

Spending on research activities were modeled as "scientific research and development services" in IMPLAN. This sector broadly represents establishments engaged in conducting original research to gain new knowledge or to significantly improvement products or processes.[20]

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for DDRDP begins in 2015 and ends in 2017. The maximum project term is two years, and grant funds cannot be expended before July 1, 2015, or after June 30, 2017. It is assumed that funds are evenly spent on an annual basis between 2015 and 2017.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). All materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., construction of new power and communication structures; architectural, engineering, and related services; etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project level sourcing information for DDRDP, the default local purchase rate was assumed for all industrial sectors.

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[19] Jensen, Kimberly L., Lambert, Dayton M., Menard, R. Jamey, English, Burton C., and Xu, Wan (2010). "Projected Economic Impacts of Green Jobs Development in the Appalachian Region." Retrieved from http://beag.ag.utk.edu/pub/GreenJobsImpactARC2.pdf

[20] United Sates Census Bureau (2017). "North American Industry Classification System." Retrieved from https://www.census.gov/eos/www/naics/2017NAICS/2017_NAICS_Manual.pdf

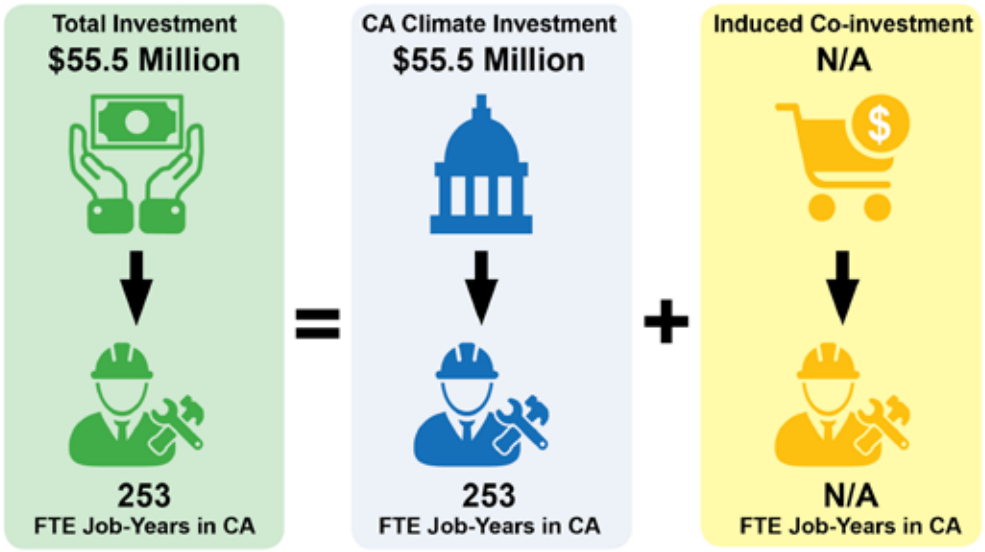
Table 18.3. Summary of Modeling Inputs for DDRDP

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment: Dairy Digester Grants ($11.1 Million)	Textile bag and canvas mills	28.9%	2015- 2017	None	Default (21.4%)
	Power, distribution, and specialty transformer manufacturing	28.1%	2015- 2017	None	Default (22.7%)
	Construction of new power and communication structures	23.2%	2015- 2017	N/A	Default (99.9%)
	Architectural, engineering, and related services	10.5%	2015- 2017	N/A	Default (95.7%)
	Heating equipment, except warm air furnaces	5.8%	2015- 2017	None	Default (29.7%)
	Pump and pumping equipment manufacturing	3.6%	2015- 2017	None	Default (12.9%)
California Climate Investment: Research Activities ($225,000)	Scientific research and development services	100%	2015- 2017	N/A	Default (97.9%)
Induced Co-investment ($26Million)	Textile bag and canvas mills	28.9%	2015- 2017	None	Default (21.4%)
	Power, distribution, and specialty transformer manufacturing	28.1%	2015- 2017	None	Default (22.7%)
	Construction of new power and communication structures	23.2%	2015- 2017	N/A	Default (99.9%)
	Architectural, engineering, and related services	10.5%	2015- 2017	N/A	Default (95.7%)
	Heating equipment, except warm air furnaces	5.8%	2015- 2017	None	Default (29.7%)
	Pump and pumping equipment manufacturing	3.6%	2015- 2017	None	Default (12.9%)

19. State Water Efficiency and Enhancement Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The State Water Efficiency and Enhancement Program (SWEEP) provides financial assistance in the form of competitive grants to implement irrigation systems that reduce greenhouse gas emissions (GHGs) and save water in California agricultural operations. The maximum grant award has ranged from $50,000 to $200,000 over the course of five solicitation periods from 2014 to 2016. Only one grant application could be submit-

ted per agricultural operation during each solicitation period.[1,2,3,4,5]

In order to qualify, applicants must propose irrigation upgrades that include both water-saving and GHGs-reducing measures. Water-saving measures include micro-irrigation drip systems and irrigation sensors that are responsive to soil moisture, weather, and the water content in plant tissue. GHG-reducing measures include replacing pumps with more energy efficient versions, converting fuels sources from fossil fuels to renewable energy, switching to lower pressure pumping systems, using variable frequency drives that better match pumping speeds with flow loads, and improving irrigation scheduling that lead to less pumping.[6]

Administration

The California Department of Food and Agriculture (CDFA) administers SWEEP, in coordination with the State Water Resources Control Board (SWRCB) and the California Department of Water Resources (DWR).[7]

Results

After modeling the program in IMPLAN, we estimate that appropriations during the study period for SWEEP between FY 2013-14 and FY 2015-16, totaling $55.5 million, are supporting a total of **253 full-time equivalent (FTE) job-years** in California.[8] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 19.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[9]

Table 19.1. Direct, Indirect, and Induced Jobs Supported by SWEEP*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	120	48%	N/A	N/A
Indirect Jobs	65	26%	N/A	N/A
Induced Jobs	67	26%	N/A	N/A
Total	**253**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

[1] California Department of Food and Agriculture (2014). "2014 State Water Efficiency and Enhancement Program (SWEEP) Frequently Asked Questions (FAQs)." Retrieved from https://www.cdfa.ca.gov/EnvironmentalStewardship/pdfs/SWEEP_FAQs.pdf

[2] California Department of Food and Agriculture (2014). "2014 State Water Efficiency and Enhancement Program (SWEEP) Second Solicitation." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/SWEEP_Round-II-FAQ.pdf

[3] California Department of Food and Agriculture (2015). "2015 State Water Efficiency and Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2015-SWEEP-AppGuidelines.pdf

[4] California Department of Food and Agriculture (2015). "2016 State Water Efficiency and Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016_Request_for_Grant_Applications.pdf

[5] California Department of Food and Agriculture (2016). "2016 State Water Efficiency and Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016SWEEP-RndII-Request-GrantApp.pdf

[6] Ibid.

[7] Ibid.

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

The majority of direct jobs supported by SWEEP occur in the maintenance and repair construction sector (51%). These jobs are explained by the program funds that go toward the installation of irrigation components. A smaller share of jobs is also supported by the program in the construction of new power and communication structures (6%), which are exp lained by the funds that go toward the installation of solar photovoltaic systems to power irrigation systems. The remaining jobs supported by the program occur in manufacturing sectors that provide the inputs for irrigation equipment (e.g., other electronic component manufacturing, plastics pipe and pipe fitting manufacturing, pump and pumping equipment manufacturing, etc.). See **Table 19.2** for a summary of the direct jobs supported by SWEEP.

Table 19.2. Direct Jobs Supported by SWEEP (by Industry)[10]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Maintenance and repair construction of nonresidential structures	61.2	50.9%
Other electronic component manufacturing	39.5	32.8%
Plastics pipe and pipe fitting manufacturing	9.2	7.6%
Construction of new power and communication structures	7.3	6.1%
Pump and pumping equipment manufacturing	1.9	1.5%
All other miscellaneous electrical equipment and component manufacturing	0.8	0.7%
Hardware manufacturing	0.5	0.4%
Total of All Industries	**120.4**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Methodology

In order to model SWEEP in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of SWEEP. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 19.4.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $60 million in California Climate Investment funding was allocated to SWEEP.[11] Of these funds, it is assumed that 7.5% was allocated to CDFA for program administration ($4.5 million), and the remaining 92.5% was dedicated to funding efficiency projects ($55.5 million). These percentages are based on the FY 2014-15 and FY 2015-16 public expenditure records for SWEEP.[12] During each

[10] A summary of the indirect and induced jobs by industry, supported by SWEEP can be found in **Appendix 19.1**.

[11] California Air Resources Board (2017). "Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2017.pdf

[12] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

fiscal year, CDFA estimated 5% to 10% in administrative costs. In the absence of detailed records on final administrative costs, an average of 7.5% was assumed for each fiscal year. The job-years supported by the $4.5 million in state-level administrative funds were excluded from the job totals reported in this chapter, and are instead reported in **chapter 3** of **Part I**.[13]

During the study period, a total of $18.1 million in project funds have been awarded to 223 efficiency projects.[14] It is assumed that the remaining $41.9 million in available project funds will be rolled over into the next fiscal year, but are analyzed here for their employment benefits.

Induced Co-investment

To receive a SWEEP award, grantees are not required to provide matching funds.[15] Yet, grantees have leveraged millions of dollars in outside funds toward the completion of their proposed projects. However, it is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured for the efficiency projects even in the absence of California Climate Investment funding. Without detailed data on how grantees would have spent matching funds in the absence of a SWEEP grant, only the employment benefits of California Climate Investment funding (described above) was modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. The IMPLAN codes assigned to each SWEEP grant were based on the grant award descriptions obtained from the 2016 California Climate Investments Annual Report spreadsheet.[16] Each project type was assigned a manufacturing code for material costs and a construction code for labor-related costs (i.e., installation costs). According to the request for grant applications for each application cycle, labor costs cannot exceed 25% of the total request.[17,18,19,20,21] Based on input from CDFA, the maximum allowable labor cost was assumed for all grant

[13] State-level administrative costs also include the cost of technical review for project applications, the verification of project completion, and post-project quantification. Some portion of these activities may be contracted to university irrigation experts, resource conservation districts, and other third-party organizations. However, since detailed budgetary data on administrative costs were not available at the time of this study, all activities were modeled as "employment and payroll only (state government, non-education)" in IMPLAN.

[14] California Department of Food and Agriculture (2016). "Dairy Digester Research & Development Program." Retrieved from https://www.cdfa.ca.gov/oefi/ddrdp/docs/2016_Fact_Sheet.pdf

[15] California Department of Food and Agriculture (2017). "2017 State Water Efficiency Enhancement Program (SWEEP) Frequently Asked Questions." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2017-SWEEP_FAQs.pdf

[16] California Air Recourses Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from http://www.arb.ca.gov/cc/capandtrade/auction-proceeds/ggrf_project_list_for_2016_annual_report.xlsx (ggrf_project_list_for_2016_annual_report)

[17] California Department of Food and Agriculture (2014). "2014 State Water Efficiency Enhancement Program (SWEEP) Frequently Asked Questions." Retrieved from https://www.cdfa.ca.gov/EnvironmentalStewardship/pdfs/SWEEP_FAQs.pdf

[18] California Department of Food and Agriculture (2014). "2014 State Water Efficiency Enhancement Program (SWEEP) Second Solicitation." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/SWEEP_Round-II-FAQ.pdf

[19] California Department of Food and Agriculture (2015). "2015 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2015-SWEEP-AppGuidelines.pdf

[20] California Department of Food and Agriculture (2015). "2016 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016_Request_for_Grant_Applications.pdf

[21] California Department of Food and Agriculture (2016). "2016 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016SWEEP-RndII-RequestGrantApp.pdf

awards.[22] See **Table 19.3** for a summary of SWEEP project types and the IMPLAN codes that were assigned to them.

Of particular note, the IMPLAN industries assigned to renewable energy projects were based on the basket of industries created for the solar sector in *The Economic Benefits of Investing in Clean Energy* authored by the Center for American Progress.[23] The basket from that report, however, was modified here to reflect the 25% cap on labor costs. All labor costs were coded entirely as construction, since design costs are not an allowable expense.[24,25,26]

The percentage share of California Climate Investment funding assigned to each grant award was also based on the descriptions obtained from the 2016 California Climate Investments Annual Report spreadsheet.[27] When a grant award involved multiple project types (e.g., the installation of soil moisture sensors and pipeline improvements), funds were evenly split between each project type. See **Appendix 19.2** for a matrix of how funds were apportioned to the various project types for each grantee.

Table 19.3. Summary of SWEEP Project Types and Relevant IMPLAN Codes

Efficiency Measure	IMPLAN Code
Irrigation Scheduling	Other electronic component manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Micro-irrigation	Plastics pipe and pipe fitting manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Pump Efficiency	Pump and pumping equipment manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Soil Moisture Sensor	Other electronic component manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Renewable Energy (Solar PV System)	Hardware manufacturing (25%)
	Miscellaneous electrical equipment and component manufacturing (25%)
	Other electronic component manufacturing (25%)
	Construction of new power and communication structures (25%)
Low-pressure System	Plastics pipe and pipe fitting manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)

Continues next page.

[22] CDFA (Email correspondence, June 13, 2017).

[23] Pollin, Robert, Heintz, James, Garrett-Peltier, Heidi (2009). "The Economic Benefit of Investing in Clean Energy." Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/peri_report.pdf

[24] California Department of Food and Agriculture (2015). "2015 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2015-SWEEP-AppGuidelines.pdf

[25] California Department of Food and Agriculture (2015). "2016 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016_Request_for_Grant_Applications.pdf

[26] California Department of Food and Agriculture (2016). "2016 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016SWEEP-RndII-Request-GrantApp.pdf

[27] California Air Recourses Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from http://www.arb.ca.gov/cc/capandtrade/auction-proceeds/ggrf_project_list_for_2016_annual_report.xlsx (ggrf_project_list_for_2016_annual_report)

Efficiency Measure	IMPLAN Code
Open Ditch to Pipeline	Plastics pipe and pipe fitting manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Pipeline Improvement	Plastics pipe and pipe fitting manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Water Capture	Metal tank (heavy gauge) manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)
Water Reuse	Plastics pipe and pipe fitting manufacturing (75%)
	Maintenance and repair construction of nonresidential structures (25%)

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for SWEEP begins in 2014 and ends in 2017. The first round of projects was awarded in August 2014 using FY 2013-14 funds.[28] The latest round was awarded in November 2016 using FY 2015-16 funds.[29] The maximum grant duration is 12 months.[30] Funds are assumed to be evenly spent on an annual basis between 2014 and 2017.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). All materials are assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries. Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (i.e., maintenance and repair construction of non-residential structures, construction of new power and communication structures).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project level sourcing information for SWEEP, the default local purchase rate was assumed for all industrial sectors.

[28] California Department of Food and Agriculture (2014). "State Water Efficiency Enhancement Program 2014 Application Guideline." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2014-SWEEP-Round1-AppGuidelines.pdf

[29] California Department of Food and Agriculture (2016). "2016 State Water Efficiency Enhancement Program (SWEEP) Request for Grant Applications." Retrieved from https://www.cdfa.ca.gov/oefi/sweep/docs/2016SWEEP-RndII-Request-GrantApp.pdf

[30] Ibid.

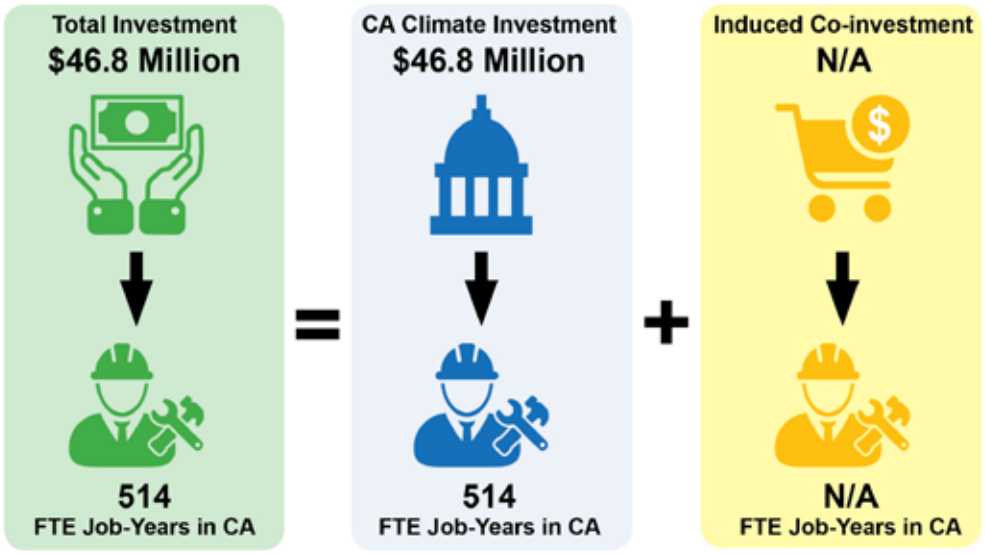
Table 19.4. Summary of Modeling Inputs for SWEEP

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($55.5 Million)	Other electronic component manufacturing	43.2%	2014-2017	None	Default (46.5%)
	Maintenance and repair construction of nonresidential structures	23.1%	2014-2017	N/A	Default (85.9%)
	Plastics pipe and pipe fitting manufacturing	15.9%	2014-2017	None	Default (57.1%)
	Pump and pumping equipment manufacturing	12.0%	2014-2017	None	Default (12.9%)
	Hardware manufacture	1.9%	2014-2017	None	Default (16.1%)
	All other miscellaneous electrical equipment manufacturing	1.9%	2014-2017	None	Default (7.3%)
	Construction of new power and communication structures	1.9%	2014-2017	N/A	Default (100%)
	Metal tank (heavy gauge) manufacture	0.1%	2014-2017	None	Default (7.3%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

20. Water-Energy Grant Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Water-Energy Grant Program provides grants to local government agencies and nonprofit organizations to implement residential, commercial, or institutional water efficiency programs or projects that reduce greenhouse gas (GHG) emissions, water use, and energy use. In 2014, the maximum grant award was $2.5 million, with a cap of $5 million per applicant.[1] Award amounts increased for the 2016 grant cycle, with a maximum grant award of $3 million per proposal, and cap of $6 million per applicant.[2]

In order to qualify for funding in the most recent solicitation, applicants must have proposed projects that achieve reductions in water use, energy use, and GHGs. Potential projects included replacing household

[1] California Department of Water Resources (2014). "2014 Water-Energy Grant Program Guidelines and Proposal Solicitation Package." Retrieved from http://www.water.ca.gov/waterenergygrant/docs/2014_WE_GL_PSP_Final_10102014.pdf

[2] California Department of Water Resources (2016). "2016 Water-Energy Grant Program Guidelines and Proposal Solicitation Package." Retrieved from http://www.water.ca.gov/waterenergygrant/docs/Final%202016_WE_GL_PSP_September2016.pdf

appliances (e.g., clothes washers, dishwashers), upgrading commercial and institutional cooking equipment (e.g., steam cookers, boilerless combination ovens, ice machines, pre-rinse spray valves), and installing new bathroom fixtures (e.g., faucets, showerheads), among others. Residential water-energy efficiency programs must specifically benefit disadvantaged communities.[3]

A total of $45.5 million was awarded to 20 projects in 2014 and 14 projects in 2016. The grantees included a mix of water districts, city governments, and nonprofit organizations. The grants ranged from $24,000 to $3 million and covered a variety of water and energy saving measures, including bathroom fixture replacements, washing machine rebates, advanced metering infrastructure, and landscape retrofits.[4]

Administration

The California Department of Water Resources (DWR) administers the Water-Energy Grant Program.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Water-Energy Grant Program between FY 2013-14 and FY 2015-16, totaling $46.8 million, are supporting a total of **514 full-time equivalent (FTE) job-years** in California.[5] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 20.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[6]

Table 20.1. Direct, Indirect, and Induced Jobs Supported by the Water-Energy Grant Program

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	321	63%	N/A	N/A
Indirect Jobs	84	16%	N/A	N/A
Induced Jobs	108	21%	N/A	N/A
Total	**514**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The Water-Energy Grant Program supports direct jobs in a variety of sectors. The majority of direct jobs occur in industries involved installing water-saving devices or landscaping features (e.g., landscape and horticultural services, maintenance and repair construction of residential structures, maintenance and repair construction of nonresidential structures). The program also funds consumer-facing rebate programs, which support a significant number of jobs in retail related sectors (i.e., electronics and appliance stores, building material and garden equipment and supply stores, and other miscellaneous retail stores). Additionally, industries that provide project management, administration, and implementation-related services are also heavily impacted by the program (e.g., individual and family services, management

[3] Ibid.

[4] California Department of Water Resources. "Water-Energy Grant Programs Final Awards." Retrieved from http://www.water.ca.gov/waterenergygrant/docs/W_E_FinalAwards.pdf

[5] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[6] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

consulting services, employment and payroll of local government, and architectural, engineering, and related services). See **Table 20.2** for a summary of the direct jobs supported by the Water-Energy Grant Program.

Table 20.2. Direct Jobs Supported by the Water-Energy Grant Program (by Industry)[7]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Landscape and horticultural services	73.8	23.0%
Retail - Miscellaneous store retailers	60.9	19.0%
Maintenance and repair construction of residential structures	41.9	13.1%
Individual and family services	41.0	12.8%
Architectural, engineering, and related services	28.5	8.9%
Management consulting services	17.8	5.5%
Retail - Electronics and appliance stores	15.0	4.7%
Retail - Building material and garden equipment and supplies stores	14.1	4.4%
Employment and payroll of local government, non-education	8.1	2.5%
Maintenance and repair construction of nonresidential structures	5.7	1.8%
Subtotal of Top 10 Industries	**306.8**	**95.7%**
Total of All Industries	**320.6**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Methodology

In order to model the Water-Energy Grant Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 20.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $50 million in California Climate Investment funding was allocated to the Water-Energy Grant Program.[8] Of this funding, $45.5 million was awarded to projects that reduce GHG emissions, water use, and energy use ($27.8 million for 20 projects in 2014 and $17.7 million for 14 projects

[7] A summary of the indirect and induced jobs, by industry, supported by the Water-Energy Grant Program can be found in **Appendix 20.1**.

[8] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

in 2016 projects).[9] About $1.3 million in program funds will also be dedicated to post-project monitoring.[10] Across both project cycles, a total of $3 million was allocated to DWR for program administration. The job-years supported by the $3 million in state-level administrative funds were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**. The remaining $0.2 million was returned to the Greenhouse Gas Reduction Fund for future appropriations and was not analyzed in this study.

Induced Co-investment

To receive a Water-Energy grant, there is no mandated cost-share. However, if the total project costs of a proposal exceeded the maximum grant amount, then applicants were required to document all costs necessary to complete the scope of work. Cumulatively, grantees contributed $5.9 million in matching funds to complete their projects (around $5 million in matching funds were provided by 2014 grantees and around $0.8 million in matching funds were provided by 2016 grantees). It is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured even in the absence of California Climate Investment funding. As a conservative assumption, none of the matching funds from grantees were modeled as induced co-investment, and as a result, are not reflected in the job totals reported for this program.

In addition to matching funds from grantees, consumers also contribute funds to the program. Many of the Water-Energy grants support consumer-facing rebate programs for high-efficiency clothes washers and low-flow toilets, in which consumers must pay the difference between the retail price of the toilet or clothes washer and the respective rebate amount. At the time of writing this report, detailed data was not available on the kinds of clothes washers and toilets that consumers purchased with grant funds. As a conservative assumption, matching funds from consumers were excluded from the investment flows modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by Water-Energy Grant Program, funds must be tracked according to how they are spent. Program funds are spent in two primary ways: (1) grants for water efficiency projects and (2) post-project monitoring.

The grants for water-efficiency projects directly impact a wide array of industrial sector (see **Table 20.3**). These industrial sectors were based on the proposed budgets and work plans submitted by the 20 awarded projects in 2014 and the 14 awarded projects in 2016.[11] For line-item level information on how each expenditure was coded for the various Water-Energy grant awards, refer to **Appendix 20.2**. Industrial sectors that make up less than 0.01% of overall spending were excluded from the mix of industries modeled for this program because their employment impacts were negligible.

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[9] Awarded projects and funding amounts were based on the summary tables posted to the program's web archive. A total of 22 awards were originally distributed for 2014 projects, but the awards for Yuba City and Hidden Valley Lake Community Services District were later returned to DWR. Summary tables of awarded projects can be viewed here: http://www.water.ca.gov/waterenergygrant/archive.cfm

[10] DWR (Email correspondence, May 25, 2017).

[11] Detailed budget information was obtained from the project applications posted here: California Department of Water Resources (2017). "Water-Energy Grant Program." Retrieved from http://www.water.ca.gov/waterenergygrant/energyApp.cfm.

Of particular note, the mileage basket is a mix of industries, based on the average breakdown of annual vehicle costs reported in the American Automobile Association's 2015 Your Driving Costs study.[12] The mix of industries in the mileage basket includes: household income (42%); retail stores – gasoline stations (19.3%); insurance carriers (12.8%); automotive repair and maintenance, except car washes (8.8%); monetary authorities and depositor credit intermediation activities (7.7%); employment and payroll only (state and local government, non-education) (7.7%); and tire manufacturing (1.7%). Household income is a unique industry in the basket because it does not directly correspond to a vehicle cost and instead represents reimbursement dollars that go toward vehicle depreciation, which vehicle owners may spend in a variety of ways.

With respect to the program funds for post-project monitoring, around $1.3 million will be awarded to interested grantees and one third-party researcher. Without knowing which parties will be selected for post-project monitoring, these activities were modeled in IMPLAN as "management and consulting services," and industry that represents technical assistance providers that assist with data collection and reporting.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Water-Energy Grant Program begins in 2015 and ends in 2019. The first round of projects (2014 award year) began implementation in 2015 and the second round (2016 award year) began implementation in 2017. According to program guidelines, the first round must be completed by April 1, 2018 and the second round must be completed by June 30, 2019.[13,14] It is assumed that project funds are evenly spent each year between 2015 and 2019.

Based on feedback from the DWR, project monitoring activities are assumed to begin in 2017 and continue through the end of 2022. It is assumed that monitoring funds are evenly spent each year between 2017 and 2022.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

In the case of the Water-Energy Grant Program, it is assumed that water-saving devices are purchased through third-party retailers, rather than directly from manufacturers, so margins were applied for nearly all of the manufacturing related sectors. However, margins were not assumed for spending on metering technologies (modeled in IMPLAN as "totalizing fluid meter and counting device manufacturing"), since these goods are more technical in nature and are assumed to be purchased directly from the manufacturer. Margins were also assumed for the mileage basket. All other industries are service-related industries, and since services are not purchased through third-party retailers, margins were not applicable for these industries.

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[12] The American Automobile Association Newsroom (2015). "Annual Cost to Own and Operate a Vehicle Falls to $8,698, Finds AAA." Retrieved from http://newsroom.aaa.com/2015/04/annual-cost-operate-vehicle-falls-8698-finds-aaa-archive/

[13] California Department of Water Resources (2014). "2014 Water-Energy Grant Program Guidelines and Proposal Solicitation Package." Retrieved from http://www.water.ca.gov/waterenergygrant/docs/2014_WE_GL_PSP_Final_10102014.pdf

[14] California Department of Water Resources (2016). "Draft 2016 Water-Energy Grant Program Guidelines and Proposal Solicitation Package." Retrieved from http://www.water.ca.gov/waterenergygrant/docs/Final%202016_WE_GL_PSP_6-28-16.pdf

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Water-Energy Grant Program when project-level sourcing information could be determined, based on project proposals. When a supplier or vendor was not known, the default local purchase rate was assumed. For line-item level sourcing information for awarded projects, refer to **Appendix 20.2.**

The default local purchase rate for the mileage basket varies between 4% and 100% because it represents seven different industrial sectors. The default local purchase rate in IMPLAN was assumed for all seven industries: Household income was 100%; retail stores – gasoline stations was 84.9%; insurance carriers was 50.8%; automotive repair and maintenance, except car washes, was 100%; monetary authorities and depository credit intermediation activities was 79.6%; employment and payroll only (state and local government, non-education) was 100%; and tire manufacturing was 4%.

Table 20.3. Summary of Modeling Inputs for Water-Energy Grants

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment – Project Grants ($45.5 Million)	Maintenance and repair construction of residential structures	20.2%	2015-2019	N/A	90%
	Totalizing fluid meter and counting device manufacturing	12.5%	2015-2019	None	Default (4.7%)
	Architectural, engineering, and related services	11.3%	2015-2019	N/A	100%
	Household laundry equipment manufacturing	9.8%	2015-2019	Default (38.3%)*	Default (11.2%)
	Landscape and horticultural services	9.5%	2015-2019	N/A	100%
	Plumbing fixture fitting and trim manufacturing	8.9%	2015-2019	Default (50.0%)*	Default (51.4%)
	Pottery, ceramics, and plumbing fixture manufacturing	7.9%	2015-2019	Default (66.6%)*	Default (10.0%)
	Other commercial service industry machinery manufacturing	4.4%	2015-2019	Default (77.8%)*	Default (42.8%)
	Management and consulting services	3.8%	2015-2019	N/A	86%
	Individual and family services	3.0%	2015-2019	N/A	100%
	Maintenance and repair construction of nonresidential structures	2.5%	2015-2019	N/A	92%
	Employment and payroll only (local government, non-education)	2.4%	2015-2019	N/A	100%
	Other electronic component manufacturing	1.1%	2015-2019	Default (46.0%)*	Default (46.5%)
	Printing	0.47%	2015-2019	N/A	Default (51.7%)
	Other major household appliance manufacturing	0.39%	2015-2019	Default (38.4%)*	Default (0.7%)

Continues next page.

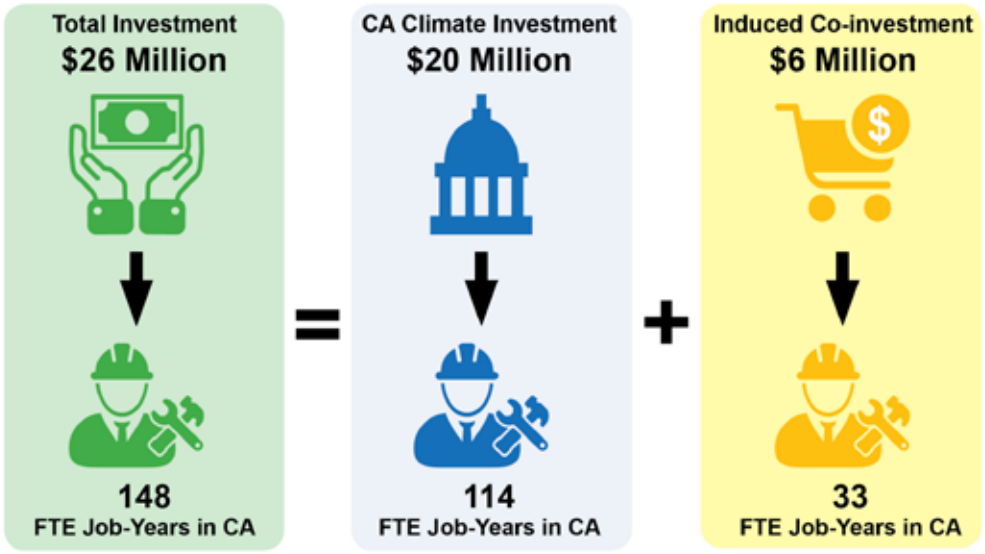
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment – Project Grants ($45.5 Million)	Hardware manufacturing	0.33%	2015-2019	Default (65.1%)*	Default (16.1%)
	Wireless telecommunications carriers	0.30%	2015-2019	N/A	Default (99.4%)
	Real estate establishments	0.25%	2015-2019	N/A	Default (100%)
	Software publishers	0.25%	2015-2019	Default (37.2%)*	Default (99.8%)
	Environmental and other technical consulting services	0.20%	2015-2019	N/A	100%
	Water, sewage, and other treatment and delivery systems	0.14%	2015-2019	N/A	100%
	Mileage basket	0.07%	2015-2019	Default (Varies)	Default (4-100%)
	Labor and civic organizations	0.07%	2015-2019	N/A	100%
	Waste management and remediation services	0.05%	2015-2019	N/A	Default (99.9%)
	Electronic computer manufacturing	0.03%	2015-2019	Default (39.3%)*	Default (83.4%)
	Postal service	0.03%	2015-2019	N/A	Default (90.3%)
	Broadcast and wireless communications equipment manufacturing	0.02%	2015-2019	Default (58.9%)*	Default (0.8%)
	Radio and television broadcasting	0.02%	2015-2019	N/A	100%
	Wired telecommunications carriers	0.01%	2015-2019	N/A	Default (93.9%)
	Other plastics product manufacturing	0.01%	2015-2019	Default (33.1%)	Default (33.1%)
	Retail stores - Building material and garden supply	0.01%	2015-2019	Default (34.6%)*	Default (94.6%)
California Climate Investment – Monitoring Grants ($1.3 Million)	Management and consulting services	100%	2015-2019	N/A	Default (71.95%)
Induced Co-Investment (N/A)	N/A	N/A	N/A	N/A	N/A

*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

21. State Water Project Turbines

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The State Water Project Turbines program pays for the replacement of hydroelectric turbine runners. The program has been implemented at two separate facilities of the Oroville-Thermalito complex located in the city of Oroville. One replacement is at the Edward Hyatt Powerplant (Hyatt) and the other is at the Thermalito Pumping-Generating Plant (Thermalito). Both projects will improve energy generation efficiency and availability, and will produce additional clean energy without increasing water use.[1]

The California State Water Project is the nation's largest state-built water and power development and conveyance system. It includes facilities all across the state that capture, store, and convey water to 29 different water agencies.[2] Among those facilities are hydroelectric power plants, which provide about 40% to 60% of

[1] California Air Resources Board (2016). "Greenhouse Gas Quantification Methodology for the Department of Water Resources, State Water Project Turbines, Greenhouse Gas Reduction Funds Fiscal Year 2013-2014/2014-2015." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/dwr_finalqm_13-14_14-15.pdf

[2] California Department of Water Resources (2017). "California State Water Project Today." Retrieved from http://www.water.ca.gov/swp/swptoday.cfm

SWP's annual energy requirements to pump water throughout California.[3] Increasing the hydrogeneration potential of each of those plants, vis-a-vis energy-efficiency improvements, helps displace power obtained from fossil fuels for meeting pump load demands.

Administration

The California Department of Water Resources (DWR) administers the State Water Project Turbines program. The program was developed in coordination with the Climate Action Team State Operations Working Group, a task force comprising state agencies including the California Environmental Protection Agency, Department of General Services, Air Resources Board, Department of Toxic Substances Control, Department of Water Resources, Office of the State Chief Information Officer, California Energy Commission, Department of Transportation, Department of Resources, Recycling, and Recovery (CalRecycle), and Department of Finance.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the State Water Project Turbines program between FY 2013-14 and FY 2015-16, totaling $20 million, are supporting a total of **114 full-time equivalent (FTE) job-years** in California.[4] We estimate that these appropriations induced $6 million in co-investment, supporting an additional **33 FTE job-years.**[5] When modeled together, appropriated funds and induced co-investment support a total of **148 FTE job-years**.[6,7] See **Table 21.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[8]

Table 21.1. Direct, Indirect, and Induced Jobs Supported by the State Water Project Turbines Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	Percent of Total	FTE Job-Years	Percent of Total
Direct Jobs	51	45%	15	47%
Indirect Jobs	27	24%	7	23%
Induced Jobs	35	31%	10	31%
Total	**114**	**100%**	**33**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

All of the direct jobs supported by the State Water Project Turbines program occur in the architectural, engineering, and related services (i.e., external consultants hired for design construction and installation activities). The only other directly impacted industry is turbine and turbine generator set units manufacturing. The turbines that are being purchased are manufactured out-of-state, so no in-state jobs are

[3] California Climate Change. "Near-Term Implementation Plan Strategy 2B: State Water Project Efficiency." Retrieved from http://www.climatechange.ca.gov/climate_action_team/reports/catnip/state_operations/State%20Operations%20water%20project%20EE%20CATNIP.pdf

[4] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[5] Ibid.

[6] Ibid.

[7] Disaggregated job numbers do not add up to the total job number because of rounding that occurs within IMPLAN when investment flows are modeled together.

[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

supported by these manufacturing activities. A summary of the indirect and induced jobs, by industry, supported by the State Water Project Turbines program can be found in **Appendix 21.1.**

Methodology

In order to model the State Water Project Turbines program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the State Water Turbines program. Before reading the following section, we recommend readers first review the **Methodology** chapter in Part I, which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 21.2**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $20 million in California Climate Investment funding was allocated to the State Water Project Turbines program. The funds will be equally split between the replacement projects at the Hyatt and Thermalito plants. No funds were allocated for state-level operations or administration.[9]

Induced Co-investment

The total project cost is $26 million, of which California Climate Investments will cover $20 million. The remaining $6 million will be covered by DWR. All of these funds are considered induced because turbine replacement is not a divisible activity that could be partially implemented with DWR's matching funds. In other words, all $26 million is needed to realize the project. Without state funding, it is assumed that DWR would use matching funds to maintain existing turbine infrastructure, which does not operate as efficiently as the replacement turbines.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the State Water Project Turbines program, funds must be tracked according to how they are spent.

DWR will provide existing positions to perform the work associated with the two turbine replacement projects, so all funds will be spent on external consultants for design, construction, and installation-related costs. A detailed cost estimate for both turbine replacement projects was prepared by Voith GmbH, a global hydroelectric turbine manufacturer. All design and manufacture costs were coded as "turbine and turbine generator set units manufacturing" in IMPLAN, an industry that comprises establishments primarily engaged in manufacturing turbines (except aircraft) and complete turbine generator set units, such as steam, hydraulic, gas, and wind. All replacement and rehabilitation activities were modeled as "architectural, engineering, and related services" in IMPLAN, an industry that comprises establishments primarily engaged

[9] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

in the design, development, and utilization of machines, materials, instruments, structures, processes, and systems. The assignments undertaken by these establishments include the following activities: provision of advice, preparation of feasibility studies, preparation of preliminary and final plans and designs, provision of technical services during the construction or installation phase, inspection and evaluation of engineering projects, and related services. See **Appendix 21.2** for a detailed summary of how line-item costs were coded in IMPLAN.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. Spending for the State Water Project Turbines program began in 2015 ($3.5 million). It is assumed all remaining funds will be spent between 2016 and 2017, split evenly between each year.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). The replacement turbines and related equipment will be purchased directly from Voith, so pricing margins were not assumed for this economic sector. Similarly, pricing margins were not applicable for architectural, engineering, and related services because these services are not purchased through a third-party retailer.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. All manufacturing activities will be completed by Voith, a global hydroelectric turbine manufacturer. Voith has no production facilities in California, so the local purchase rate for turbine manufacturing was adjusted to 0%.[10] It is assumed that all engineering and installation services will also be completed by Voith, which has a regional office in Sacramento that provides engineering assistance for end users, as well as on-site training for equipment maintenance and operation.[11] Since Voith has a California office dedicated to engineering services, the local purchase rate for this sector was adjusted to 100%.

Table 21.2. Summary of Modeling Inputs for the State Water Project Turbines Program

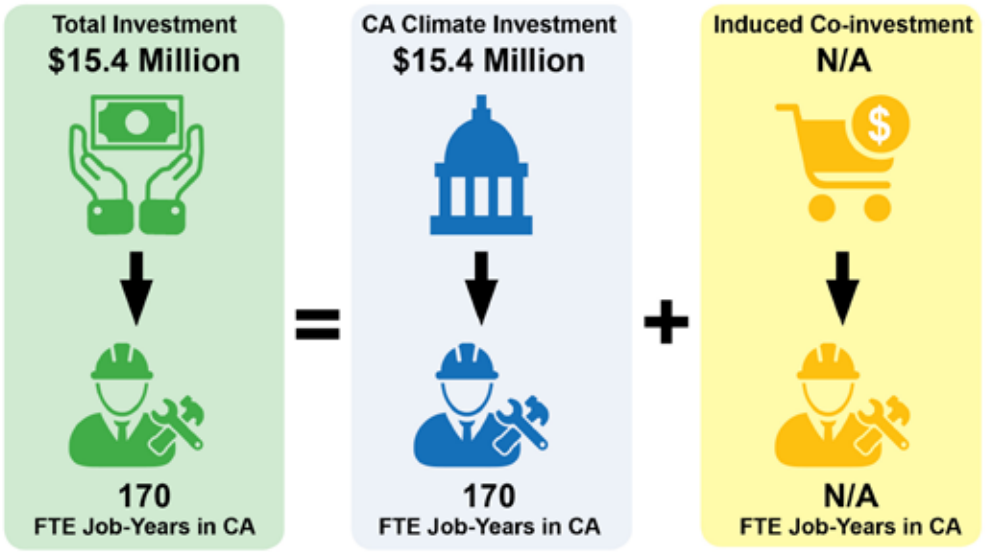
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($20 Million)	Turbine and turbine generator set units manufacturing	55%	2015-2017	None	0%
	Architectural, engineering, and related services	45%	2015-2017	N/A	100%
Induced Co-investment ($6 Million)	Turbine and turbine generator set units manufacturing	55%	2015-2017	None	0%
	Architectural, engineering, and related services	45%	2015-2017	N/A	100%

[10] Voith in USA. "Locations in the United States." Retrieved from http://voith.com/usa/en/locations-in-usa-709.htm
[11] Voith in USA. "Sacramento (CA)." Retrieved from http://voith.com/usa/en/784.htm?city=Sacramento%20(CA)

22. Sacramento-San Joaquin Delta and Coastal Wetlands Restoration

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program provides grants to public agencies and nonprofit organizations to restore or enhance wetlands along the confluence of the Sacramento and San Joaquin rivers and the California coast. The grants are awarded on a competitive basis, with no specified upper limit on how much money can be requested, as long as it is within the bounds of the program's total budget.[1]

The central goal of the program is to achieve greenhouse gas (GHG) reductions through carbon

[1] California Department of Fish and Wildlife (2014). "Wetlands Restoration for Greenhouse Gas Reduction –Grant Program- FY 2014-2015 Proposal Solicitation Notice." Retrieved from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=91275&inline

sequestration (i.e., photosynthetic uptake of carbon in living biomass) and avoided emissions (i.e., protecting wetlands from conversion to more carbon-intensive land uses). The program also provides a number co-benefits, including enhanced fish and wildlife habitat, protected and improved water quality and quantity, improved flood protection for local communities, and reduced or reversed land subsidence.

The first round of grants was distributed in 2015 to four restoration projects totaling $15.4 million.[2] Three of the four projects were coastal wetland restoration projects, with the remaining project taking place in the Sacramento-San Joaquin Delta on Sherman Island. Together, these projects restore or reconstruct around 1,800 acres of wetland ecosystems.[3]

Administration

The California Department of Fish and Wildlife (DFW) administers the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program. The program is housed within DFW's Watershed Restoration Grants Branch, which provides a number of science-informed grants aimed at improving the ecological functioning of degraded lands.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program between FY 2013-14 and FY 2015-16, totaling $15.4 million, are supporting a total of **170 full-time equivalent (FTE) job-years** in California.[4] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 22.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[5]

Table 22.1. Direct, Indirect, and Induced Jobs Supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	98	58%	N/A	N/A
Indirect Jobs	31	19%	N/A	N/A
Induced Jobs	38	23%	N/A	N/A
Total	**170**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program supports direct jobs in a variety of industrial sectors. The majority of these jobs occur in the construction sector, which is explained by the program funds that go toward landscape rehabilitation. The second most impacted industrial sector

[2] California Department of Fish and Wildlife (2015). "CDFW Awards $21 Million in Grants for Greenhouse Gas Reduction Projects." Retrieved from https://cdfgnews.wordpress.com/2015/04/30/cdfw-awards-21-million-in-grants-for-greenhouse-gas-reduction-projects/

[3] California Air Recourses Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ggrf_project_list_for_2016_annual_report.xlsx (ggrf_project_list_for_2016_annual_report)

[4] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[5] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

is museums, historical sites, zoos and parks, which is the sector that represents nature preserves and conservation areas in IMPLAN. These organizations receive around 12% of program funds for administration and project management. Most of the other direct jobs occur in industries that provide support services for restoration crews (e.g., landscape and horticultural services; support activities for agriculture and forestry, architectural, engineering, and related services; etc.). The remaining direct jobs occur in sectors that collect and analyze data (i.e., environmental and other technical consulting services and scientific research and development services), produce field equipment (e.g., watch, clock, and other measuring and controlling device manufacturing), and performance maintenance activities (e.g., maintenance and repair construction of nonresidential structures). See **Table 22.2** for a summary of the direct jobs supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program.

Table 22.2. Direct Jobs Supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program (by Industry)[6]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of other new nonresidential structures	60.4	61.5%
Museums, historical sites, zoos, and parks (including nature preserves and conservation areas)	16.4	16.7%
Landscape and horticultural services	8.9	9.1%
Architectural, engineering, and related services	3.7	3.8%
Maintenance and repair construction of nonresidential structures	2.4	2.4%
Support activities for agriculture and forestry	2.3	2.4%
Environmental and other technical consulting services	1.6	1.6%
Scientific research and development services	0.9	1.0%
Employment and payroll of state government, non-education	0.9	0.9%
Watch, clock, and other measuring and controlling device manufacturing	0.2	0.2%
Subtotal of Top 10 Industries	**97.7**	**99.6%**
Total of All Industries	**98.2**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[6] A summary of the indirect and induced jobs, by industry, supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program can be found in **Appendix 22.1**.

Methodology

In order to model the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 22.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, a total of $27 million in California Climate Investment funding was appropriated to DFW for restoration grants.[7] Of those funds, $15.4 million was allocated to the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program, $5.9 million was allocated to the Mountain Meadow Ecosystems program, and $5.7 million was allocated to state-level program administration.[8] The job-years supported by the latter two allocations were excluded from the job totals reported in this chapter and are instead reported in **Part II – chapter 23** and **Part I - chapter 3** of this report, respectively. All $15.4 million in funding for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program has been awarded to grantees. See **Appendix 22.2** for a list of the four projects that received funding through this program.

Induced Co-investment

There is no required cost-share to receive a restoration grant through the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program. Yet, grantees leveraged $12.4 million in outside funds toward the completion of their proposed projects. However, it is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured for the projects even in the absence of California Climate Investment funding.[9] Without detailed data on how grantees would have spent matching funds in the absence of a restoration grant, only the employment benefits of California Climate Investment dollars (described above) were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 22.3** summarizes the industrial sectors directly impacted by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program. These industry codes and their percentage share of total project spending were based on the proposed budgets and work plans submitted by the four awarded projects. For line-item level information on how each expenditure was coded for each project, refer to **Appendix 22.2**. Industrial sectors that constituted less

[7] DFW (Email correspondence, May 2, 2017).

[8] Ibid.

[9] California Department of Fish and Wildlife (2014). "Wetlands Restoration for Greenhouse Gas Reduction -Grant Program- FY 2014-2015 Proposal Solicitation Notice." Retrieved from http://www.sfbayjv.org/fundingdocs/GHG%20Reduction%20program%20PSN%2011_10_14.pdf

than 0.01% of overall spending were excluded from the employment model for this program because their impacts were negligible.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program begins in 2015 and ends in 2020. Grant agreements began in June of 2015 and can extend until 2020.[10] Funds are assumed to be spent in equal amounts each year between 2015 and 2020.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

Most of the industrials sectors directly impacted by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program are service-related industries, and since services are not purchased through a third-party retailer, pricing margins were not applicable for these sectors. It is assumed that scientific equipment was custom-ordered directly from the manufacturer, so margins were not applied for these expenditures (modeled as "watch, clock, and other measuring and controlling device manufacturing" in IMPLAN). It is also assumed that plants were purchased directly from nurseries (modeled as "greenhouse, nursery, and floriculture production" in IMPLAN), so margins were not applied for these expenditures either. General supplies and equipment, however, are assumed to be purchased from retail centers (modeled as "retail stores-building and garden supply" in IMPLAN).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program when project-level sourcing information could be determined, based on project budgets. When a supplier or vendor was not known, the default local purchase rate in IMPLAN was assumed. For line-item level sourcing information, refer to **Appendix 22.2.**

[10] California Department of Fish and Wildlife (2014). "FY 2014/15 Wetlands Restoration for Greenhouse Gas Reduction Program Application Form with Instructions." Retrieved from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=91277&inline

Table 22.3. Summary of Modeling Inputs for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program

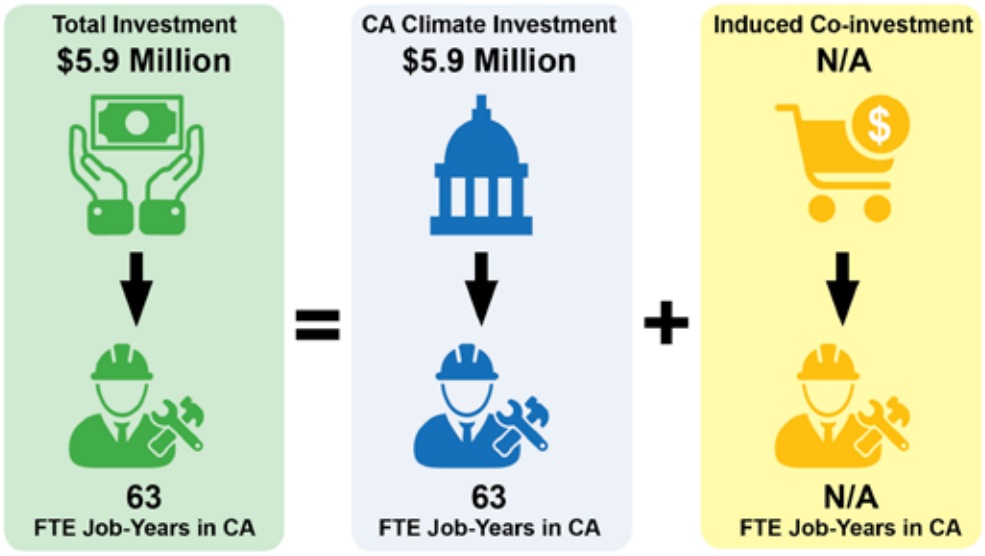
Input	Funded Industries	Share Of Total Funds	Spending Time Line	Margins	Local Purchase Rate
State Investment ($15.4 Million)	Construction of other new nonresidential structures	65.6%	2015-2020	N/A	Default (99.9%)
	Museums, historical sites, zoos, and parks	12.2%	2015-2020	N/A	100%
	Watch, clock, and other measuring and controlling device manufacturing	5.0%	2015-2020	None	Default (6.9%)
	Architectural, engineering, and related services	4.5%	2015-2020	N/A	96.3%
	Landscape and horticultural services	3.4%	2015-2020	N/A	Default (99.9%)
	Maintenance and repair construction of nonresidential structures	3.3%	2015-2020	N/A	Default (85.9%)
	Scientific research and development services	2.5%	2015-2020	N/A	84.5%
	Support activities for agriculture and forestry	1.0%	2015-2020	N/A	Default (99.92%)
	Environmental and other technical consulting services	0.9%	2015-2020	N/A	100%
	Employment and payroll only (state government, non-education)	0.8%	2015-2020	N/A	100%
	Greenhouse, nursery, and floriculture production	0.4%	2015-2020	None	Default (73.1%)
	Retail stores - Building material and garden supply	0.2%	2015-2020	Default (34.6%)*	Default (94.6%)
	Management and consulting services	0.1%	2015-2020	N/A	Default (72.0%)
	Retail sStores - Miscellaneous	0.1%	2015-2020	N/A	Default (99.7%)
	Printing	0.03%	2015-2020	N/A	Default (51.7%)
	Electronic and precision equipment repair and maintenance	0.01%	2015-2020	N/A	Default (99.7%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

23. Mountain Meadow Ecosystems Restoration

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Mountain Meadow Ecosystems Restoration program provides grants to public agencies and nonprofit organizations to restore or enhance California mountain meadow ecosystems. The grants are awarded on a competitive basis, with no specified upper limit on how much money can be requested, as long as it is within the bounds of the program's total budget.[1]

Like the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program, the central goal of this program is to achieve greenhouse gas (GHG) emissions reductions through carbon sequestration (i.e., photosynthetic uptake of carbon in living biomass) and avoided emissions (i.e., protecting wetlands from conversion to more carbon-intensive land uses). Additionally, the program provides a number co-benefits,

[1] California Department of Fish and Wildlife (2014). "Wetlands Restoration for Greenhouse Gas Reduction –Grant Program- FY 2014-2015 Proposal Solicitation Notice." Retrieved from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=91275&inline

including reduced peak flows within and downstream of mountain meadows; increased late-season flows downstream of mountain meadows, increased water storage capacity in mountain meadows; as well as enhanced fish, wildlife, and habitat.

Compared to coastal wetland ecosystems, there is a relative lack of scientific literature and research related to GHG reductions in mountain meadow ecosystems. Thus, projects under this program must include a research component in addition to restoration activities. Research objectives should advance scientific understanding of carbon sequestration in mountain meadow ecosystems in order to help inform future GHG mitigation projects.[2]

The first round of grants was distributed in 2015 to eight restoration projects totaling $5.9 million.[3] The projects involve plugging degraded channels, creating ponds in excavated pits, re-vegetating land surfaces, improving roadway drainage, among other restoration activities. Together, these projects restore around 700 acres of wet meadow ecosystems.[4]

Administration

The California Department of Fish and Wildlife (DFW) administers the Mountain Meadow Ecosystems Restoration program. The program is housed within DFW's Watershed Restoration Grants Branch, which provides a number of science-informed grants aimed at improving the ecological functioning of degraded land.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Mountain Meadow Ecosystems Restoration program between FY 2013-14 and FY 2015-16, totaling $5.9 million, are supporting a total of **63 full-time equivalent (FTE) job-years** in California.[5] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for details on this determination). See **Table 23.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[6]

[2] California Department of Fish and Wildlife (2014). "Wetlands Restoration for Greenhouse Gas Reduction -Grant Program- FY 2014-2015 Proposal Solicitation Notice." Retrieved from http://www.sfbayjv.org/fundingdocs/GHG%20Reduction%20program%20PSN%2011_10_14.pdf

[3] California Department of Fish and Wildlife (2015). "CDFW Awards $21 Million in Grants for Greenhouse Gas Reduction Projects." Retrieved from https://cdfgnews.wordpress.com/2015/04/30/cdfw-awards-21-million-in-grants-for-greenhouse-gas-reduction-projects/

[4] California Air Resources Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ggrf_project_list_for_2016_annual_report.xlsx (ggrf_project_list_for_2016_annual_report)

[5] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[6] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 23.1. Direct, Indirect, and Induced Jobs Supported by the Mountain Meadows Ecosystems Restoration Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	36	58%	N/A	N/A
Indirect Jobs	11	17%	N/A	N/A
Induced Jobs	16	25%	N/A	N/A
Total	**63**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The Mountain Meadow Ecosystems Restoration program supports direct jobs in a variety of sectors. Most of these jobs occur in the environmental and other technical consulting services sector. These jobs are explained by program funds that go to grantees for project management, as well as funds that go to subcontractors for technical tasks, such as California Environmental Quality Act (CEQA) review, carbon sampling, wildlife surveys, and other environmental monitoring activities. The construction sector is the second most impacted industry, which is explained by program spending that goes toward landscape rehabilitation activities. The remaining direct jobs occur in industries that provide administrative support (e.g., museums, historical sites, zoos, and parks; labor and civic organizations, etc.), scientific expertise (i.e., scientific research and development services), and support services for restoration crews (e.g., support activities for agriculture and forestry, truck transportation, architectural, engineering, and related services, etc.) See **Table 23.2** for a summary of the direct jobs supported by the Mountain Meadow Ecosystems Restoration program.

Table 23.2. Direct Jobs Supported by the Mountain Meadow Ecosystems Restoration Program (by Industry)[7]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Environmental and other technical consulting services	11.9	32.7%
Construction of other new nonresidential structures	8.8	24.3%
Scientific research and development services	3.1	8.6%
Landscape and horticultural services	2.9	8.0%
Management consulting services	2.7	7.3%
Museums, historical sites, zoos, and parks	2.2	6.1%
Labor and civic organizations	2.0	5.5%
Support activities for agriculture and forestry	1.2	3.3%
Truck transportation	0.6	1.6%
Architectural, engineering, and related services	0.4	1.0%
Subtotal of Top 10 Industries	**35.8**	**98.5%**
Total of All Industries	**36.3**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[7] A summary of the indirect and induced jobs, by industry, supported by the Mountain Meadows Ecosystems Restoration program can be found in **Appendix 23.1**.

Methodology

In order to model the Mountain Meadow Ecosystems Restoration program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 23.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, a total of $27 million in California Climate Investment funding was appropriated to DFW for restoration grants.[8] Of those funds, $5.9 million was allocated to the Mountain Meadow Ecosystems program, $15.4 million was allocated to the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program, and $5.7 million was allocated to state-level program administration.[9] The job-years supported by the latter two allocations were excluded from the job totals reported in this chapter and are instead reported in **Part II – chapter 22** and **Part I - chapter 3** of this report, respectively. All $5.9 million in funding for the Mountain Meadow Ecosystems Restoration program has been awarded to grantees. See **Appendix 23.2** for a list of the eight projects that received funding through this program.

Induced Co-investment

There is no required cost-share to receive a restoration grant the Mountain Meadow Ecosystems Restoration program. Yet, grantees leveraged $2.7 million in outside funds toward the completion of their proposed projects. However, it is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured for the restoration projects even in the absence of California Climate Investment funding.[10] Without detailed data on how grantees would have spent matching funds in the absence of a restoration grant, only the employment benefits of California Climate Investment dollars (described above) were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 23.3** summarizes the industrial sectors directly impacted by the Mountain Meadow Ecosystems Restoration program. These industry codes and their percentage share of total project spending were based on the proposed budgets and work plans submitted by the eight awarded projects. For line-item level information on how each expenditure was coded for each project, refer to **Appendix 23.2**.

Of particular note, the mileage basket is a mix of industries, based on the average breakdown of annual

[8] DFW (Email correspondence, May 2, 2017).

[9] Ibid.

[10] California Department of Fish and Wildlife (2014). "Wetlands Restoration for Greenhouse Gas Reduction -Grant Program- FY 2014-2015 Proposal Solicitation Notice." Retrieved from http://www.sfbayjv.org/fundingdocs/GHG%20Reduction%20program%20PSN%2011_10_14.pdf

vehicle costs reported in the American Automobile Association's 2015 Your Driving Costs study.[11] The mix of industries in the mileage basket include: household income (42%), retail stores – gasoline stations (19.3%), insurance carriers (12.8%), automotive repair and maintenance, except car washes (8.8%), monetary authorities and depositor credit intermediation activities (7.7%), employment and payroll only (state and local government, non-education) (7.7%), and tire manufacturing (1.7%). Household income is a unique industry in the basket because it does not directly correspond to a vehicle cost, and instead represents reimbursement dollars that go toward vehicle depreciation, which vehicle owners may spend in a variety of ways.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Mountain Meadow Ecosystems Restoration program begins in 2015 and ends in 2020. According to the program's application form, grant agreements did not begin until June 2015 and cannot extend past March 1, 2020.[12] Funds are assumed to be spent in equal amount each year between 2015 and 2020.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

Most of the industrials sectors directly impacted by the Mountain Meadow Ecosystem Restoration program are service-related, and since services are not purchased through a third-party retailer, pricing margins were not applicable these sectors. It is assumed that scientific equipment and monitoring devices were ordered directly from the manufacturer, so margins were not applied for these expenditures (modeled as "watch, clock, and other measuring and controlling device manufacturing" and "other general-purpose machinery manufacturing" in IMPLAN). It is also assumed that plants were purchased directly from nurseries (modeled as "greenhouse, nursery, and floriculture production" in IMPLAN), so margins were not applied for these expenditures either. General supplies and equipment, however, are assumed to be purchased from retail centers (modeled as "retail stores-building and garden supply in IMPLAN). Margins were also assumed for the mileage basket.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Mountain Meadow Ecosystem Restoration program when project-level sourcing information could be determined, based on project budgets. When a supplier or vendor was not known, the default local purchase rate was assumed. For line-item level sourcing information, refer to **Appendix 23.2.**

The default local purchase rate for the mileage basket varies between 4% and 100% because the mileage

[11] The American Automobile Association Newsroom (2015). "Annual Cost to Own and Operate a Vehicle Falls to $8,698, Finds AAA." Retrieved from http://newsroom.aaa.com/2015/04/annual-cost-operate-vehicle-falls-8698-finds-aaa-archive/

[12] California Department of Fish and Wildlife (2014). "FY 2014/15 Wetlands Restoration for Greenhouse Gas Reduction Program Application Form with Instructions." Retrieved from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=91277&inline

basket represents seven different industrial sectors. The default local purchase rate in IMPLAN was assumed for all seven industries: Household income was 100%; retail stores – gasoline stations was 84.9%; insurance carriers was 50.8%; automotive repair and maintenance, except car washes, was 100%; monetary authorities and depositor credit intermediation activities was 79.6%; employment and payroll only (state and local government, non-education) was 100%; and tire manufacturing was 4%.

Table 23.3. Summary of Modeling Inputs for the Mountain Meadows Ecosystem Restoration Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($5.9 Million)	Scientific research and development services	31.4%	2015-2020	N/A	58%
	Construction of other new nonresidential structures	25.0%	2015-2020	N/A	Default (99.9%)
	Environmental and other technical consulting services	17.3%	2015-2020	N/A	100%
	Management and consulting services	6.6%	2015-2020	N/A	97.2%
	Civic, social, professional, and similar organizations	4.5%	2015-2020	N/A	100%
	Museums, historical sites, zoos and parks	4.2%	2015-2020	N/A	100%
	Landscape and horticultural services	2.9%	2015-2020	N/A	Default (99.9%)
	Truck transportation	1.7%	2015-2020	N/A	Default (91.0%)
	Support activities for agriculture and forestry	1.3%	2015-2020	N/A	100%
	Architectural, engineering, and related services	1.2%	2015-2020	N/A	Default (95.7%)
	Watch, clock, and other measuring and controlling device manufacturing	1.1%	2015-2020	None	Default (4.7%)
	Retail stores – Building material and garden supply	1.0%	2015-2020	Default (34.6%)*	Default (94.6%)
	Stone mining and quarrying	0.7%	2015-2020	N/A	Default (26.6%)
	Mileage basket	0.3%	2015-2020	Default (Varies)	Default (4 to 100%)
	Employment and payroll only (state government, non-education)	0.3%	2015-2020	N/A	100%
	Greenhouse, nursery, and floriculture production	0.2%	2015-2020	None	Default (73.1%)
	Special design services	0.1%	2015-2020	N/A	Default (99.4%)
	Automotive equipment rental and leasing	0.1%	2015-2020	N/A	Default (88.8%)

Continues next page.

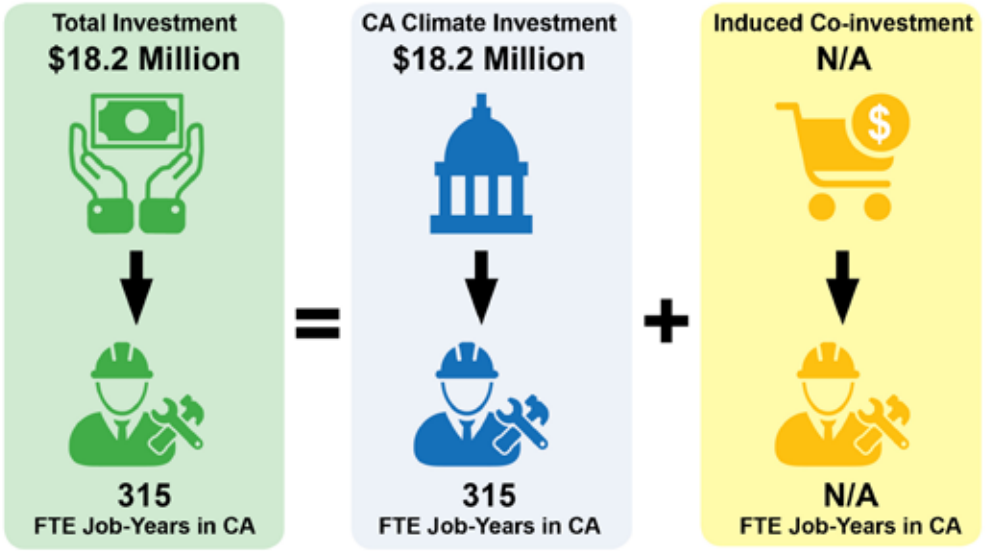
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($5.9 Million)	Printing	0.1%	2015-2020	N/A	Default (51.7%)
	Periodical publishers	0.1%	2015-2020	N/A	Default (72.0%)
	Food services and drinking places	0.1%	2015-2020	N/A	Default (99.5%)
	Other general-purpose machinery manufacturing	0.02%	2015-2020	None	Default (3.6%)
	Hotels and motels	0.02%	2015-2020	N/A	Default (17.1%)
	U.S. Postal Service	0.01%	2015-2020	N/A	Default (90.3%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

24. Forest Health Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Forest Health Program provides grants and cost-share agreements to projects that enhance tree cover on disturbed forestland, reduce wildfire hazards, prevent pest and disease outbreaks, and advance scientific understanding of carbon cycling mechanisms in forest ecosystems. The goal of the program is to ensure that California's forests continue to be a significant carbon storage sink, as well as renewable source of fuel and fiber.

The Forest Health Program comprises five subprograms:

1. **California Forest Improvement Program (CFIP) Reforestation:** This program provides funding for small forest landowners to plant forest trees. It is a cost-share program that targets private non-industrial forest landowners with small acreages of ownership (i.e., 20 to 5,000 acres of forestland).[1]
2. **Watershed Reforestation and Restoration**: This program provides grants for the reforestation

[1] CAL FIRE (2012). "California Forest Improvement Program." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_forestryassistance_cfip

and restoration of land disturbed by large catastrophic wildfires, as well as forest improvement activities such as post-fire fuel hazard reduction and utilization of biomass. The program is designed for large projects (i.e., watershed wide) that group together multiple landowners.[2]

3. **Forest Pest Control:** This program provides grants for projects that reduce native and/or exotic insects and diseases that threaten California forests. The activities funded include the removal of infected/infested trees, forest thinning (i.e., selective removal of trees that are highly susceptible to pests), utilization of removed vegetation for biomass or wood products, and restoring pest-impacted landscapes through reforestation.[3]
4. **Demonstration State Forest Research:** This program provides grants to universities, public agencies, and other organizations for research projects related to forest carbon sequestration and greenhouse gas (GHG) emissions reduction**.** Projects can include research, monitoring, and validation of existing vegetation, wildlife, fuel, and carbon sequestration models.[4]
5. **Fuels Reduction:** This program provides grants for selective removal and utilization of vegetation to reduce wildfire hazards on land managed by public, tribal, or nonprofit organizations. The program also provides cost-share agreements to private landowners participating in CFIP Restoration for the selective removal and utilization of vegetation to reduce wildfire hazard.[5]

From FY 2013-14 through 2015-16, a total of 29 projects have been launched, totaling $10 million dollars in implemented funds. Most of the implemented projects were CFIP Restoration projects (18 projects totaling $0.7 million), followed by Watershed Reforestation and Restoration projects (seven projects totaling $7.6 million), Forest Pest Control projects (three projects totaling $1.5 million), and one Demonstration State Forest Research Program ($0.2 million).[6]

Administration

The California Department of Forestry and Fire Protection (CAL FIRE) administers the Forest Health Program. All subprograms are implemented directly by the awarded grantees.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Forest Health Program between FY 2013-14 and FY 2015-16, totaling $18.2 million, are supporting a total of **315 full-time equivalent (FTE) job-years** in California.[7] These job-years stem solely from California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section

[2] CAL FIRE (2012). "Greenhouse Gas Reduction Fund (GGRF) – Watershed Reforestation and Restoration Grants." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_GGRF_Watershed-Reforestation

[3] CAL FIRE (2012). "Pest Management Program." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_pestmanagement

[4] CAL FIRE (2012). "Demonstration State Forests." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_stateforests

[5] CAL FIRE (2012). "Greenhouse Gas Reduction Fund (GGRF) – Fuels Reduction." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_fuelreduction

[6] California Air Resources Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ggrf_project_list_for_2016_annual_report.xlsx

[7] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

of this chapter for details on this determination). See **Table 24.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[8]

Table 24.1. Direct, Indirect, and Induced Jobs Supported by the Forest Health Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	245	78%	N/A	N/A
Indirect Jobs	13	4%	N/A	N/A
Induced Jobs	56	18%	N/A	N/A
Total	**315**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of the direct jobs supported by the Forest Health Program occur in the forestry sector (i.e., "support activities for agriculture and forestry" in IMPLAN). The occupations in this sector consist of forestry experts and laborers who provide a wide array of services, including forest pest control, reforestation, and forest protection. The local government sector is the second most directly impacted sector, which is explained by the funds that go to local conservation districts for project planning, administration, monitoring, and reporting. Forestry, forest products, and timber tract production is the third most directly impacted sector, which is explained by funds that go toward the procurement of trees for reforestation purposes. The remaining direct jobs occur in sectors that involve the construction of fencing (i.e., construction of other new nonresidential structures), the quantification of GHG reduction benefits (i.e., scientific research and development services), and the retailing of field equipment (i.e., retail – building material and garden equipment and supplies stores). See **Table 24.2** for a summary of the direct jobs supported by the Forest Health Program.

Table 24.2. Direct Jobs Supported by the Forest Health Program (by Industry)[9]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Support activities for agriculture and forestry	227.9	93.19%
Employment and payroll of local government, non-education	8.2	3.34%
Forestry, forest products, and timber tract production	6.6	2.69%
Construction of other new nonresidential structures	1.2	0.47%
Scientific research and development services	0.7	0.27%
Retail – Building material and garden equipment and supplies stores	0.1	0.04%
Total of All Industries	**244.5**	**100%**
Induced Co-investment		
N/A	N/A	N/A

[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

[9] A summary of the indirect and induced jobs, by industry, supported by the Forest Health Program can be found in Appendix 24.1.

Methodology

In order to model the Forest Health Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of the Forest Health Program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I**, which provides an overview of the economic input-output model that was used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 24.3**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $24.2 million in California Climate Investment funding was allocated to the Forest Health Program and the Forest Legacy Program.[10] Of these funds, $1.8 million was allocated to CAL FIRE for program administration and $4.2 million was set for conservation easements (i.e., the Forest Legacy Program), leaving $18.2 million available for the five grant subprograms under the Forest Health Program.[11] The job-years supported by the $1.8 million in funding for state-level administration were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**. Similarly, the job-years supported by the $4.2 million in funding set aside for conservation easements are reported in the chapter for the Forest Legacy Program (**chapter 25** of **Part II**).

During the study period, a total of $10.7 million in grant funding was awarded to 30 grantees to implement forest management activities that will reduce GHGs.[12] It is assumed that the remaining $7.5 million in available grant funding under the Forest Health Program will be rolled over into the next fiscal year but is analyzed here for its employment benefits.

Induced Co-investment

To receive a grant through the Forest Health Program, only applicants applying for a CFIP Reforestation grant are required to contribute matching funds.[13] Yet, grantees across all five subprograms have leveraged millions of dollars in outside funds toward the completion of their proposed projects. However, it is not known which of these locally matched funds were specifically induced by the program, and which would have likely been secured for forest health projects even in the absence of California Climate Investment funding. Without detailed data on how grantees would have spent matching funds in the absence of a grant through the Forest Health Program, only the employment benefits of California Climate Investment dollars (described above) were modeled for this program.

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[10] California Air Resources Board (2015). "Greenhouse Gas Reduction Fund: Expenditure Record Fiscal for Fiscal Year 2014-2015." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-calfire-forestlegacy-expenditure-records.pdf

[11] Ibid.

[12] See **Appendix 24.2** for a summary of the awarded grant projects.

[13] CAL FIRE (2014). "Using the California Forest Improvement Program (CFIP) for Carbon Sequestration Authorized by AB 32." Retrieved from http://www.fire.ca.gov/Grants/downloads/GGRF_CFIP-Reforestation_ProceduralGuide_042915.pdf

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 24.3** summarizes the industrial sectors directly impacted by the Forest Health Program. These industrial sectors were based on five sample budgets provided by CAL FIRE, one for each of the five subprograms under the Forest Health Program (see **Appendix 24.2** for a summary of how IMPLAN codes were assigned to the various line-item expenses among the five sample budgets).

Of particular note, the mileage basket is a mix of industries, as based on the average breakdown of annual vehicle costs reported in the American Automobile Association's 2015 Your Driving Costs study.14 The mix of industries in the mileage basket includes: household income (42%), retail stores – gasoline stations (19.3%), insurance carriers (12.8%), automotive repair and maintenance, except car washes (8.8%), monetary authorities and depositor credit intermediation activities (7.7%), employment and payroll only (state and local government, non-education) (7.7%), and tire manufacturing (1.7%). Household income is a unique industry in the basket because it does not directly correspond to a vehicle cost, and instead represents reimbursement dollars that go toward vehicle depreciation, which vehicle owners may spend in a variety of ways.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. Projects are assumed to have begun in 2015. According to the procedural guide for each of the five subprograms, all project work related to the grant must be completed by December 31, 2019.[15,16,17,18,19] It is assumed that funds are spent in equal amounts each year between 2015 and 2019.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

In the case of the Forest Health Program, all trees and seedlings are assumed to be purchased directly from suppliers, so no pricing margins were applied to purchases from nurseries (i.e., modeled as "forestry, forest products, and timber tract production" in IMPLAN). General supplies and equipment, however, are assumed to be purchased from retail centers (i.e., modeled as "retail stores-building and garden supply" in IMPLAN). Similarly, mileage-related expenses are assumed to be purchased for retail centers. Service-relat-

[14] The American Automobile Association (2015). "Annual Cost to Own and Operate a Vehicle Falls to $8,698, Finds AAA." Retrieved from http://newsroom.aaa.com/2015/04/annual-cost-operate-vehicle-falls-8698-finds-aaa-archive/

[15] CAL FIRE (2015). "Using the California Forest Improvement Program (CFIP) for Carbon Sequestration Authorized by AB 32." Retrieved from http://www.fire.ca.gov/Grants/downloads/GGRF_CFIP-Reforestation_ProceduralGuide_042915.pdf

[16] CAL FIRE (2015). "Watershed Reforestation and Restoration Program Authorized by AB 32." Retrieved from http://calfire.ca.gov/Grants/downloads/Procedural_Guide_Watershed_Reforestation.pdf

[17] CAL FIRE (2015). "Demonstration State Forests Research Authorized by AB 32." Retrieved from http://calfire.ca.gov/Grants/downloads/Procedural_Guide_State_Forests_Research.pdf

[18] CAL FIRE (2015). "Forest Pest Control Authorized by AB 32." Retrieved from http://calfire.ca.gov/Grants/downloads/Procedural_Guide_Forest_Pest_Control.pdf

[19] CAL FIRE (2015). "Fuels Reduction Grants Authorized by AB 32." Retrieved from http://calfire.ca.gov/Grants/downloads/Procedural_Guide_Fuels_Reduction.pdf

ed expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., support activities for agriculture and forestry, scientific research and development services support activities, construction, etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project level sourcing information for all 30 awarded projects, the default local purchase rate was assumed for industrial sectors.

The default local purchase rate for the mileage basket varies between 4% and 100% because it represents seven different industrial sectors. The default local purchase rate in IMPLAN was assumed for all seven industries: Household income was 100%; retail stores – gasoline stations was 84.9%; insurance carriers was 50.8%; automotive repair and maintenance, except car washes, was 100%; monetary authorities and depository credit intermediation activities was 79.6%; employment and payroll only (state and local government, non-education) was 100%; and tire manufacturing was 4%.

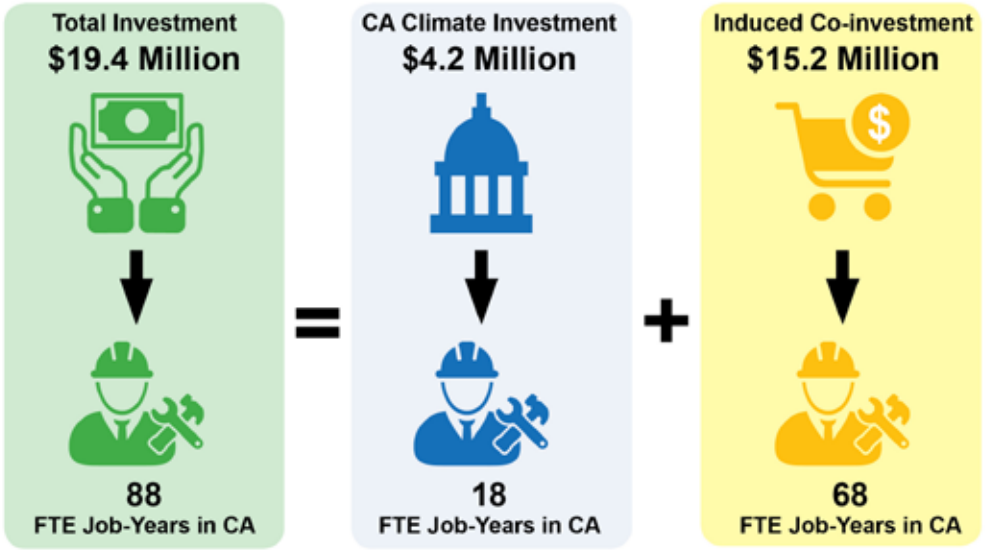
Table 24.3. Summary of Modeling Inputs for the Forest Health Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($18.2 Million)	Support activities for agriculture and forestry	82.7%	2015-2019	N/A	Default (99.9%)
	Forestry, forest products, and timber tract production	8.7%	2015-2019	None	Default (47.1%)
	Employment and payroll only (local government, non-education)	6.0%	2015-2019	N/A	Default (100%)
	Scientific research and development services	1.3%	2015-2019	N/A	Default (97.8%)
	Construction of other new nonresidential structures	1.1%	2015-2019	N/A	Default (99.9%)
	Mileage basket	0.2%	2015-2019	Default (Varies)	Default (4-100%)
	Retail stores - Building material and garden supply	0.1%	2015-2019	Default (34.6%)*	Default (94.6%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

25. Forest Legacy Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Forest Legacy Program protects forests that are vulnerable to conversion to non-forest uses that emit, rather than sequester, greenhouse gases. As with the Forest Health Program, the goal of the Forest Legacy Program is to ensure that California's forests continue to be a significant carbon storage sink. To accomplish this goal, the Forest Legacy Program provides grants that support permanent conservation easements.

The program works by allowing landowners to sell or transfer particular rights, such as the right to develop the property or to allow public access, while retaining ownership of the property and the right to use it in any way consistent with the terms of the easement. The agency or organization holding the easement is responsible for managing the rights it acquires and for monitoring compliance by the landowner. Forest management activities, including timber harvesting, hunting, fishing, and hiking are encouraged provided they are consistent with the program's purpose of preventing forest loss.[1]

From FY 2013-14 through 2015-16, a total of $4 million in California Climate Investment funding has been

[1] CAL FIRE (2012). "Forest Legacy Program." Retrieved from http://calfire.ca.gov/resource_mgt/resource_mgt_forestryassistance_legacy

spent on four conservation easements through this program. The projects are located in Humboldt, Napa, and Siskiyou counties. Together, these projects protect around 2,400 acres of forest from conversion to alternative land uses.[2]

Administration

The California Department of Forestry and Fire Protection (CAL FIRE) administers the Forest Legacy Program. CAL FIRE and the easement holders are responsible for working cooperatively with participating landowners to design their easements. The agency or organization holding the easement is responsible for monitoring compliance by the landowner.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Forest Legacy Program between FY 2013-14 and FY2015-16, totaling $4.2 million, are supporting a total of **18 full-time equivalent (FTE) job-years** in California.[3] We estimate that these appropriations, once fully spent, will induce $15.2 million in co-investment, supporting an additional **68 FTE job-years**.[4] When modeled together, appropriated funds and induced co-investment support a total of **88 FTE job-years**.[5,6] See **Table 25.11** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[7]

Table 25.1. Direct, Indirect, and Induced Jobs Supported by the Forest Legacy Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	0.2	1.0%	0.5	1%
Indirect Jobs	0	0%	0	0%
Induced Jobs	17.8	99.0%	66.6	99%
Total	**18.0**	**100%**	**67.5**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

Induced jobs make up the majority of jobs supported by the Forestry Legacy Program because most of the program funds and induced co-investment are spent on conservation easements, which compensate landowners for the development rights to their land. Easement payments then create an increase in proprietor income (i.e., income for business owners and self-employed individuals), which ultimately gets spent on a variety of goods and services, supporting induced jobs. The only sector directly impacted by the program is the real estate sector.[8] These jobs are explained by the 0.9% of program funds and induced co-investment that cover real estate transaction costs associated with processing easements.

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[2] California Air Resources Board (2016). "2015 County and Legislative District List of Implemented GGRF Projects Reported by Agencies Implementing California Climate Investments." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auction-proceeds/ggrf_project_list_for_2016_annual_report.xlsx

[3] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[4] Ibid.

[5] Ibid.

[6] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[7] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

[8] A summary of the indirect and induced jobs by industry, supported by the Forestry Legacy Program can be found in **Appendix 25.1**.

Methodology

In order to model the Forest Legacy Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that were entered into IMPLAN in order to model the employment benefits of the Forest Legacy Program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 25.2.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $24.2 million in California Climate Investment funding was allocated to the Forest Legacy Program and the Forest Health Program.[9] Of these funds, $4.2 million was set for conservation easements (i.e., the Forest Legacy Program).[10] During the study period, a total of $4 million in grant funding was awarded to four grantees to implement conservation easements.[11] It is assumed that the remaining $0.2 million in available funding will be rolled over into the next fiscal year, but is analyzed here for its employment benefits.

Induced Co-investment

To receive a grant through the Forest Legacy Program, grantees are required to provide at least 25% in matching funds toward the cost of their proposed easement.[12] Grantees, therefore, are considered co-investors (with the state) in the development of forest legacy projects. Based on a sample of four awarded projects in FY 2014-15, grants exceeded the minimum cost-share requirement by contributing around $14.5 million in matching funds, or 78% of total projects costs.[13] Assuming that the observed ratio between California Climate Investment appropriations and grantee co-investment (1 to 3.6) will continue into the future, it is projected that the leftover state funds during the study period ($0.2 million) will generate an additional $0.7 million in grantee co-investment, bringing the projected total for grantee co-investment during the study period to $15.2 million.

All grantee co-investment is considered induced by the Forest Legacy Program because applicants depend on state financial assistance to secure their proposed easements. In other words, without a grant through the program, it is unlikely that a landowner would sell the development rights for a smaller portion of their property to one of the awarded grantees. Thus, it is assumed that all co-investment would likely be spent elsewhere in the economy without the financial support offered through this program.

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[9] California Air Resources Board (2015). "Greenhouse Gas Reduction Fund: California Department of Forestry and Fire Protection Expenditure Record for Fiscal Year 2014-2015." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-calfire-forestlegacy-expenditure-records.pdf

[10] Ibid.

[11] California Air Resources Board (2016). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

[12] CAL FIRE (2014). California Forest Legacy Program for Carbon Sequestration Authorized by AB 32." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/FLP_GGRF_ProceduralsGuide.pdf

[13] California Air Resources Board. (2016). "California Climate Investments Using Cap-and-Trade Auction Proceeds." Retrieved from https://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. To identify the industrial sectors directly impacted by the Forest Legacy Program, funds must be tracked according to how they are spent. The program funds are spent in two primary ways: (1) on conservation easement acquisitions and (2) real estate transaction costs.

Easement costs were modeled as an increase in property-owner income, rather than an investment in any particular industry. Since easements compensate landowners for the development rights to their land, landowners are free to spend that compensation however they choose. Without detailed data on how landowners have spent easement funds, it is assumed that they will spend them on a variety of goods or services. To model this spending in IMPLAN, easement funds were coded as "proprietor income," which is a unique economic activity within the model that averages together the many ways in which a self-employed individual may spend an increase in income, including both savings and the purchase of goods and services. In other words, an increase in "proprietor income" represents a basket of industries that reflect typical spending patterns of self-employed individuals.

Real estate transaction costs were modeled as "real estate establishments" in IMPLAN. This industrial sector represents establishments that are primarily engaged in renting or leasing real estate to others; managing real estate for others; selling, buying, or renting real estate for others; and providing other real estate-related services, such as appraisal services.

The percentage split between easement acquisition costs and real estate transaction costs was based on a sample budget submitted by the California Wildlife Conservation Board for the conservation of approximately 860 acres in Napa County. It is assumed that California Climate Investment funding and induced co-investment will be spent on the same mix of industries.

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the Forest Legacy Program starts in 2016 and ends in 2019. Grant awards were announced in 2016, and all funds must be expended by December 31, 2019.[14] Funds are assumed to be spent in equal amounts annually between 2016 and 2019.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

The pricing margins for an increase in proprietor income varies because an increase in income represents spending on a basket of industries, some of which involve pricing margins, while others do not. Spending on goods typically involves pricing margins because goods are purchased from retail locations (e.g., grocery stores, department stores, etc.). Spending on services, on the other hand, typically does not involve

[14] CAL FIRE (2014). California Forest Legacy Program for Carbon Sequestration Authorized by AB 32." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/FLP_GGRF_ProceduralsGuide.pdf

pricing margins because the services are purchased directly from the provider (e.g., medical services, dining establishments, etc.). IMPLAN has built-in assumptions that account for this variability, and those assumptions were used in this analysis.

Since real estate services are not purchased through a thirty-party retailer, margins were not applicable for spending in this industry.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project-level sourcing information for the Forest Legacy Program, the default local purchase rate was assumed for all directly impacted industrial sectors.

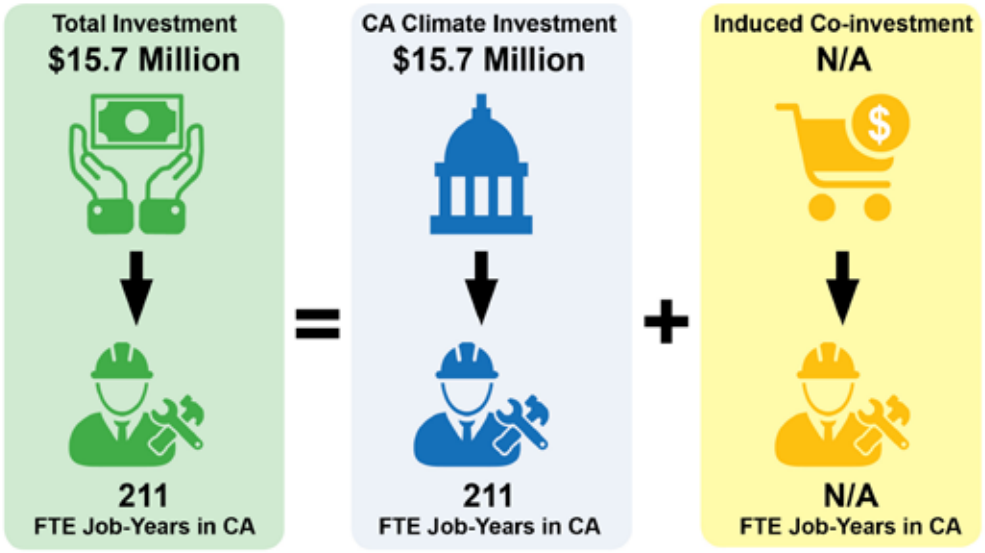
Table 25.2. Summary of Modeling Inputs for the Forest Legacy Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($4.2 Million)	Proprietor income	99.1%	2016-2019	Default (Varies)	Default (100%)
	Real estate establishments	0.9%	2016-2019	N/A	Default (100%)
Induced Co-investment ($15.2 Million)	Proprietor income	99.1%	2016-2019	Default (Varies)	Default (100%)
	Real estate establishments	0.9%	2016-2019	N/A	Default (100%)

26. Urban and Community Forestry Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Urban and Community Forestry Program provides grants to projects that optimize the benefits of trees in urban settings. These benefits include carbon sequestration, energy conservation, stormwater capture, improved air quality, wildlife habitat, and enhanced property values. Along with physical improvements to the urban landscape, all projects must also have an educational component. Eligible applicants include cities, counties, special districts, and nonprofit organizations.

The Urban and Community Forestry Program comprises five subprograms:

1. **Green Trees for The Golden State:** This program provides funding for the creation, development, and implementation of tree planting projects that maintain or expand healthy urban forests. In addition to covering the cost of planting trees, funds can be used toward up to five years of tree

establishment care. Grants issued are between $150,000 and $750,000.[1]

2. **Green Innovations:** This program provides funding for the development and implementation of forward-thinking green infrastructure projects. Eligible projects include green roofs, bio-remediation projects, edible landscaping and/or community gardens and orchards, and other non-traditional green infrastructure projects that reduce greenhouse gas emissions. Grants range between $200,000 and $1.5 million.[2]

3. **Woods in The Neighborhood:** This program provides funding to purchase, reclaim, and restore abandoned land in disadvantaged urban communities. Eligible projects include passive recreation facilities, community gardens or orchards, urban forestry education centers, pocket parks, and other improvements that include green infrastructure. Grants range between $200,000 and $1.5 million.[3]

4. **Urban Forest Management Activities:** This program provides funding for the development and implementation of urban forestry management plans. The plans must be long term (40 to 50 years), include the entire jurisdiction, take an ecosystem management approach, and be holistic in scope. Funds can be used toward tree inventories, urban forest mapping, job training, educational programming, and other activities that lead to a well-informed plan. Grants range between $150,000 and $750,000.[4]

5. **Urban Wood and Biomass:** This program provides funding for the diversion of dead or dying urban trees from landfills where they would decay and release greenhouse gases. Removed trees can be used to produce wood products or generate renewable energy. Funds can also be used to plant replacement trees in the place of removed trees. Grants range between $150,000 and $500,000.[5]

From FY 2013-14 through 2015-16, a total of 29 grants have been awarded, totaling $15.6 million dollars. Most of the awarded grants went to Golden Trees for The Golden State projects (17 projects totaling $7.4 million), followed by Green Innovations projects (eight totaling $6 million), Urban Forestry Management projects (six projects totaling $1.6 million), and one Urban Wood and Biomass project ($0.5 million).[6]

Administration

The California Department of Forestry and Fire Protection (CAL FIRE) administers the Urban and Community Forestry Program. In addition to grant management responsibilities, CAL FIRE also provides direct technical assistance to grantees in the implementation of their projects.[7]

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[1] CAL FIRE (2014). "Green Trees for the Golden State Tree Planting Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UFGrants_GreenTreesRFP2014_2015.pdf

[2] CAL FIRE (2014). "Green Trees Innovations Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UFGreen%20InnovationsRFP2014_2015.pdf

[3] CAL FIRE (2014). "Urban Forestry: Woods in the Neighborhood Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UF_WoodsInNeighborhoodRFP2014_2015.pdf

[4] CAL FIRE (2014). "Urban Forest Management for GHG Reduction Request for Proposals 2014/2015." Retrieved from http://www.fire.ca.gov/resource_mgt/downloads/CALFIRE_UF_ManagementActivitiesRFP2014_2015.pdf

[5] CAL FIRE (2014). "Urban Wood and Biomass Utilization Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UrbanWood-BiomassRFP2014_2015.pdf

[6] CAL FIRE. "Cal Fire Urban and Community Forestry Program Greenhouse Gas Reduction Fund Grants 2014/2015." Retrieved from http://calfire.ca.gov/Grants/downloads/UrbanForestry/CAL_FIRE_GGRF_UCF_Awards_14_15.pdf

[7] CAL FIRE (2012). "Urban and Community Forestry." Retrieved from http://www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Urban and Community Forestry Program between FY 2013-14 and FY 2015-16, totaling $15.7 million, support a total of **211 full-time equivalent (FTE) job-years** in California.[8] These job-years reflect solely the effect of California Climate Investment funding, since no induced co-investment was determined for the program (see the following **Methodology** section of this chapter for more details on this determination). See **Table 26.1** for a breakdown of the program's employment benefits by direct, indirect, and induced jobs.[9]

Table 26.1. Direct, Indirect, and Induced Jobs Supported by the Urban and Community Forestry Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	146	69%	N/A	N/A
Indirect Jobs	26	12%	N/A	N/A
Induced Jobs	39	18%	N/A	N/A
Total	**211**	**100%**	N/A	N/A

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The Urban and Community Forestry Program supports direct jobs in a variety of industrial sectors. Landscape and horticulture services are the most directly impacted sector, which is the result of program funds spent on labor for planting activities. Labor and civic organizations are the second most directly impacted sector, which is explained by the funds that go to community nonprofits for project administration.[10] Likewise, the local government sector is also positively impacted by funds that go to municipal governments for project administration. The remaining direct jobs occur in industries that provide concrete demolition and removal services (i.e., maintenance and repair construction of highways, streets, bridges, and tunnels), trees and materials for planting purposes (e.g., forestry, forest products, and timber tract production; building material and garden equipment and supplies stores, etc.), and technical support services (e.g., environmental and other technical consulting services; architectural, engineering, and related services; management consulting services; other educational services, etc.). See **Table 26.2** for a summary of the direct jobs supported by the program.

[8] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions on how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[9] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

[10] Civic organizations are coded in IMPLAN as "labor and civic organizations," and industry group that broadly represents establishments that promote the interests of their members, including urban greening.

Table 26.2. Direct Jobs Supported by the Urban and Community Forestry Program (By Industry)[11]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Landscape and horticultural services	62.5	43.0%
Labor and civic organizations	40.7	28.0%
Forestry, forest products, and timber tract production	13.9	9.6%
Maintenance and repair construction of highways, streets, bridges, and tunnels	7.2	4.9%
Employment and payroll of local government, non-education	5.3	3.7%
Environmental and other technical consulting services	3.9	2.7%
Architectural, engineering, and related services	3.5	2.4%
Retail - Building material and garden equipment and supplies stores	2.4	1.6%
Management consulting services	2.4	1.6%
Other educational services	1.1	0.7%
Subtotal of Top 10 Industries	**143.0**	**98.2%**
Total of All Industries	**145.5**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Methodology

In order to model the Urban and Community Forestry Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that were entered into IMPLAN in order to model the employment benefits of the program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 26.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $17.8 million in California Climate Investment funding was allocated to the Urban and Community Forestry Program.[12] Of this funding, $2.1 million was allocated to CAL FIRE for program administration and $15.7 million was allocated as grants.[13] The job-years supported by the $2.1 million in funding for administration were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**.

[11] A summary of the indirect and induced jobs, by industry, supported by the Urban and Community Forestry Program can be found in **Appendix 26.1**.

[12] California Air Resources Board (2015). "Greenhouse Gas Reduction Fund: California Department of Forestry and Fire Protection Expenditure Records for Fiscal Year 2014-2015." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-calfire-urbancommunityforests-expenditure-records.pdf

[13] Ibid.

During the study period, a total of $15.6 million in grant funding was awarded to a total of 29 projects.[14] It is assumed that the remaining $0.1 million in available grant funding will be rolled over into the next fiscal year, but it is analyzed here for its employment benefits.

Induced Co-investment

To receive a grant through the Urban and Community Forestry Program, applicants are required to provide at least 25% in matching funds toward the total cost of their proposed project.[15,16,17,18,19] Grantees, therefore, are considered co-investors (with the state) in the development of urban and community forestry projects. However, it is not known which co-investment funds were specifically induced by the program, and which would have likely been secured for urban forestry projects even in the absence of California Climate Investment funding. Without detailed data on how grantees would have spent matching funds in the absence of a grant through the Urban and Community Forestry Program, only the employment benefits of California Climate Investment funding were modeled for this program.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 26.3** summarizes the industrial sectors directly impacted by the Urban and Community Forestry Program. These industry codes and their percentage share of total project spending were based on the proposed budgets and work plans submitted by the 30 awarded projects to CAL FIRE (see **Appendix 26.2** for a summary of how IMPLAN codes were assigned to the various line-item expenses among the 14 sample budgets).

Of particular note, the mileage basket is a mix of industries, as based on the average breakdown of annual vehicle costs reported in the American Automobile Association's 2015 Your Driving Costs study.[20] The mix of industries in the basket include: household income (42%); retail stores – gasoline stations (19.3%); insurance carriers (12.8%); automotive repair and maintenance, except car washes, (8.8%); monetary authorities and depositor credit intermediation activities (7.7%); employment and payroll only (state and local government, non-education) (7.7%); and tire manufacturing (1.7%). Household income is a unique industry in the basket because it does not directly correspond to a vehicle cost and instead represents reimbursement dollars that go toward vehicle depreciation, which vehicle owners may spend in a variety of ways.

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[14] CAL FIRE. "Cal Fire Urban and Community Forestry Program Greenhouse Gas Reduction Fund Grants 2014/2015." Retrieved from http://calfire.ca.gov/Grants/downloads/UrbanForestry/CAL_FIRE_GGRF_UCF_Awards_14_15.pdf

[15] CAL FIRE (2014). "Green Trees for the Golden State Tree Planting Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UFGrants_GreenTreesRFP2014_2015.pdf;

[16] CAL FIRE (2014). "Green Trees Innovations Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UFGreen%20InnovationsRFP2014_2015.pdf

[17] CAL FIRE (2014). "Urban Forest Management for GHG Reduction Request for Proposals 2014/2015." Retrieved from http://www.fire.ca.gov/resource_mgt/downloads/CALFIRE_UF_ManagementActivitiesRFP2014_2015.pdf

[18] CAL FIRE (2014). "Urban Wood and Biomass Utilization Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UrbanWood-BiomassRFP2014_2015.pdf

[19] CAL FIRE (2014). "Urban Forestry: Woods in the Neighborhood Grant Program Request for Proposals 2014/2015." Retrieved from http://calfire.ca.gov/resource_mgt/downloads/CALFIRE_UF_WoodsInNeighborhoodRFP2014_2015.pdf

[20] The American Automobile Association Newsroom (2015). "Annual Cost to Own and Operate a Vehicle Falls to $8,698, Finds AAA." Retrieved from http://newsroom.aaa.com/2015/04/annual-cost-operate-vehicle-falls-8698-finds-aaa-archive/

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. Grant awards were announced in 2015. According to the request for proposal for each of the five subprograms, projects must close by June 2020.[21] Funds are assumed to be spent equally on an annual basis between 2015 and 2020.

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). IMPLAN has built-in assumptions for the share of transaction costs associated with purchasing a particular good. When margins were appropriate for spending on a particular industry, we relied on IMPLAN's built-in assumptions.

In the case of the Urban and Community Forestry Program, it is assumed that all materials are purchased through third-party retailers, rather than directly from the manufacturer, so margins were applied for all spending on materials (e.g., building material and garden supply, electronics and appliances, and other miscellaneous products). All other spending occurs in service-related industries, and since services are not purchased through third-party retailers, margins were not applicable for these industries.

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Urban and Community Forestry Program when project-level sourcing information could be determined, based on project proposals. When a supplier or vendor was not known, the default local purchase rate in IMPLAN was assumed. For project level sourcing information for the Urban and Community Forestry Program, refer to **Appendix 26.2.**

The default local purchase rate for the mileage basket varies between 4% and 100% because it represents seven different industrial sectors. The default local purchase rate in IMPLAN was assumed for all seven industries in the basket: Household income was 100%; retail stores – gasoline stations was 84.9%; insurance carriers was 50.8%; automotive repair and maintenance, except car washes, was 100%; monetary authorities and depositor credit intermediation activities was 79.6%; employment and payroll only (state and local government, non-education) was 100%; and tire manufacturing was 4%.

[21] Ibid.

Table 26.3. Summary of Modeling Inputs for the Urban and Community Forestry Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($15.7 Million)	Civic, social, professional, and similar organizations	34.38%	2015-2020	N/A	100%
	Landscape and horticultural services	23.16%	2015-2020	N/A	100%
	Forestry, forest products, and timber tract production	10.39%	2015-2020	N/A	96.5%
	Maintenance and repair construction of highways, streets, bridges, and tunnels	8.42%	2015-2020	N/A	100%
	Retail stores - Building material and garden supply	5.78%	2015-2020	Default (34.6%)*	95.1%
	Employment and payroll only (local government, non-education)	4.57%	2015-2020	N/A	100%
	Architectural, engineering, and related services	4.04%	2015-2020	N/A	100%
	Management and consulting services	2.43%	2015-2020	N/A	90.1%
	Environmental and other technical consulting services	2.13%	2015-2020	N/A	Default (100%)
	Printing	1.40%	2015-2020	N/A	56.2%
	Scientific research and development services	0.64%	2015-2020	N/A	16.6%
	Mileage basket	0.47%	2015-2020	Default (Varies)	Default (4-100%)
	Automotive equipment rental and leasing	0.41%	2015-2020	N/A	Default (88.8%)
	Other educational services	0.32%	2015-2020	N/A	Default (100%)
	All other miscellaneous professional, scientific, and technical services	0.28%	2015-2020	N/A	Default (99.4%)
	Retail stores - Electronics and appliances	0.20%	2015-2020	Default (29.9%)*	Default (99.7%)
	Retail stores - Food and beverage	0.18%	2015-2020	Default (27.7%)*	Default (100%)
	Retail stores - Miscellaneous	0.17%	2015-2020	Default (47.2%)*	Default (99.7%)
	Employment and payroll only (local government, education)	0.16%	2015-2020	N/A	100%
	Software publishers	0.15%	2015-2020	None	Default (99.8%)
	Water, sewage and other treatment and delivery systems	0.12%	2015-2020	N/A	100.0%

Continues next page.

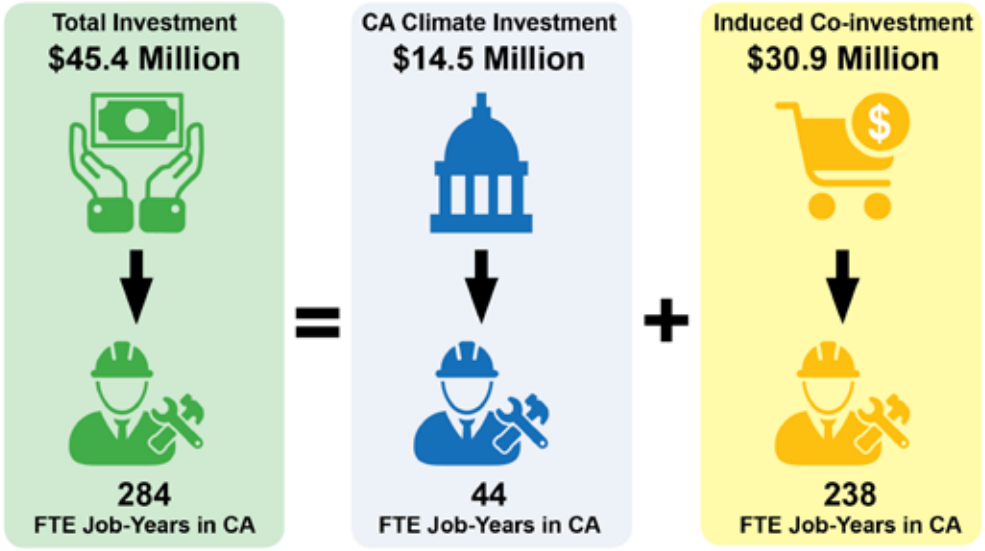
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($15.7 Million)	Retail stores - Clothing and clothing accessories	0.07%	2015-2020	Default (45.9%)*	Default (100%)
	Advertising and related services	0.04%	2015-2020	N/A	Default (98.3%)
	Insurance agencies, brokerages, and related activities	0.04%	2015-2020	N/A	Default (50.8%)
	Truck trailer manufacturing	0.02%	2015-2020	N/A	Default (21.6%)
	Specialized design services	0.02%	2015-2020	N/A	100.0%
	Retail stores - Gasoline stations	0.01%	2015-2020	Default (11.6%)*	Default (84.9%)
	Transport by air	0.01%	2015-2020	N/A	Default (69.0%)
Induced Co-investment (N/A)	N/A	N/A	N/A	N/A	N/A

*These percentages represent the share of spending within an industry that goes to transaction costs (e.g., retailer services, wholesaler services, etc.).

27. Organics Grant Program

Impacts from California Climate Investments*

Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Organics Grant Program provides competitive grants for projects that expand or establish facilities that reduce the amount of California-generated green materials, food materials, or alternative daily cover sent to landfills. Grants are available to public, nonprofit, and for-profit entities. The maximum grant award is $3 million per application.[1]

The primary goal of this program is to reduce the amount of greenhouse gas emissions generated by organic material as it decays in landfills. To accomplish this goal, this program funds projects that divert organic waste to processing facilities where it can be turned into value-added products (e.g., compost) or a source of renewable energy (e.g., biogas). Compost can be used as a soil amendment that helps bury carbon in underground pools, while biogas can be used to displace fossil fuel consumption.

In order to qualify, projects must either compost, anaerobically digest, or use some other related digestion

[1] The California Department of Resources Recycling and Recovery (2015). "Notice of Funds Available: Organics Grants Program (FY 2014-15)." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/FY201415/default.htm

or fermentation process to upcycle green or food materials into value-added products. Funds can be used toward the purchase of equipment, machinery, and real estate for composting and digestion activities, as well as programming around food waste prevention.

The first round of grants, distributed using FY 2014-15 funds, went to five projects totaling $14.5 million. The funded projects include the construction of composting facilities in Fresno and San Bernardino counties, the construction of a new high-solids anaerobic co-digestion facility in Tulare County, the expansion of an existing anaerobic digester facility in Riverside County, and the purchase of equipment designed to extract organic material intermingled with mixed solid waste at a transfer station in the city of San Francisco.[2]

Administration

The California Department of Resources Recycling and Recovery (CalRecycle) administers the Organics Grant Program.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Organics Grant Program between 2013-14 and 2015-16, totaling $14.5 million, are supporting a total of **44 full-time equivalent (FTE) job-years** in California.[3] We estimate that these appropriations induced $30.9 million in co-investment, supporting an additional **238 FTE job-years**.[4] When modeled together, appropriated funds and induced co-investment support a total of **284 FTE job-years**.[5,6] See **Table 27.1** for a breakdown of employment benefits by direct, indirect, and induced jobs.[7]

Table 27.1. Direct, Indirect, and Induced Jobs Supported by the Organics Grant Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	Percent of Total	FTE Job-Years	Percent of Total
Direct Jobs	24.9	57%	145.1	61%
Indirect Jobs	7.5	17%	33.4	14%
Induced Jobs	11.2	26%	57.9	25%
Total	**44.4**	**100%**	**238.1**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

The majority of direct jobs supported by appropriations for the Organics Grant Program occur in the construction sector. These construction jobs are explained by program funds that go toward building new facilities or upgrading existing facilities to accommodate new equipment (e.g., excavation, grading, plumbing, electrical, etc.). Industrial machinery manufacturing is the second most directly impacted sector, which is explained by funds that go toward new equipment (e.g., equipment for composting, grinding, loading,

[2] The California Department of Resources and Recovery. "Fiscal Year 2014-15 Organics Grant Program (ORG1) Awards." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/ORG1Sum83115.pdf

[3] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[4] Ibid.

[5] Ibid.

[6] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[7] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

etc.). The remaining jobs occur in sectors associated with miscellaneous project expenses.[8] See **Table 27.2** for a summary of the direct jobs supported by appropriations for the grant program.

Co-investment induced by the Organics Grant Program supports direct jobs in a mix of industries similar to those described above. However, in contrast to appropriated funds, induced co-investment is used to cover a greater variety of miscellaneous project expenses.[9] See **Table 27.2** for a summary of the direct jobs supported by induced co-investment for the grant program.

Table 27.2. Direct Jobs Supported by the Organics Grant Program (by Industry)[10]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new manufacturing structures	16.4	65.8%
All other industrial machinery manufacturing	7.8	31.1%
Waste management and remediation services	0.6	2.3%
Other commercial service industry machinery manufacturing	0.1	0.4%
Architectural, engineering, and related services	0.1	0.4%
Total of All Industries	**24.9**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Construction of new manufacturing structures	124.5	85.8%
Waste management and remediation services	7.0	4.8%
Construction of other new nonresidential structures	4.5	3.1%
Architectural, engineering, and related services	4.1	2.8%
All other industrial machinery manufacturing	3.5	2.4%
Employment and payroll of local government, non-education	0.8	0.5%
Environmental and other technical consulting services	0.5	0.3%
Fabricated pipe and pipe fitting manufacturing	0.1	0.1%
Printing	0.1	0.1%
Total of All Industries	**145.1**	**100%**

Methodology

In order to model the Organics Grant Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment

[8] Refer to **Appendix 27.2** for a full list of expenses across the five awarded projects.
[9] Ibid.
[10] A summary of the indirect and induced jobs by industry, supported by the Organics Grant Program can be found in **Appendix 27.1**.

benefits of the program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 27.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $20 million in California Climate Investment funding was allocated to the Organics Grant Program and the Recycled Fiber, Plastic, and Glass Grant Program.[11] Of this funding, $19.5 million was set aside for project awards and $0.5 million was allocated to CalRecycle for program administration.[12] The job-years supported by the $0.5 million in state-level administrative funds were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**.

During the study period, a total of $14.5 million in grant funding was awarded to five grantees to implement organic material recovery projects.[13] The other $5 million in available funding for projects was distributed to three projects under the Recycled Fiber, Plastic, and Glass Grant Program.[14] The job-years supported by these three projects are modeled in the chapter for the Recycled Fiber, Plastic, and Glass Grant Program (**chapter 28** of **Part II**).

Induced Co-investment

To receive an award through the Organics Grant Program, applicants are not required to provide matching funds.[15] Yet, grantees have leveraged millions of dollars in outside funds toward the completion of their proposed projects. Grantees, therefore, are considered co-investors (with the state) in the development of a waste recovery project. Based on the project budgets submitted by the five awarded grantees, a total of $30.9 million has been leveraged toward the Organics Grant Program.

All co-investment dollars are considered induced by the Organics Grant Program. Based on feedback from CalRecycle, the awarded grantees depended on the state's financial assistance to complete their waste recovery projects. Thus, without the grant funds, all grantees would have spent their co-investment on other expenses.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 27.3** summarizes the industrial sectors directly impacted by the Organics Grant Program. These industry codes and their percentage share of total project spending were based on the proposed budgets submitted by the five awarded projects (see **Appendix 27.2** for a summary of how IMPLAN codes were assigned to the various line-item expenses among the five projects).

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[11] California Air Resources Board (2014). "Greenhouse Gas Reduction Fund: CalRecycle Expenditure Record for Fiscal Year 2014-15." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-calrecycle-expenditure-record.pdf

[12] Ibid.

[13] The California Department of Resources Recycling and Recovery. "Fiscal Year 2014-15 Organics Grant Program (ORG1) Awards." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/ORG1Sum83115.pdf

[14] The California Department of Resources Recycling and Recovery. "Fiscal Year 2014-15 Recycled Fiber, Plastic, and Glass Grant Program (FPG1) Awards." Retrieved from http://www.calrecycle.ca.gov/climate/grantsloans/FPG/FPG1Sum.pdf

[15] The California Department of Resources Recycling and Recovery (2014). "Organics Grant Program Application Guidelines and Instructions." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/FY201415/Apply/Instructions.pdf

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. It is assumed that funds will be spent between 2015 and 2018 according to the following percentages provided by CalRecycle: 2015 (18%); 2016 (36%); 2017 (30%); and 2018 (16%).

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). All equipment is assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries (e.g., other industrial machinery manufacturing; other commercial service industry machinery manufacturing; fabricated pipe and pipe fitting manufacturing; etc.). Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., construction of new manufacturing structures; waste management and remediation services; architectural, engineering, and related services; environmental and other technical consulting services; etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Organics Grant Program when project-level sourcing information could be determined, based on project budgets. When a supplier or vendor was not known, the default local purchase rate in IMPLAN was assumed. For project-level sourcing information, refer to **Appendix 27.2.**

Table 27.3. Summary of Modeling Inputs for Organic Grants Program

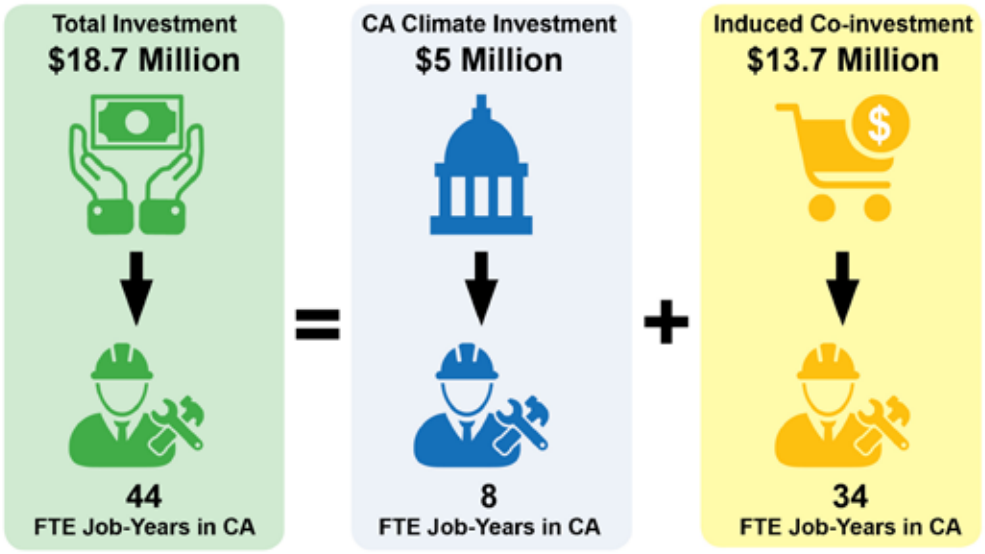
Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($14.5 Million)	All other industrial machinery manufacturing	81.0%	2015-2018	None	6.1%
	Construction of new manufacturing structures	17.4%	2015-2018	N/A	Default (100%)
	Waste management and remediation services	1.0%	2015-2018	N/A	100%
	Other commercial service industry machinery manufacturing	0.3%	2015-2018	None	Default (42.8%)
	Light truck and utility vehicle manufacturing	0.2%	2015-2018	None	Default (2.4%)
	Architectural, engineering, and related services	0.1%	2015-2018	N/A	Default (95.7%)
Induced Co-investment ($30.9 Million)	Construction of new manufacturing structures	59.9%	2015-2018	N/A	Default (100%)
	All other industrial machinery manufacturing	27.2%	2015-2018	None	10.5%
	Waste management and remediation services	5.5%	2015-2018	N/A	100%

Continues next page.

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
Induced Co-investment ($30.9 Million)	Architectural, engineering, and related services	2.5%	2015-2018	N/A	Default (95.7 %)
	Construction of other new nonresidential structures	2.5%	2015-2018	None	Default (99.9%)
	Material handling equipment manufacturing	1.5%	2015-2018	None	Default (22.6%)
	Employment and payroll only (local government, non-education)	0.3%	2015-2018	N/A	100%
	Fabricated pipe and pipe fitting manufacturing	0.3%	2015-2018	None	Default (37.7%)
	Environmental and other technical consulting services	0.1%	2015-2018	N/A	Default (100%)
	Printing	0.1%	2015-2018	N/A	Default (51.7%)

28. Recycled Fiber, Plastic, and Glass Grant Program

Impacts from California Climate Investments*
Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Recycled Fiber, Plastic, and Glass Grant Program provides competitive grants for projects that expand existing capacity or establish new facilities in California that use California-generated postconsumer recycled fiber, plastic, or glass to manufacture products. Grants are available to public, nonprofit, and for-profit entities. The maximum grant award is $3 million per application.[1]

Like the Organics Grant Program, the primary goal of this program is to reduce the amount of greenhouse gas emissions generated by solid waste in landfills. As with green waste, many fiber products are primarily composed of organic material (e.g., paper, wood, cotton, linen, wool) and decompose in landfills, producing methane in the process. Recycling these products at the end of their life cycle helps prevent the release

[1] The California Department of Resources Recycling and Recovery (2014). "Recycled Fiber, Plastic, and Glass Grant Program Application Guidelines and Instructions." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/FPG/FY201415/Apply/Instructions.pdf

of this potent greenhouse gas. Inorganic materials such as plastic, glass, and some fiber products (e.g., polyester, nylon, polypropylene) do not necessarily decompose in landfills, but they are energy intensive to produce from virgin materials. Thus, recycling these products helps achieve energy savings in manufacturing sectors.

Eligible projects must result in a manufactured product. For the purposes of this program, this is defined as a good or package in a form that requires no further processing before it is offered for sale to an end user. It does not include intermediate products, such as plastic pellets sold as feedstock to a converter for fabrication into a consumer product. Funds can be used toward the purchase of equipment, machinery and real estate improvements associated with the installation the construction, renovation, or expansion of recycling facilities.

The first round of grants, distributed using FY 2014-15 funds, went to three projects totaling $5 million. Two of the three projects are in Los Angeles County and pay for upgrades to a manufacturing facility that recycles agricultural film plastic into reusable bags, as well as the expansion of a recycling operation that turns post-consumer carpet into fiber cushion, traffic signs, building signs, and flooring substrate. The third project, in Stanislaus County, pays for the purchase of recycling equipment that processes bottle labels, cellulosic fines, and paper sludge into a range of landscaping material including bender boards.[2]

Administration

The California Department of Resources Recycling and Recovery (CalRecycle) administers the Recycled Fiber, Plastic, and Glass Grant Program.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the Recycled Fiber, Plastic, and Glass Grant Program between FY 2013-14 and FY 2015-16, totaling $5 million, are supporting a total of **8 full-time equivalent (FTE) job-years** in California.[3] We estimate that these appropriations induced $13.7 million in co-investment, supporting an additional **34 FTE job-years**.[4] When modeled together, appropriated funds and induced co-investment support a total of **44 FTE job-years**.[5,6] See **Table 28.1** for a breakdown of these employment benefits by direct, indirect, and induced jobs.[7]

[2] The California Department of Resources Recycling and Recovery. "Fiscal Year 2014-15 Recycled Fiber, Plastic, and Glass Grant Program (FPG1) Awards." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/FPG/FPG1Sum.pdf

[3] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[4] Ibid.

[5] Ibid.

[6] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[7] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

Table 28.1. Direct, Indirect, and Induced Jobs Supported by the Recycled Fiber, Plastic, and Glass Grant Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	4.8	67%	16.6	49%
Indirect Jobs	1.1	16%	8.2	26%
Induced Jobs	1.2	17%	8.8	26%
Total	**7.8**	**100%**	**33.9**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

Most of direct jobs supported by appropriations for the Recycled Fiber, Plastic, and Glass Grant Program occur in the industrial machinery manufacturing sector. These jobs are explained by the program funds that go toward the purchase of new recycling equipment. Construction is the second most directly impacted industry, which is explained by the program funds that go toward upgrading recycling facilities so that they can accommodate the new equipment (e.g., electrical service upgrades, the construction of supporting infrastructure, etc.). The remaining jobs occur in sectors associated with miscellaneous project expenses.[8] See **Table 28.2** for a summary of the direct jobs supported by appropriations for the grant program.

Co-investment induced by the grant program supports direct jobs in a mix of industries similar to those described above. However, in contrast to appropriated funds, a significant share of induced co-investment is used to pay employees at recycling facilities to assist with equipment operations and maintenance (modeled in IMPLAN as "waste management and remediation services"). Induced co-investment is also used to cover a greater variety of miscellaneous project expenses.[9] See **Table 28.2** for a summary of the direct jobs supported by induced co-investment for the grant program.

Table 28.2. Direct Jobs Supported by the Recycled Fiber, Plastic, and Glass Grant Program (by Industry)[10]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
All other industrial machinery manufacturing	2.6	48.8%
Construction of new manufacturing structures	2.4	45.8%
Architectural, engineering, and related services	0.2	3.6%
Commercial and industrial machinery and equipment rental and leasing	0.1	1.8%
Total of All Industries	**5.2**	**100%**

Continues next page.

[8] Refer to Appendix 28.2 for a full list of expenses across the three awarded projects.
[9] Ibid.
[10] A summary of the indirect and induced jobs by industry, supported by the Recycled Fiber, Plastic, and Glass Grant Program can be found in Appendix 28.1.

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
All other industrial machinery manufacturing	6.3	35.2%
Waste management and remediation services	5.5	30.7%
Construction of new manufacturing structures	2.3	12.9%
Employment and payroll of state government, non-education	2.0	11.1%
Ready-mix concrete manufacturing	0.4	2.2%
Architectural, engineering, and related services	0.4	2.1%
Commercial and industrial machinery and equipment rental and leasing	0.4	2.1%
Switchgear and switchboard apparatus manufacturing	0.3	1.6%
Other support services	0.3	1.5%
Employment and payroll of local government, non-education	0.1	0.5%
Total of All Industries	**17.8**	**100%**

Methodology

In order to model the Recycled Fiber, Plastic, and Glass Grant Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 28.3.**

California Climate Investment

From FY 2013-14 through FY 2015-16, $20 million in California Climate Investment funding was allocated to the Recycled Fiber, Plastic, and Glass Grant Program and the Organics Grant Program.[11] Of this funding, $19.5 million was set aside for project awards, and $0.5 million was allocated to CalRecycle for program administration.[12] The job-years supported by the $0.5 million in state-level administrative funds were excluded from the job totals reported in this chapter and are instead reported in **chapter 3** of **Part I**.

During the study period, a total of $5 million in grant funding was awarded to three grantees to implement fiber, plastic, and glass recovery projects.[13] The other $14.5 million in available grant funding was distributed

[11] California Air Resources Board (2015). "Greenhouse Gas Reduction Fund: CalRecycle Expenditure Record for Fiscal Year 2014-15." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/14-15-calrecycle-expenditure-record.pdf

[12] Ibid.

[13] The California Department of Resources Recycling and Recovery. "Fiscal Year 2014-15 Recycled Fiber, Plastic, and Glass Grant Program (FPG1) Awards." Retrieved from http://www.calrecycle.ca.gov/climate/grantsloans/FPG/FPG1Sum.pdf

to five projects under the Organics Grant Program.[14] The job-years supported by these five projects are modeled in the chapter for the Organics Grant Program (**chapter 27** of **Part II**).

Induced Co-investment

To receive an award through the Recycled Fiber, Plastic, and Glass Grant Program, applicants are not required to provide matching funds.[15] Yet, grantees have leveraged millions of dollars in outside funds toward the completion of their proposed projects. Grantees, therefore, are considered co-investors (with the state) in the development of waste recovery projects. Based on the project budgets submitted by the three awarded grantees, a total of $13.7 million has been leveraged toward the Recycled Fiber, Plastic, and Glass Grant Program.

All co-investment dollars are considered induced by the program. Based on feedback from CalRecycle, the awarded grantees depended on the state's financial assistance to complete their waste recovery projects. Thus, without the grant funds, all grantees would have spent their co-investment on other expenses.

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 28.3** summarizes the industrial sectors directly impacted by the Recycled Fiber, Plastic, and Glass Grant Program. These industry codes and their percentage share of total project spending were based on the proposed budgets submitted by the three awarded projects (see **Appendix 28.2** for a summary of how IMPLAN codes were assigned to the various line-item expenses among the three projects).

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. It is assumed that funds will be spent between 2015 and 2017 according to the following percentages provided by CalRecycle: 2015 (62%); 2016 (13%); and 2017 (25%).

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). All equipment is assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries (i.e., other industrial machinery manufacturing; switchgear and switchboard apparatus manufacturing). Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (e.g., construction of new manufacturing structures; waste management and remediation services; architectural, engineering, and related services; advertising and related services; etc.).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each

[14] The California Department of Resources Recycling and Recovery. "Fiscal Year 2014-15 Organics Grant Program (ORG1) Awards." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/ORG1Sum83115.pdf

[15] The California Department of Resources Recycling and Recovery (2014). "Organics Grant Program Application Guidelines and Instructions." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/Organics/FY201415/Apply/Instructions.pdf

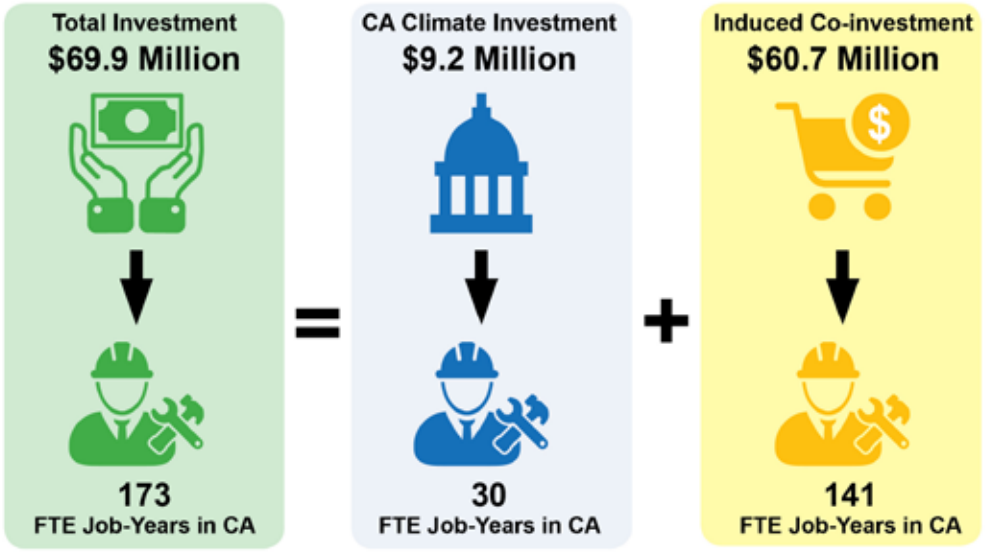
industry, so the user needs to adjust this percentage only when there is an exception to the norm. Local purchase rates were adjusted for the Recycled Fiber, Plastic, and Glass Grant Program when project-level sourcing information could be determined, based on project budgets. When a supplier or vendor was not known, the default local purchase rate in IMPLAN was assumed. For project-level sourcing information for the Recycled Fiber, Plastic, and Glass Grant Program, refer to **Appendix 28.2**.

Table 28.3. Summary of Modeling Inputs for the Recycled Fiber, Plastic, and Glass Grant Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
California Climate Investment ($5 Million)	Other industrial machinery manufacturing	91.3%	2015-2017	None	13.9%
	Construction of new manufacturing structures	7.2%	2015-2017	N/A	100%
	Architectural, engineering and related services	0.6%	2015-2017	N/A	Default (95.7%)
	Advertising and related services	0.5%	2015-2017	N/A	0%
	Industrial truck, trailer, and stacker manufacturing	0.4%	2015-2017	N/A	100%
	Employment and payroll only (local government, non-education)	0.03%	2015-2017	N/A	100%
Induced Co-investment ($13.7 Million)	Other industrial machinery manufacturing	81.5%	2015-2017	None	18.6%
	Waste management and remediation services	9.5%	2015-2017	N/A	100.0%
	Switchgear and switchboard apparatus manufacturing	3.7%	2015-2017	None	Default (20.6%)
	Construction of new manufacturing structures	2.5%	2015-2017	N/A	100%
	Ready-mix concrete manufacturing	1.3%	2015-2017	N/A	Default (73.4%)
	Industrial truck, trailer, and stacker manufacturing	0.8%	2015-2017	N/A	100.0%
	Architectural, engineering and related services	0.5%	2015-2017	N/A	Default (95.7%)
	Other support services	0.2%	2015-2017	N/A	Default (90.1%)
	Advertising and related services	0.1%	2015-2017	N/A	0%
	Employment and payroll only (local government, non-education)	0.1%	2015-2017	N/A	100 %
	Scientific research and development services	0.02%	2015-2017	N/A	100%

29. The Greenhouse Gas Reduction Loan Program

Impacts from California Climate Investments*
Appropriations from FY 2013-14 through FY 2015-16



*Disaggregated numbers may not add up to the totals due to rounding.

Program Overview

Program Design and Goals

The Greenhouse Gas (GHG) Reduction Loan Program offers noncompetitive loans that support new or expanded organics infrastructure, such as composting and anaerobic digestion facilities, as well as for facilities that manufacture fiber, plastic, or glass waste materials into beneficial products. Loans are available to public, nonprofit, and for-profit entities at a 4% interest rate. The maximum loan is $2 million per application.[1]

As with the Organics Grant Program and the Recycled Fiber, Plastic, and Glass Grant Program, the purpose of this program is to reduce GHG emissions generated from solid waste in landfills. In addition to funding the construction, renovation, or expansion of processing facilities, loan awards can be used toward food

[1] The California Department of Resource Recycling and Recovery (2017). "Climate Change and Solid Waste Management Greenhouse Gas Reduction Loan Program." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/GHGLoans/default.htm

waste prevention projects, including both source reduction and food rescue projects. Food rescue must result in rescued food being distributed to people in a disadvantaged community.

The GHG Reduction Loan Program is a revolving fund that supplements appropriated dollars with monthly loan repayments in order to maximize the number of awards that can be distributed. Loans must be repaid at a fixed interest rate of 4%. The maximum loan term is 15 years when partially or wholly collateralized by real estate, or 10 years when collateralized by assets other than real estate. The loans are awarded on a first come, first served basis.[2]

Over the course of the FY 2013-14 and FY 2015-16 study period, two GHG reduction loans have been awarded, totaling $1.7 million.[3] One loan went to North State Rendering Company Inc. to construct an anaerobic digestion facility that will convert food waste into biogas that can be used to fuel vehicles. The other loan went to Nursery Products LLC. to expand an existing composting facility.

Administration

The California Department of Resources Recycling and Recovery (CalRecycle) administers the GHG Reduction Loan Program.

Results

After modeling the program in IMPLAN, we estimate that appropriations for the GHG Reduction Loan Program between FY 2013-14 and FY 2015-16, totaling $9.2 million, are supporting a total of **30 full-time equivalent (FTE) job-years** in California.[4] We estimate that these appropriations, once fully spent, will induce $60.7 million in co-investment, supporting an additional **141 FTE job-years**.[5] When modeled together, appropriated funds and induced co-investment support a total of **173 FTE job-years**.[6,7] See **Table 29.1** for a breakdown of employment benefits by direct, indirect, and induced jobs.[8]

Table 29.1. Direct, Indirect, and Induced Jobs Supported by the GHG Reduction Loan Program*

	California Climate Investment		Induced Co-investment	
	FTE Job-Years	**Percent of Total**	**FTE Job-Years**	**Percent of Total**
Direct Jobs	14.8	52%	64.4	46%
Indirect Jobs	7.2	26%	38.5	28%
Induced Jobs	6.4	23%	36.9	26%
Total	**30.0**	**100%**	**140.6**	**100%**

*Direct, indirect, and induced jobs may not add up to the total jobs reported here due to rounding.

[2] The California Department of Resource Recycling and Recovery (2017). "Climate Change and Solid Waste Management Notice of Funds Available: Greenhouse Gas Reduction Loan Program—Fiscal Year 2015-16 (Cycle 2A)". Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/GHGLoans/FY201516/default.htm

[3] The California Department of Resource Recycling and Recovery. "Recycling Market Development Zones (RMDZ) Loan Detail: North State Rendering Co. Inc.". Retrieved from http://www.calrecycle.ca.gov/RMDZ/Reports/Businesses/Loan.aspx

[4] It is not known which of these jobs are net new jobs. Such an analysis would require making assumptions about how investment dollars would be spent under counterfactual scenarios. The development of counterfactual scenarios was outside the scope of this study.

[5] Ibid.

[6] Ibid.

[7] Disaggregated job numbers do not add up to the total job number reported here because of rounding that occurs within IMPLAN when investment flows are modeled together.

[8] See the **Methodology** chapter in **Part I** for definitions of direct, indirect, and induced jobs.

The majority of direct jobs supported by appropriations for the GHG Reduction Loan Program are in the industrial machinery manufacturing sector. These job-years are explained by spending on equipment for processing waste into useful products. Maintenance and repair construction of nonresidential structures is the second most directly impacted industry, which is explained by program funds that go toward installation activities. The remaining direct jobs occur in the totalizing fluid meter and counting device manufacturing sector, which is explained by program funds that go toward purchasing net metering equipment at facilities that process organic waste into biogas for generating electricity. See **Table 29.2** for a summary of the direct jobs supported by appropriations for the loan program.

Co-investment induced by the GHG Reduction Loan Program supports direct jobs in a mix of industries similar to those described above. This is explained by the matching funds that borrowers contribute toward their proposed projects. See **Table 29.2** for a summary of the direct jobs supported by induced co-investment for the loan program.

Table 29.2. Direct Jobs Supported by the GHG Reduction Loan Program (by Industry)[9]

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
All other industrial machinery manufacturing	10.4	70.1%
Maintenance and repair construction of nonresidential structures	4.3	29.2%
Totalizing fluid meter and counting device manufacturing	0.1	0.7%
Total of All Industries	**14.8**	**100%**
Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
All other industrial machinery manufacturing	42.6	66.1%
Maintenance and repair construction of nonresidential structures	21.5	33.4%
Totalizing fluid meter and counting device manufacturing	0.3	0.5%
Total of All Industries	**64.4**	**100%**

Methodology

In order to model the GHG Reduction Loan Program in IMPLAN, all financial flows associated with the program had to be tracked and totaled, including both California Climate Investment funding and induced co-investment. After quantifying the investment totals, the details on how they were (or will be) spent also had to be determined, including identifying all of the affected industries, the spending time line of the program, the presence or absence of pricing margins, and the local purchasing percentage.

The following section details the inputs that we entered into IMPLAN in order to model the employment benefits of this program. Before reading the following section, we recommend readers first review the **Methodology** chapter in **Part I,** which provides an overview of the economic input-output model used in this study (IMPLAN Version 3.1). For a summary of the information described below, see **Table 29.3.**

[9] A summary of the indirect and induced jobs by industry, supported by the GHG Reduction Loan Program can be found in **Appendix 29.1**.

California Climate Investment

From FY 2013-14 through FY 2015-16, $10 million in California Climate Investment funding was allocated to the GHG Reduction Loan Program.[10] Of this funding, $9.2 million was set aside for loan recipients and $0.8 million was allocated to CalRecycle for program administration.[11] The job-years supported by the $0.8 million in state-level administrative funds were excluded from the job totals reported in this chapter and are instead reported in the **chapter 3** of **Part I**.

During the study period, around $1.7 million in loans have been awarded to two businesses (North State Rendering Company Inc. and Nursery Products LLC).[12] It is assumed the remaining $7.5 million in available funding for loans will be rolled over into the next fiscal year, but is analyzed here for their employment benefits.

Induced Co-investment

To receive a GHG reduction loan, borrowers must contribute at least 25% of the total project cost.[13] Borrowers, therefore, are considered co-investors (with the state) in the development of waste recovery projects. Based on the loans awarded during the study period, the minimum match for a GHG-reduction loan was greatly exceeded, with borrowers contributing a cumulative match of 87% of total project costs ($11.1 million).[14] Assuming that the observed ratio between California Climate Investment funding and borrower co-investment (1 to 6.6) will continue into the future, it is projected that the leftover funding for loans during the study period ($7.5 million) will generate an additional $49.6 million in borrower co-investment, bringing the projected total for borrower co-investment to $60.7 million.

All co-investment dollars are considered induced by the GHG reduction loans. Based on feedback from CalRecycle, borrowers depend on the state's financial assistance to complete their waste recovery projects. North State Rending Company Inc., for example, needed the loan to pay for cost overruns, and no other sources were available. Thus, without the GHG-reduction loan, construction of its anaerobic digestion facility would have ceased and closed down. Similarly, Nursery Products LLC. needed the loan because no other source of funding was available. Without the GHG reduction loan, Nursery Products LLC. would not have expanded its composting facility.[15]

Industrial Sectors

The industrial sectors that are directly impacted by investment flows strongly influence the overall employment benefits of a particular program or project. For each industrial sector, IMPLAN has a built-in employment multiplier that translates investment dollars into job-years. **Table 29.3** summarizes the industrial sectors directly impacted by the GHG Reduction Loan Program. These industrial sectors, and their percentage share of state funds and co-invested funds, were based on sample budgets for the two projects that North State Rendering Company Inc. and Nursery Products LLC. proposed (see **Appendix 29.2** for detailed line-item expenses).

[10] California Air Resources Board (2017). "Expenditure Records from Agencies Receiving GGRF Monies." Retrieved from https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/expenditurerecords.htm

[11] Ibid.

[12] The California Department of Resource Recycling and Recovery. "Recycling Market Development Zones (RMDZ) Loan Listing." Retrieved from http://www.calrecycle.ca.gov/RMDZ/Reports/Businesses/LoanList.aspx?SearchURL=http%3a%2f%2fwww.calrecycle.ca.gov%2fRMDZ%2fReports%2fBusinesses%2fLoan.aspx&Mode=View

[13] The California Department of Resource Recycling and Recovery (2016). "Greenhouse Gas Reduction Revolving Loan Program Application Guidelines and Instructions." Retrieved from http://www.calrecycle.ca.gov/Climate/GrantsLoans/GHGLoans/Forms/CalRecycle839GHG.pdf

[14] See **Appendix 29.1** for an overview of matching funds by project.

[15] CalRecycle (Email correspondence, April 4, 2017).

Spending Time Line

The employment benefits of an investment vary over time because of inflation and relative price changes over time, which IMPLAN accounts for through built-in deflators. The spending time line modeled for the GHG Reduction Loan Program begins in 2015 and ends in 2018. During the study period, a loan for $850,000 was distributed to Nursery Products, LLC. in June 2015, and a loan for $833,000 was distributed North State Rendering Company Inc. in June 2016. It is assumed that the remaining $7.5 million in available loan funds will be awarded in June 2017. Loan recipients must spend 100% of the loan money in the first 12 months of receiving funds.[16] It is assumed that loans are spent equally over the two calendar years in which they are applied (e.g., the $850,000 loan for Nursery Products, LLC. is divided evenly between 2015 and 2016).

Pricing Margins

Pricing margins refer to the transaction costs associated with purchasing a good at a retail location (e.g., retailer services, wholesaler services, etc.). All equipment is assumed to be purchased directly from manufacturers, so no margins were applied for manufacturing-related industries (i.e., other industrial machinery manufacturing, totalizing fluid meter and counting device manufacturing, air and gas compressor manufacturing, etc.). Service-related expenditures are not typically purchased through a third-party retailer, so margins were not applicable for all service-related industries (i.e., maintenance and repair construction of nonresidential structures).

Local Purchase Percentage

The local purchase percentage refers to the share of expenditures that stay within a defined study region (i.e., California). IMPLAN already has built-in assumptions about the local purchasing patterns within each industry, so the user needs to adjust this percentage only when there is an exception to the norm. Without detailed data on project-level sourcing information for all the projects that will be awarded, the default local purchase rate was assumed for industrial sectors.

Table 29.3. Summary of Modeling Inputs for the GHG Reduction Loan Program

Input	Funded Industries	Share of Total Funds	Spending Time Line	Margins	Local Purchase Rate
State Investment ($9.2 Million)	Other industrial machinery manufacturing	62.7%	2015-2018	None	Default (22.6%)
	Maintenance and repair construction of nonresidential structures	25.4%	2015-2018	N/A	Default (85.9%)
	Totalizing fluid meter and counting device manufacturing	11.9%	2015-2018	None	Default (4.7%)
Induced Co-investment ($60.7 Million)	Other industrial machinery manufacturing	87.8%	2015-2018	None	Default (22.6%)
	Maintenance and repair construction of nonresidential structures	7.6%	2015-2018	N/A	Default (85.9%)
	Air and gas compressor manufacturing	4.5%	2015-2018	None	Default (6%)

[16] CalRecycle (Email correspondence, March 27, 2017).

PART III • Appendices

1. High-Speed Rail Project

1.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the High-Speed Rail Project. See **Table A1.1.1** and **Table A1.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A1.1.1. Indirect Jobs Supported by California Climate Investment Funding for the High-Speed Rail Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	130.1	7.9%
Employment services	108.8	6.6%
Architectural, engineering, and related services	104.7	6.3%
Truck transportation	68.0	4.1%
Real estate	60.2	3.6%
Marketing research and all other miscellaneous professional, scientific, and technical services	58.9	3.6%
Management consulting services	52.8	3.2%
Commercial and industrial machinery and equipment rental and leasing	42.2	2.6%
Full-service restaurants	40.7	2.5%
Accounting, tax preparation, bookkeeping, and payroll services	39.1	2.4%
Subtotal of Top 10 Industries	**705.4**	**42.8%**
Total of All Industries	**1,649.8**	**100%**

Table A1.1.2. Indirect Jobs Supported by Induced Co-investment for the High-Speed Rail Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1,026.6	7.9%
Employment services	858.4	6.6%
Architectural, engineering, and related services	826.1	6.3%
Truck transportation	536.2	4.1%
Real estate	474.5	3.6%
Marketing research and all other miscellaneous professional, scientific, and technical services	464.7	3.6%
Management consulting services	416.6	3.2%
Commercial and industrial machinery and equipment rental and leasing	332.5	2.6%
Full-service restaurants	321.3	2.5%
Accounting, tax preparation, bookkeeping, and payroll services	308.4	2.4%
Subtotal of Top 10 Industries	**5,565.2**	**42.7%**
Total of All Industries	**13,022.2**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A1.2.1** and **Table A1.2.2** for a summary of the induced jobs supported by the High-Speed Rail Project, as reported in FTE job-years.

Table A1.2.1. Induced Jobs Supported by California Climate Investment Funding for the High-Speed Rail Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	82.5	4.6%
Real estate	81.8	4.6%
Limited-service restaurants	75.8	4.2%
Hospitals	69.9	3.9%
Individual and family services	62.4	3.5%
Wholesale trade	59.5	3.3%
Offices of physicians	54.4	3.0%
Retail – Food and beverage stores	46.4	2.6%
Other financial investment activities	45.1	2.5%
Retail - General merchandise stores	44.1	2.5%
Subtotal of Top 10 Industries	**621.9**	**34.8%**
Total of All Industries	**1,786.1**	**100%**

Table A1.2.2. Induced Jobs Supported by Induced Co-Investment for the High-Speed Rail Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	650.9	4.6%
Real estate	645.5	4.6%
Limited-service restaurants	598.0	4.2%
Hospitals	551.7	3.9%
Individual and family services	491.8	3.5%
Wholesale trade	469.6	3.3%
Offices of physicians	429.7	3.0%
Retail – Food and beverage stores	366.3	2.6%
Other financial investment activities	355.9	2.5%
Retail - General merchandise stores	347.5	2.5%
Subtotal of Top 10 Industries	**4,907.0**	**34.8%**
Total of All Industries	**14,103.5**	**100%**

Appendix 1.2. Detailed Summary of Modeling Inputs for the High-Speed Rail Project

High Speed Rail Budget for Central Valley Test Track

Description	Total	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Construction of new highways and streets	$1,430,019,653	$201,701,870	$419,653,381	$429,132,772	$274,847,256	$100,194,336	$4,344,021	$146,018	$-
Construction of other new nonresidential structures	$140,965,112	$3,680,819	$28,381,149	$28,272,409	$28,272,409	$30,990,910	$21,367,417	$-	$-
Construction of other new nonresidential structures	$105,951,124	$-	$-	$-	$33,730,268	$38,762,606	$32,370,177	$1,088,073	$-
Construction of new highways and streets	$2,417,630,676	$798,280,612	$737,762,643	$615,574,720	$244,504,592	$11,543,900	$9,640,169	$324,039	$-
Construction of new power and communication structures	$292,443,313	$-	$-	$102,340,797	$96,868,019	$93,000,721	$226,174	$7,602	$-
Electric power transmission and distribution	$512,316,276	$-	$-	$73,354,829	$138,223,402	$151,660,127	$126,649,510	$22,428,408	$-
Architectural, engineering, and related services	$1,621,594,837	$430,585,737	$303,241,963	$311,651,792	$268,739,103	$129,649,968	$95,936,321	$37,114,606	$44,675,348
Total	**$6,520,920,990**								

Percentage Breakdown

Description	Total	2015	2016	2017	2018	2019	2020	2021	2022	2023
Construction of new highways and streets	21.93%	1.55%	4.764%	6.508%	5.398%	2.876%	0.802%	0.034%	0.001%	0.000%
Construction of other new nonresidential structures	2.16%	0.03%	0.246%	0.434%	0.434%	0.454%	0.401%	0.164%	0.000%	0.000%
Construction of other new nonresidential structures	1.62%	0.00%	0.000%	0.000%	0.259%	0.556%	0.545%	0.257%	0.008%	0.000%
Construction of new highways and streets	37.07%	6.12%	11.778%	10.377%	6.595%	1.963%	0.162%	0.076%	0.002%	0.000%
Construction of new power and communication structures	4.48%	0.00%	0.000%	0.785%	1.527%	1.456%	0.715%	0.002%	0.000%	0.000%
Electric power transmission and distribution	7.86%	0.00%	0.000%	0.562%	1.622%	2.223%	2.134%	1.143%	0.172%	0.000%
Architectural, engineering, and related services	24.87%	3.30%	5.627%	4.715%	4.450%	3.055%	1.730%	1.020%	0.627%	0.343%
Total	**100.00%**									

IMPLAN Input (GGRF Funding)

Description	Total	2015	2016	2017	2018	2019	2020	2021	2022	2023
Construction of new highways and streets	$417,163,279	$54,209,184	$116,952,862	$119,377,411	$84,787,866	$34,211,478	$6,815,430	$783,567	$25,482	$-
Construction of other new nonresidential structures	$26,770,724	$199,538	$1,738,084	$3,071,197	$4,893,824	$7,142,521	$6,694,470	$2,972,107	$58,985	$-
Construction of new power and communication structures	$31,706,782	$-	$-	$5,547,908	$10,799,137	$10,292,810	$5,053,842	$12,673	$412	$-
Electric power transmission and distribution	$55,545,468	$-	$-	$3,976,575	$11,469,684	$15,714,625	$15,087,203	$8,081,534	$1,215,847	$-
Architectural, engineering, and related services	$175,813,746	$23,342,110	$39,780,898	$33,333,473	$31,463,068	$21,596,725	$12,229,063	$7,212,709	$4,433,844	$2,421,857
Total	**$707,000,000**									

IMPLAN Input (GGRF Funding)

Description	Total	2015	2016	2017	2018	2019	2020	2021	2022	2023
Construction of new highways and streets	$2,917,782,765	$379,157,590	$818,008,348	$834,966,472	$593,035,359	$239,286,787	$47,669,447	$5,480,533	$178,229	$-
Construction of other new nonresidential structures	$187,243,610	$1,395,635	$12,156,752	$21,481,003	$34,229,083	$49,957,236	$46,823,412	$20,787,932	$412,558	$-
Construction of new power and communication structures	$221,768,088	$-	$-	$38,803,970	$75,532,858	$71,991,435	$35,348,304	$88,640	$2,883	$-
Electric power transmission and distribution	$388,504,015	$-	$-	$27,813,527	$80,222,897	$109,913,466	$105,525,060	$56,525,014	$8,504,050	$-
Architectural, engineering, and related services	$1,229,701,522	$163,262,710	$278,241,216	$233,145,718	$220,063,468	$151,054,886	$85,534,252	$50,448,152	$31,011,825	$16,939,294
Total	**$4,945,000,000**									

2. Transit and Intercity Rail Capital Program

2.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Transit and Intercity Rail Capital Program (TIRCP). See **Table A2.1.1** and **Table A2.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A2.1.1. Indirect Jobs Supported by California Climate Investment Funding for TIRCP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	38.9	11.0%
Architectural, engineering, and related services	18.7	5.3%
Employment services	13.3	3.7%
Truck transportation	12.7	3.6%
Management of companies and enterprises	12.5	3.5%
Real estate	10.7	3.0%
Services to buildings	9.6	2.7%
Accounting, tax preparation, bookkeeping, and payroll services	8.7	2.5%
Management consulting services	7.8	2.2%
Marketing research and all other miscellaneous professional, scientific, and technical services	7.3	2.1%
Subtotal of Top 10 Industries	**140.2**	**39.5%**
Total of All Industries	**355.4**	**100%**

Table A2.1.2. Indirect Jobs Supported by Induced Co-investment for TIRCP

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	0.1	100%
Total of All Industries	**0.1**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.) See **Table A2.2** for a summary of the induced jobs supported by the Transit and Intercity Rail Capital Program, as reported in FTE job-years.

Table A2.2 Induced Jobs Supported by TIRCP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	15.9	4.7%
Full-service restaurants	15.7	4.6%
Limited-service restaurants	14.5	4.3%
Hospitals	13.4	3.9%
Individual and family services	12.0	3.5%
Wholesale trade	11.4	3.4%
Offices of physicians	10.5	3.1%
Retail – Food and beverage stores	8.9	2.6%
Other financial investment activities	8.6	2.5%
Retail - General merchandise stores	8.4	2.5%
Subtotal of Top 10 Industries	**119.4**	**35.2%**
Total of All Industries	**339.5**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 2.2. Transit and Intercity Rail Capital Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Total Match Funding	Total Proposal Cost	Project Timeline	Line Item Expenses	Line Item Cost	State Funds	"Induced Co-investment"	IMPLAN Industry	Local Purchase Rate
2015-2016	Antelope Valley Transit Authority (AVTA)	Regional Transit Interconnectivity & Environmental Sustainability Project	24,403,000	$14,891,051	$39,294,051	2015-2018 2015-2018 2015-2018	Battery electric bus purchases (29) Charging Infrastructure Research and development of a more powerful wireless charging system	$26,894,051 $11,000,000 $1,400,000	$16,702,160 $6,831,390 $869,450		Heavy Duty Truck Manufacturing (BYD) Construction of new power and communication structure Scientific research and development services	100.00% Default (99.97%) Default (97.90%)
2015-2016	Capitol Corridor Joint Powers Authority (CCJPA)	Capitol Corridor Travel Time Reduction Project	$4,620,000	$800,000	$5,420,000	2017-2030 2017-2030 2017-2030 2017-2030	Track Improvements: Equipment/Infrastructure Track Improvements: Installation Signal Improvements: Equipment/Infrastructure Signal Improvements: Installation	N/A N/A N/A N/A	$1,732,500 $577,500 $1,732,500 $577,500	$300,000 $100,000 $300,000 $100,000	Railroad Rolling Stock Manufacturing Construction of other new nonresidential structures Other communication equipment manufacturing Construction of new power and communication structure	Default (21.70%) Default (99.91%) Default (35.66%) Default (99.97%)
2015-2016	Los Angeles County Metropolitan Transportation Authority (Metro)	Willowbrook/Rosa Parks Station and Blue Line Light Rail Operational Improvements Project	38,494,000	$108,166,494	$146,660,494	2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019 2014-2019	Construction Preliminary Engineering Project Management Final Design Legal, Permits, Review, Fee, etc. Surveys, Testing, Invest, etc. Construction Management Project Administration Metro Labor Professional Services Advertising	$88,793,296 $2,466,943 $10,901,162 $3,684,436 $4,225,995 $1,535,007 $4,609,036 $3,459,270 $3,749,100 $3,459,270 $145,000	$26,907,416 $747,568 $3,303,426 $1,116,511 $1,280,622 $465,160 $1,396,696 $1,048,278 $1,136,106 $1,048,278 $43,940		Construction of other new nonresidential structures Architectural, engineering, and related services Architectural, engineering, and related services Architectural, engineering, and related services Architectural, engineering, and related services Architectural, engineering, and related services Architectural, engineering, and related services Construction of other new nonresidential structures Transit and ground passenger transportation Transit and ground passenger transportation Architectural, engineering, and related services Advertising and related services	Default (99.91%) Default (95.66%) Default (95.66%) Default (95.66%) Default (95.66%) Default (95.66%) Default (99.91%) 100.00% 100.00% Default (95.66% Default (98.28%)
2015-2016	Los Angeles – San Diego – San Luis Obispo Rail Corridor Agency (LOSSAN)	Pacific Surfliner Transit Transfer Program (Demonstration Project)	$1,675,000	$200,000	$1,875,000	2015-2016 2015-2016 2015-2016 2015-2016	Marketing On-Board Surveys Administration Transit Transfer Subsidy	$200,000 $75,000 $76,033 $1,523,967	$178,667 $67,000 $67,923 $1,361,411		Advertising and related services Transit and ground passenger transportation Transit and ground passenger transportation Household Income	Default (98.28%) 100.00% 100.00% Default
2015-2016	Monterey-Salinas Transit (MST)	Monterey Bay Operations and Maintenance Facility/Salinas Transit Service Project	$10,000,000	$10,260,000	$20,260,000	2016-2017	Renovate and expand the Monterey maintenance facility	N/A	$10,000,000		Construction of other new nonresidential structures	Default (99.91%)
2015-2016	Orange County Transportation Authority (OCTA)	Bravo! Route 560 Rapid Buses	$2,320,000	$580,000	$2,900,000	2016-2017	Purchases four 40-foot compressed natural gas buses	$2,320,000	$2,320,000		Heavy Duty Truck Manufacturing	0.00%
2015-2016	Sacramento Regional Transit District (RT)	Refurbishment of Seven Light Rail Vehicles	$6,427,000	$1,607,000	$8,034,000	2015-2016	Refurbishment of the last 7 of 21 vehicles acquired from Santa Clara Valley Transportation Authority	$6,427,000	$6,427,000		Railroad Rolling Stock Manufacturing	100.00%
2015-2016	San Diego Association of Governments (SANDAG)	South Bay Bus Rapid Transit Project Award:	$4,000,000	$108,000,000	$112,000,000	2016-2018	New intermodal transportation center at the border	$112,000,000	$4,000,000		Construction of other new nonresidential structures	Default (99.91%)
2015-2016	San Diego Metropolitan Transit System	Trolley Capacity Improvements	$31,936,000	$11,200,000	$43,136,000	2017-2020 2017-2020 2017-2020	Purchases at least 8 new trolley vehicles Operating Funds to Support Service Expansion for 3 Years New Courthouse Trolley Station	$38,996,000 $960,000 $8,473,000	$31,796,000 $96,000 $4,473,000		Railroad Rolling Stock Manufacturing Transit and ground passenger transportation Construction of other new nonresidential structures	100.00% 100.00% Default (99.91%)
2015-2016	San Francisco Municipal Transportation Agency (SFMTA)	Expanding the SFMTA Light Rail Vehicle Fleet	$41,181,000	$162,470,000	$203,651,000	2016 2016	Purchases 8 zero emissions light rail vehicles Project Management	N/A N/A	$37,062,900 $4,118,100		Railroad Rolling Stock Manufacturing Transit and ground passenger transportation	100.00% 100.00%
2015-2016	San Joaquin Regional Rail Commission (SJRRC)	Altamont Corridor Express (ACE) Wayside Power Project	$200,000	$-	$200,000	2015-2016	Installation of wayside power sources at ACE's new Downtown Stockton SJRRC/ACE Regional Maintenance Facility		$200,000		Construction of new power and communication structure	Default (99.97%)
2015-2016	San Joaquin Regional Transit District (RTD)	BRT Expansion: MLK Corridor and Crosstown Miner Corridor Project	$6,841,000	$12,277,776	$19,118,776	2016-2017 2016-2017 2016-2017 2016-2017 2016-2017	Purchase of 12 new diesel-hybrid buses. Construction - Material Purchase Construction - Permits Construction - Improvements Professional Services	$8,130,000 $4,578,996 $232,480 $5,266,816 $910,483	$2,909,042 $1,638,437 $83,185 $1,884,550 $325,785		Heavy Duty Truck Manufacturing Construction of new highways and streets Construction of new highways and streets Construction of new highways and streets Architectural, engineering, and related services	Default (28.30%) Default (99.80%) Default (99.80%) Default (99.80%) Default (95.66%
2015-2016	Southern California Regional Rail Authority (Metrolink)	Purchase of Nine Fuel-Efficient Tier IV EMD F-125 Locomotives for Metrolink Commuter Rail Service	$41,181,000	$16,869,000	$58,050,000	2015	Replacing 7 locomotives, and also acquiring 2 additional locomotives	$58,050,000	$41,181,000		Railroad Rolling Stock Manufacturing	0.00%
2015-2016	Sonoma-Marin Area Rail Transit District (SMART)	SMART Rail Car Capacity Project	$11,000,000	$46,400,000	$57,400,000	2015	Purchase 3 additional rail cars	$57,400,000	$11,000,000		Railroad Rolling Stock Manufacturing	0.00%
			$224,278,000	**$493,721,321**					**$228,707,000**	**$800,000**		

3. Low Carbon Transit Operations Program

3.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Low Carbon Transit Operations Program (LCTOP). See **Table A3.1** for a summary of the indirect jobs supported by LCTOP, as reported in full-time equivalent (FTE) job-years.

Table A3.1. Indirect Jobs Supported by LCTOP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Insurance agencies, brokerages, and related activities	19.1	8.0%
Wholesale trade	17.1	7.1%
Services to buildings	14.9	6.2%
Employment services	12.0	5.0%
Maintenance and repair construction of nonresidential structures	10.7	4.4%
Management consulting services	10.2	4.2%
Nondepository credit intermediation and related activities	9.6	4.0%
Waste management and remediation services	7.3	3.0%
Real estate	6.9	2.9%
Dry-cleaning and laundry services	6.6	2.7%
Subtotal of Top 10 Industries	**114.4**	**47.7%**
Total of All Industries	**239.7**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A3.2** for a summary of the induced jobs supported by LCTOP, as reported in FTE job-years.

Table A3.2. Induced Jobs Supported by LCTOP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	12.1	4.7%
Real estate	12.0	4.6%
Limited-service restaurants	11.0	4.3%
Hospitals	10.2	3.9%
Individual and family services	9.1	3.5%
Wholesale trade	8.7	3.3%
Offices of physicians	7.9	3.1%
Retail - Food and beverage stores	6.8	2.6%
Other financial investment activities	6.6	2.6%
Retail - General merchandise stores	6.4	2.5%
Subtotal of Top 10 Industries	**90.7**	**35.1%**
Total of All Industries	**258.6**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 3.2. Low Carbon Transit Operations Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Local Purchase Rate
2014 - 2015	Napa County Transportation and Planning Agency	Vine Bus Service to SF Ferry in Vallejo	$61,689	$61,689	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Orange County Transportation Authority	Fare and Transit Rider Promotion/Outreach	$1,346,536	$1,346,536	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Transit Joint Powers Authority Merced County	Free Fare Bus Passes to Increase Ridership and Promote Transit	$90,933	$90,933	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Tahoe Transportation District	Increase Service on Route 30	$34,128	$34,128	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	South County Transit	Operating Assistance for New RTE 26 Service	$97,348	$97,348	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Central Contra Costa Transit Authority	Martinez Shuttle	$185,881	$185,881	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Solano County Transit	Curtola Park and Ride Transit Hub Photovoltaic Panels	$169,444	$169,444	Solar PV Basket	Mixed
2014 - 2015	Eastern Contra Costa Transit Authority	Expanded Service Route 201	$178,646	$178,646	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Mt. Area Regional Transit Agency (SanBAG)	Free Ride Day	$1,098	$1,098	Household Income	N/A
2014 - 2015	Mendocino Transit Authority	Reduce Fare Project for Mendocino College Students	$31,142	$31,142	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Shasta Regional Transportation Agency	Expansion of express services	$62,657	$62,657	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Tehama County Transportation Commission	Bus Shelter Install	$20,762	$20,762	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Trinity County - Transit	Increase Awareness of Transit System	$4,618	$4,618	Sign Manufacturing	48.66%
2014 - 2015	City of Auburn	Auburn Transit- Municipal Airport Route - Earhart & Rickenbacker Bus Shelter	$3,782	$3,782	M&R Construction of Non-residential Structures	85.93%
2014 - 2015	City of Davis/Unitrans	Weekend Service Expansion	$30,977	$30,977	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Elk Grove	E-train Local Route 156 Transit Service Frequency Improvements	$59,300	$59,300	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Roseville	Louis Orlando Transfer Point Improvements and Fixed Route Service Enhancements	$45,465	$45,465	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Colusa County Transit Agency	Free Fare Days	$7,438	$7,438	Household Income	N/A
2014 - 2015	El Dorado County Transit Authority	Cameron Park Fixed Route Service Expansion	$57,524	$57,524	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Nevada County Dept of Public Works	Gold Country Stage Fare Incentive Project	$27,626	$27,626	Household Income	N/A
2014 - 2015	Placer County	Highway 267 TART Year Round Service	$38,608	$38,608	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Placer County	Lincoln Saturday Service	$12,234	$12,234	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Placer County	Rocklin Route Modification	$10,000	$10,000	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Sacramento Regional Transit District	Bus Route 25 Enhancement - Operations	$45,292	$45,292	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Sacramento Regional Transit District	Bus Route 65 Expansion - Operations	$116,751	$116,751	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Sacramento Regional Transit District	Connect Card- Operations	$75,150	$75,150	Semiconductor and Related Device Manufacturing	4.66%
2014 - 2015	Sacramento Regional Transit District	South Line Phase 2 Light Rail Extension- Operations	$365,969	$365,969	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Yolo Co. Trans. District	Free/Reduced Fare Passes/Vouchers	$58,833	$58,833	Transit and Ground Passenger Transportation	N/A
2014 - 2015	Yuba-Sutter Transit Authority	North Beale Road Transit Center Enhancement Project	$60,305	$60,305	M&R Construction of Non-residential Structures	85.93%
2014 - 2015	Alameda- Contra Costa Transit District-AC Transit	Division 3 Re-Opening for Service Expansion	$573,226	$573,226	Construction of New Nonresidential Structures	99.91%
2014 - 2015	City of Fairfield	Bus Stop Improvements	$98,890	$98,890	Semiconductor and Related Device Manufacturing	71.28%
2014 - 2015	City of Petaluma	Real-Time Transit Signage	$1,726	$1,726	Semiconductor and Related Device Manufacturing	71.28%
2014 - 2015	City of Union City - Union City Transit	Heavy-Duty Transit Vehicle Replacement	$34,267	$34,267	Heavy Duty Truck Manufacturing	100.00%
2014 - 2015	Golden Gate Bridge, Hwy & Trans. District	Central San Rafael/SRTC Commuter Ferry Shuttle	$261,000	$261,000	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Golden Gate Bridge, Hwy & Trans. District	Purchase Four (4) 30-foot Hybrid Vehicles	$45,703	$45,703	Heavy Duty Truck Manufacturing	100.00%
2014 - 2015	Livermore Amador Valley Transit Authority	Purchase one (1) 40' Electric/Diesel Hybrid bus	$107,192	$107,192	Heavy Duty Truck Manufacturing	100.00%
2014 - 2015	Peninsula Corridor Joint Powers Board	Peninsula Corridor Electrification Project (PCEP)	$935,322	$935,322	Railroad Rolling Stock Manufacturing	21.70%
2014 - 2015	San Francisco Bay Area Rapid Transit (BART)	Train Car Repair and Maintenance Project	$1,596,049	$1,596,049	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Santa Clara Valley Transportation Authority	N. 1st Street Light Rail Improvements	$1,107,878	$1,107,878	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Santa Clara Valley Transportation Authority	Transit Assistance Program (TAP)	$802,508	$802,508	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	SF Municipal Transportation Agency	Expanded Service for the 38-R Geary and 44- O'Shaughnessy Lines	$2,592,022	$2,592,022	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Sonoma County Transit	New bus route 33, Expanded service route 32	$338,943	$338,943	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Western Contra Costa Transit Authority	Expanded service route 11	$54,247	$54,247	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Guadalupe	Guadalupe Transit Expansion	$79,756	$79,756	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Monterey-Salinas Transit	Transit Service in East Salinas	$345,563	$345,563	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	San Benito County Local Transportation Authority	Intercounty service expansion	$18,741	$18,741	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Santa Barbara County Association of Gov. (SBCAG)	Increase Awareness of Transit System	$10,000	$10,000	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Santa Barbara Metro Transit Dist.	Peak-Period Frequency Improvement Service	$101,679	$101,679	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Arvin	Free Ride Day for Transit Buses	$6,878	$6,878	Household Income	N/A
2014 - 2015	City of California City	Bus Stop Improvements	$4,440	$4,440	M&R Construction of Non-residential Structures	85.93%
2014 - 2015	City of Clovis	Upgrade Transit Stop	$36,902	$36,902	Semiconductor and Related Device Manufacturing	71.28%

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Appendix 3.2. Low Carbon Transit Operations Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Local Purchase Rate
2014 - 2015	City of Delano	Bus Shelters with Solar Lighting	$17,580	$17,580	Construction of New Nonresidential Structures	99.91%
2014 - 2015	City of Fresno Department of Transportation/FAX	FAX System Capacity Increasing Tripper Service	$249,311	$249,311	Transit and Ground Passenger Transportation	80.15%
2014 - 2015	City of Shafter	Electric Bus	$5,784	$5,784	Heavy Duty Truck Manufacturing	28.30%
2014 - 2015	City of Taft	Purchase Transit Passes for Promotion	$4,913	$4,913	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Wasco	Bus Voucher Program	$8,622	$8,622	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Fresno County Rural Transit Agency	Green Commuting in Fresno_A Zero-Emission Vanpooling and Car Sharing Project within and benefiting Disadvantaged Communities	$69,760	$69,760	Light truck and utility vehicle manufacturing	2.41%
2014 - 2015	Golden Empire Transit District	Operating Assistance Expansion	$177,752	$177,752	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Kern Regional Transit	Bus Stop Enhancements	$65,035	$65,035	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Kern Regional Transit	Bus Stop Enhancements - McFarland & Tehachapi	$8,620	$8,620	M&R Construction of Non-residential Structures	85.93%
2014 - 2015	Kings Co. Area Public Transit Agency	Route Expansion	$51,481	$51,481	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Madera, City of	New Bus Stop and Enhancements	$50,146	$50,146	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Visalia, City of	New Transit Service	$167,017	$167,017	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Antelope Valley Transit Authority	Electric Bus Infrastructure Improvements	$40,687	$40,687	Construction of New Power and Communication Structures	85.93%
2014 - 2015	City of Culver City	Culver CityBus Line 6 Rapid Service	$34,529	$34,529	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Gardena	Bus Operation - Line 1X	$38,999	$38,999	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Los Angeles	Bus bicycle racks	$214,964	$214,964	Motorcycle, Bicycle, and Parts Manufacturing	16.39%
2014 - 2015	City of Montebello, Montebello Bus Lines	Montebello Bus Lines Route 10 Rideshare Thursday	$56,717	$56,717	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Norwalk	Operating Assistance for Maintenance of CNG Fueling Station	$5,100	$5,100	M&R Construction of Non-residential Structures	85.93%
2014 - 2015	City of Santa Monica's Big Blue Bus	Fixed Route Bus Transit Operations	$131,075	$131,075	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Foothill Transit	Electric Bus Charging Stations	$167,914	$167,914	Construction of New Power and Communication Structures	85.93%
2014 - 2015	L.A. County Metro. Trans. Auth	LACMTA New Light Rail Transit Operations	$5,897,391	$5,897,391	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Long Beach Transit	Route 1 Extension Project	$163,267	$163,267	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Southern California Regional Rail Authority (SCRRA)	Ticket Vending Machine Replacement and Expansion	$486,312	$486,312	Other commercial service industry machine manufacturing	42.78%
2014 - 2015	Torrance Transit System	Upgraded Bus Bicycle Racks	$39,556	$39,556	Motorcycle, Bicycle, and Parts Manufacturing	16.39%
2014 - 2015	Ventura County Transportation Commission	Oxnard-Camarillo Employment Connector	$295,041	$295,041	Heavy Duty Truck Manufacturing	100.00%
2014 - 2015	City of Beaumont	Veteran's Voucher Program	$665	$665	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Omnitrans	Freeway Express Service	$54,868	$54,868	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Palo Verde Valley Transit Agency	Solar Panels with EV Charging Station	$8,885	$8,885	Construction of New Power and Communication Structures	85.93%
2014 - 2015	Riverside County Transportation Commission	Perris Valley Line	$129,859	$129,859	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Riverside Transit Agency	Downtown Riverside Operating Plan - Vine Street Stop Expansion	$58,822	$58,822	Construction of New Nonresidential Structures	99.91%
2014 - 2015	Riverside Transit Agency	Perris Valley Line Feeder Bus Service - Operating Assistance	$460,410	$460,410	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	SANBAG	Downtown San Bernardino Passenger Rail (DSBPR) Operations	$679,599	$679,599	Construction of New Nonresidential Structures	99.91%
2014 - 2015	SunLine Transit Agency	Weekend Frequency Improvement on Line 91	$155,907	$155,907	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Victor Valley Transit Authority	Fare Media Outreach and Educational Program	$7,478	$7,478	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Mono County	Expansion of Mammoth Express Fixed Route Service	$17,597	$17,597	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	Calaveras County Public Works	Calaveras Transit Green Tickets	$14,549	$14,549	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Lodi	Free Vouchers/Rides on GrapeLine Fixed Route Transit System	$12,408	$12,408	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	City of Modesto Transit Division	Purchase/Install Bus Stop Shelters	$183,908	$183,908	Construction of New Nonresidential Structures	99.91%
2014 - 2015	San Joaquin Regional Rail Commission (Alameda)	Shuttles- Alameda	$14,627	$14,627	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	San Joaquin Regional Rail Commission (San Joaquin)	Shuttles- San Joaquin	$39,455	$39,455	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	San Joaquin Regional Transit District	Metro Hopper Expansion	$221,773	$221,773	Transit and Ground Passenger Transportation	100.00%
2014 - 2015	San Diego Metropolitan Transit System	Access to Transit Improvements	$101,000	$101,000	Construction of New Nonresidential Structures	99.91%
2014 - 2015	San Diego Metropolitan Transit System	El Cajon Transit Center Renovation	$630,000	$630,000	Construction of New Nonresidential Structures	99.91%
2014 - 2015	San Diego Metropolitan Transit System	Old Town Transit Center Renovation and Improvements	$473,141	$473,141	Construction of New Nonresidential Structures	99.91%
2015-2016	Humboldt County Association of Governments	Transit Takes Off: Expansion & Enhancement	$34,694	$34,694	Transit and Ground Passenger Transportation	100.00%
2015-2016	Humboldt Transit Authority	Electric Bus Charging Station/Electric Bus Purchase	$112,775	$68,775	Heavy Duty Truck Manufacturing	100.00%
				$44,000	Heavy Duty Truck Manufacturing	100.00%

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Appendix 3.2. Low Carbon Transit Operations Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Local Purchase Rate
2015-2016	Humboldt Transit Authority	Ticket Vouchers	$5,900	$5,900	Transit and Ground Passenger Transportation	100.00%
2015-2016	Lake Transit Authority	Bus Stop Sign Upgrades	$68,131	$68,131	Sign manufacturing	48.66%
2015-2016	Mendocino Transit	Reduced Fare Project for Mendocino College Students	$92,361	$92,361	Transit and Ground Passenger Transportation	100.00%
2015-2016	Redwood Coast Transit Authority	Upgrade Transit Stops	$29,192	$29,192	Construction of New Nonresidential Structures	99.91%
2015-2016	Modoc County Transportation Commission	Saturday Demand Response Service Expansion	$9,104	$9,104	Transit and Ground Passenger Transportation	100.00%
2015-2016	Shasta Regional Transportation Agency	Expansion of Express Route Services	$187,529	$187,529	Transit and Ground Passenger Transportation	100.00%
2015-2016	Tehama County Transportation Commission	Transit Facilities Upgrades to Support Active Transportation and Encourage Ridership	$62,305	$62,305	M&R Construction of Non-residential Structures	85.93%
2015-2016	Trinity County Department of Transportation	Free Trinity Transit Fare Day and Voucher Program	$13,977	$13,977	Household Income	N/A
2015-2016	Lassen County Transportation Commission	Lassen Rural Bus 2nd City Route	$33,208	$33,208	Transit and Ground Passenger Transportation	100.00%
2015-2016	Butte Area Council of Governments	New B-Line Commuter Express Service	$230,926	$230,926	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Auburn	Bus Stop Enhancement	$11,288	$11,288	Construction of New Nonresidential Structures	99.91%
2015-2016	City of Davis	Amtrak Station Improvement Project Install Electronic Bike Lockers	$93,295	$93,295	Showcase, partition, shelving and locker manufacturing	21.56%
2015-2016	City of Elk Grove	E-Tran Local Route 156 Transit Service Frequency Improvements	$173,992	$173,992	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Roseville	Route S Expansion	$162,221	$162,221	Transit and Ground Passenger Transportation	100.00%
2015-2016	Colusa County	Free Fare Day Program	$22,015	$22,015	Transit and Ground Passenger Transportation	N/A
2015-2016	El Dorado County Transit	Continuation of the Cameron Park Service Enhancement	$172,232	$172,232	Transit and Ground Passenger Transportation	100.00%
2015-2016	Glenn County Transportation Commission	Transit Facilities Solar Installation	$27,827	$27,827	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Nevada County Department of Public Works-Transit Services Division	Gold Country Stage Fare Incentive Project II	$83,222	$83,222	Household Income	N/A
2015-2016	Nevada County Transportation Commission	Town of Truckee Winter Shuttle	$15,702	$15,702	Transit and Ground Passenger Transportation	100.00%
2015-2016	Placer County Transportation Planning Agency	Regional Bus Stop Enhancements	$43,104	$43,104	Construction of New Nonresidential Structures	99.91%
2015-2016	Placer County	Lincoln Saturday Service	$36,888	$36,888	Transit and Ground Passenger Transportation	100.00%
2015-2016	Placer County	Rocklin Route Modification Year 2	$10,000	$10,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Placer County	Tahoe Area Regional Transit Bus Stop - Dollar Hill	$31,196	$31,196	Construction of New Nonresidential Structures	99.91%
2015-2016	Placer County	Tahoe Area Regional Transit Highway 267 Year-Round Service Year 2	$71,271	$71,271	Transit and Ground Passenger Transportation	100.00%
2015-2016	Sacramento Area Council of Governments	Connect Card Implementation (Universal Fare Card)	$126,847	$126,847	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Sacramento Regional Transit District	Bus Route 25 Enhancement - Operations	$69,000	$69,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Sacramento Regional Transit District	Bus Route 65 Expansion-Operations	$130,000	$130,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Sacramento Regional Transit District	Connect Card Operations	$45,000	$45,000	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Sacramento Regional Transit District	Golden 1 Arena Special Event Service	$206,632	$206,632	Transit and Ground Passenger Transportation	100.00%
2015-2016	Sacramento Regional Transit District	South Line Phase 2 Light Rail Extension Project	$1,440,433	$1,440,433	Transit and Ground Passenger Transportation	100.00%
2015-2016	Tahoe Transportation	Route 30	$72,980	$72,980	Transit and Ground Passenger Transportation	100.00%
2015-2016	Yolo County Transportation District	Connect Card Project	$181,156	$181,156	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Yuba Sutter Transit Authority	Transit Stop Enhancements	$180,417	$180,417	Construction of New Nonresidential Structures	99.91%
2015-2016	Alameda-Contra Costa Transit District	East Bay Bus Rapid Transit	$1,948,597	$1,948,597	Construction of New Nonresidential Structures	99.91%
2015-2016	Central Contra Costa Transit Authority	Martinez Shuttle	$308,009	$308,009	Transit and Ground Passenger Transportation	100.00%
2015-2016	Central Contra Costa Transit Authority	Clean Fuels Electric Trolleys	$307,569	$307,569	Railroad Rolling Stock Manufacturing	21.70%
2015-2016	City of Fairfield	Local Bus Fleet Replacement	$168,281	$168,281	Heavy Duty Truck Manufacturing	100.00%
2015-2016	City of Petaluma	Petaluma Transit Weekday Afternoon Service Enhancements	$62,410	$62,410	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Santa Rosa	Reimagine City Bus Marketing & Implementation	$446,509	$446,509	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Union City	Solar Panels for Union Landing Transit Center	$79,718	$79,718	Smart Grid Basket	Mixed
2015-2016	Eastern Contra Costa Transit Authority	Continue Expanded Service Route 201	$354,460	$354,460	Transit and Ground Passenger Transportation	100.00%
2015-2016	Golden Gate Bridge, Highway & Transportation District	Purchase Three (3) 40 Foot Diesel Electric Hybrid Buses	$1,127,876	$1,127,876	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Livermore Amador Valley Transit Authority	Purchase Two (2) Hybrid Replacement Buses	$253,365	$253,365	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Marin County Transit District	Marin County Transit District 2016	$275,413	$275,413	Transit and Ground Passenger Transportation	100.00%
2015-2016	Metropolitan Transportation Commission	Clipper Fare Payment System	$3,559,290	$3,559,290	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Napa County Transportation and Planning Agency	Zero Emission Buses for Vine Commuter Service to Sonoma Marin Area Rail Transit	$152,830	$152,830	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Peninsula Corridor Joint Powers Board	Peninsula Corridor Electrification Project	$1,089,039	$1,089,039	Construction of New Nonresidential Structures	99.91%
2015-2016	San Francisco Bay Area Rapid Transit District	BART Additional Rail Car Procurement Project	$4,476,845	$4,476,845	Railroad Rolling Stock Manufacturing	21.70%

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Appendix 3.2. Low Carbon Transit Operations Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Local Purchase Rate
2015-2016	San Francisco Bay Area Water Emergency Transportation Authority	Purchase Two New Richmond Ferry Vessels	$264,976	$264,976	Ship Building and Repairing	61.72%
2015-2016	San Francisco Municipal Transportation Agency	Expanded Service on the 9R, 28R,31, 44, and 38R	$8,156,592	$8,156,592	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Mateo County Transit District	Purchase of Electric Bus	$949,523	$949,523	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Santa Clara Valley Transportation Authority	Battery Electric Zero Emission Bus and Infrastructure Project	$3,562,582	$3,562,582	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Solano County Transit	Purchase of Zero Emission Bus for New and Expanded Service	$336,011	$336,011	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Sonoma County Transit	Electric Bus Purchase for Route 24 Service Expansion	$47,711	$47,711	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Western Contra Costa Transit Authority	Continued Expanded Service on Route 11	$130,172	$130,172	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Guadalupe	Guadalupe Transit Expansion	$71,000	$71,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Monterey Salinas Transit	Monterey Salinas Transit Electric Bus	$296,890	$296,890	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Santa Barbara County Association of Governments Traffic Solutions	South Coast Transit Marketing and Try Transit Program	$20,000	$20,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Benito County Local Transportation Authority	Continued Expansion of Inter-county Services	$56,513	$56,513	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Luis Obispo Regional Transit Authority	Paso Robles Facility Improvement	$291,301	$291,301	Construction of New Nonresidential Structures	99.91%
2015-2016	Santa Barbara County Association of Governments	Expanded Saturday Intercity Transit Service in Santa Barbara	$169,422	$169,422	Transit and Ground Passenger Transportation	100.00%
2015-2016	Santa Barbara Metropolitan Transit District	Santa Barbara Metropolitan Transit District Line 1&2 A.M. Peak Period Frequency Improvement	$190,000	$190,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Santa Barbara Metropolitan Transit District	Santa Barbara Metropolitan Transit District Smartcard Network/Fare Integration	$121,403	$121,403	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	Santa Cruz Metropolitan Transit District	Watsonville Zero Emission Bus Transit Service	$709,292	$709,292	Heavy Duty Truck Manufacturing	100.00%
2015-2016	City of California City	Bus Stop Improvements	$13,243	$13,243	M&R Construction of Non-residential Structures	85.93%
2015-2016	City of Clovis	Bus Stop Amenities	$63,921	$63,921	Construction of New Nonresidential Structures	99.91%
2015-2016	City of Clovis	Free Ride Days and Promotion	$50,000	$50,000	Household Income	N/A
2015-2016	City of Corcoran	Amtrak Subsidy Program	$22,241	$22,241	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Delano	Bus Shelters with Solar Lighting	$52,781	$52,781	Construction of New Nonresidential Structures	99.91%
2015-2016	City of Fresno	Fresno Area Express Increased Frequency Weekend Service	$734,563	$734,563	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Shafter	Shafter Saturday Dial- A-Ride Service	$18,256	$18,256	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Tulare	Electronic Fareboxes for Enhanced Fare Integration	$65,918	$65,918	Semiconductor and Related Device Manufacturing	71.28%
2015-2016	City of Visalia	Expansion of V-LINE Shuttle Service	$286,466	$286,466	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Wasco	Temporary Extra-Help Driver Project	$26,031	$26,031	Transit and Ground Passenger Transportation	100.00%
2015-2016	Fresno County Rural Transit Agency	Electric Transit Vehicles	$208,734	$208,734	Light Truck and Utility Vehicle Manufacturing	2.41%
2015-2016	Golden Empire Transit District	Purchase of three (3) Electric Buses	$535,221	$535,221	Heavy Duty Truck Manufacturing	100.00%
2015-2016	Kern Regional Transit	Construct Mojave Transit Center	$112,269	$112,269	Construction of New Nonresidential Structures	99.91%
2015-2016	Kings County Area Public Transit Agency	Free or Reduced Fare Transit Passes/Vouchers	$10,000	$10,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Kings County Area Public Transit Agency	Renewable Energy	$120,415	$120,415	Transit and Ground Passenger Transportation	100.00%
2015-2016	Madera County Transportation Commission	Madera County Connection Bus Stop Shelters and Bike Lockers	$63,492	$63,492	Construction of New Nonresidential Structures	99.91%
2015-2016	Madera County Transportation Commission	Madera County Connection Bus Wi-Fi	$20,335	$20,335	Broadcast and wireless communication equipment manufacturing	0.81%
2015-2016	Madera County Transportation Commission	New and Improved Bus Stops and Amenities	$67,160	$67,160	Construction of New Nonresidential Structures	99.91%
2015-2016	Tulare County Area Transit	Fare Subsidy Program for New Riders	$147,474	$147,474	Transit and Ground Passenger Transportation	100.00%
2015-2016	Kern Regional Transit	Construct Lamont Transit Center	$161,241	$161,241	Construction of New Nonresidential Structures	99.91%
2015-2016	Antelope Valley Transit Authority	Electric Bus Infrastructure Improvements	$118,796	$118,796	Construction of New Power and Communication Structures	85.93%
2015-2016	City of Commerce	Bus Service Expansion	$31,108	$31,108	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Gardena	Line 1X Transit Service	$111,484	$111,484	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Los Angeles Department of Transportation	Free Fare on DASH Services for Metro Pass Holders	$663,949	$663,949	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Norwalk	Operating Assistance for New Norwalk Transit Service Route	$51,207	$51,207	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Redondo Beach	Regional Smart Card Ticket Vending Machine Project	$17,168	$17,168	Other commercial service industry machine manufacturing	42.78%
2015-2016	City of Santa Monica's Big Blue Bus	Fixed Route Bus Transit Operations	$387,175	$387,175	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Torrance Transit System	Torrance Transit Upgraded Bus Bicycle Racks	$128,883	$128,883	Motorcycle, Bicycle, and Parts Manufacturing	16.39%
2015-2016	Foothill Transit	Foothill Transit Line 280 Expansion and Electrification	$512,738	$512,738	Heavy duty truck manufacturing	100.00%
2015-2016	Gold Coast Transit District	Ticket Vending Machines	$40,701	$40,701	Other commercial service industry machine manufacturing	42.78%

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Appendix 3.2. Low Carbon Transit Operations Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Local Purchase Rate
2015-2016	Los Angeles County Metropolitan Transportation Authority	Operations Expenditures for the New Gold Line Foothill Extension	$7,007,087	$7,007,087	Transit and Ground Passenger Transportation	100.00%
2015-2016	Los Angeles County Metropolitan Transportation Authority	Operations Expenditures for the Expo Phase 2 Project	$9,818,511	$9,818,511	Transit and Ground Passenger Transportation	100.00%
2015-2016	Long Beach Public Transportation Company	Long Beach Transit Bus Stop Improvement Project	$512,596	$512,596	Construction of New Nonresidential Structures	99.91%
2015-2016	Southern California Regional Rail Authority Metrolink	Purchase One Fuel Efficient Tier 4 EMD F- 125 Locomotives	$2,051,727	$2,051,727	Railroad Rolling Stock Manufacturing	21.70%
2015-2016	Ventura County Transportation Commission	Oxnard-Camarillo Employment Connector	$804,001	$492,303	Transit and Ground Passenger Transportation	100.00%
				$311,698	Heavy Duty Truck Manufacturing	100.00%
2015-2016	City of Culver City	Culver CityBus	$56,805	$56,805	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Redondo Beach	Beach Cities Transit Bus Pass Subsidy Project	$7,968	$7,968	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Montebello	Montebello Bus Lines "Route 10" Rideshare Thursday	$178,826	$178,826	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Beaumont Pass	Expansion of Commuter Route 120	$63,619	$63,619	Transit and Ground Passenger Transportation	100.00%
2015-2016	Omnitrans	Freeway Express Service Expansion	$300,000	$300,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Palo Verde Valley Transit Agency	Operations Facility Solar Project	$25,345	$25,345	Solar PV Basket	Varies
2015-2016	Riverside County Transportation Commission	Perris Valley Line Station Passenger Upgrades	$391,049	$391,049	Construction of New Nonresidential Structures	99.91%
2015-2016	Riverside Transit Agency	University Of California, Riverside Mobility Hub	$1,492,532	$1,492,532	Construction of New Nonresidential Structures	99.91%
2015-2016	San Bernardino Associated Governments	Transit Marketing & Fare Subsidy Program for Mountain/Desert Transit Operations	$461,683	$461,683	Transit and Ground Passenger Transportation	100.00%
2015-2016	Sunline Transit Agency	Lines 80,81, and 95 Service Frequency Improvements	$539,373	$539,373	Transit and Ground Passenger Transportation	100.00%
2015-2016	Victor Valley Transit Authority	Fare Media Outreach and Educational Program II	$10,000	$10,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Victor Valley Transit Authority	Transfer Center and Bus Stop Amenities	$296,574	$296,574	Construction of New Nonresidential Structures	99.91%
2015-2016	Omnitrans	Omnitrans Route 290 Pilot Program Expansion	$591,285	$591,285	Transit and Ground Passenger Transportation	100.00%
2015-2016	Omnitrans	Ontario Airport Shuttle Service Pilot	$554,435	$554,435	Transit and Ground Passenger Transportation	100.00%
2015-2016	Inyo County	Expansion of the Lone Pine Express Fixed Route Service	$24,715	$24,715	Transit and Ground Passenger Transportation	100.00%
2015-2016	Mono County	Pass Fare Reduction	$9,510	$9,510	Transit and Ground Passenger Transportation	100.00%
2015-2016	Mono County	Expansion of Mammoth Express Fixed Route Service	$23,812	$23,812	Transit and Ground Passenger Transportation	100.00%
2015-2016	Calaveras County Public Works	Calaveras Transit Pilot Saturday Service	$44,235	$44,235	Transit and Ground Passenger Transportation	100.00%
2015-2016	City of Modesto	New Route 23	$354,065	$354,065	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Joaquin Regional Transit District	Bus Rapid Transit Expansion-Martin Luther King Corridor	$584,436	$584,436	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Joaquin Regional Transit District	Metro Hopper Expansion	$221,773	$221,773	Transit and Ground Passenger Transportation	100.00%
2015-2016	Stanislaus County Public Works Transit Division	Bus Stop Enhancement & Access Improvement Program	$173,076	$173,076	M&R Construction of Non-residential Structures	85.93%
2015-2016	Transit Joint Powers Authority for Merced County	Free-fare bus promotions	$271,109	$271,109	Household Income	N/A
2015-2016	Tuolumne County Transit Agency	Law and Justice Center Transit Hub	$52,632	$52,632	Construction of New Nonresidential Structures	99.91%
2015-2016	Stanislaus County Public Works Transit Division	Fare Reduction Program	$25,000	$25,000	Transit and Ground Passenger Transportation	100.00%
2015-2016	Imperial County Transportation Commission	Calexico Intermodal Transportation Center	$193,483	$193,483	Construction of New Nonresidential Structures	99.91%
2015-2016	San Diego Metropolitan Transit System	Trolley Capacity Improvements Project	$3,663,014	$3,663,014	Heavy Duty Truck Manufacturing	100.00%
2015-2016	North County Transit District	Student Transit Pass Reduced Fare Program	$794,903	$794,903	Transit and Ground Passenger Transportation	100.00%
2015-2016	San Diego Association of Governments	South Bay Bus Rapid Transit	$375,669	$375,669	Construction of New Nonresidential Structures	99.91%
2015-2016	Orange County Transportation Authority	Fare Adjust	$3,588,424	$3,588,424	Transit and Ground Passenger Transportation	100.00%
			$98,842,253	**$98,842,253**		

Summary of Industry-Level Investments for the Low Carbon Transit Operations Program

Total State Funds	Industry	Weighted Local Purchase Rates	Percent of State Funds (Excluding State Admin. Costs)	Percent of State Funds (Including State Admin. Costs)
$20,335	Broadcast and wireless communication equipment manufacturing	0.81%	0.02%	0.02%
$10,488,076	Construction of new nonresidential structures	99.91%	10.61%	10.59%
$336,282	Construction of new power and communication Structures	85.93%	0.34%	0.34%
$13,227,794	Heavy-duty truck manufacturing	99.97%	13.38%	13.36%
$483,363	Household income	N/A	0.49%	0.49%
$278,494	Light-truck and utility vehicle manufacturing	2.41%	0.28%	0.28%
$330,871	M&R construction of nonresidential structures	85.93%	0.33%	0.33%
$383,403	Motorcycle, bicycle, and parts manufacturing	16.39%	0.39%	0.39%
$544,181	Other commercial service industry machine manufacturing	42.78%	0.55%	0.55%
$7,771,463	Railroad rolling stock manufacturing	21.70%	7.86%	7.85%
$4,340,109	Semiconductor and related device manufacturing	71.28%	4.39%	4.38%
$264,976	Shipbuilding and repairing	61.72%	0.27%	0.27%
$93,295	Showcase, partition, shelving and locker manufacturing	21.56%	0.09%	0.09%
$72,749	Sign manufacturing	48.66%	0.07%	0.07%
$79,718	Smart grid basket	Mixed	0.08%	0.08%
$194,789	Solar PV basket	Mixed	0.197%	0.20%
$59,932,355	Transit and ground passenger transportation	100.00%	60.63%	60.52%
$98,842,253				

4. Affordable Housing and Sustainable Communities

4.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Affordable Housing and Sustainable Communities (AHSC) program. See **Table A4.1** for a summary of the indirect jobs supported by AHSC, as reported in full-time equivalent (FTE) job-years.

Table A4.1. Indirect Jobs Supported by AHSC

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail – Clothing and clothing accessories stores	147.1	11.0%
Retail – Nonstore retailers	136.6	10.2%
Retail – Miscellaneous store retailers	91.6	6.8%
Wholesale trade	84.9	6.3%
Retail – Health and personal care stores	60.9	4.5%
Truck transportation	50.0	3.7%
Real estate	44.9	3.3%
Architectural, engineering, and related services	44.0	3.3%
Employment services	34.6	2.6%
Ready-mix concrete manufacturing	31.5	2.4%
Subtotal of Top 10 Industries	**726.0**	**54.2%**
Total of All Industries	**1,340.7**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A4.2** for a summary of the induced jobs supported by AHSC, as reported in FTE job-years.

Table A4.2. Induced Jobs Supported by AHSC

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	46.6	4.6%
Real estate	46.1	4.6%
Limited-service restaurants	42.8	4.3%
Hospitals	39.5	3.9%
Individual and family services	39.2	3.5%
Wholesale trade	33.6	3.3%
Offices of physicians	30.8	3.1%
Retail - Food and beverage stores	26.2	2.6%
Other financial investment activities	25.5	2.5%
Retail - General merchandise stores	25.0	2.5%
Subtotal of Top 10 Industries	**351.4**	**34.9%**
Total of All Industries	**1,008.1**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 4.2. Affordable Housing and Sustainable Communities Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2014-2015	Meta Housing Corporation	Sylmar Court Apartments	$2,500,000	Affordable Housing Development	$2,300,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$200,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	American Communities, LLC	Crenshaw Villas	$2,200,000	Affordable Housing Development	$-	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$2,116,600	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$52,000	Construction of new highways and streets	99.80%
				TRI: Bike racks, storage,repair kiosks	$13,000	Construction of new highways and streets	99.80%
				TRI: Other Costs: Electric Vehicle Charging Infrastructure	$5,000	Construction of new power and communication structures	99.91%
				TRI: Demolition	$13,400	Construction of new highways and streets	99.80%
2014-2015	Century Housing Corporation	Anchor Place	$2,441,616	Affordable Housing Development	$2,191,616	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Planning	$250,000	Architectural, engineering, and related services	
2014-2015	C&C Development, LLC	Depot at Santiago	$3,925,000	Affordable Housing Development	$425,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$3,100,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Bikeways	$20,000	Construction of new highways and streets	99.80%
				TRI: Walkways, crossings, and traffic calming	$340,664	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$39,336	Architectural, engineering, and related services	95.66%
2014-2015	LINC Housing Corporation	Mosaic Gardens at Westlake	$1,900,000	Affordable Housing Development	$418,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,482,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	SANDAG	South Bay Bus Rapid Transit (BRT) Project	$7,000,000	Affordable Housing Development	$-	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Transit Station Area Improvements	$4,920,000	Construction of new highways and streets	99.80%
				TRI: Transit Service/Intelligent Transportation Systems (ITS) Technology	$1,380,000	Heavy duty truck manufacturing	28.30%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$700,000	Architectural, engineering, and related services	95.66%
2014-2015	TNDC	Mission Bay South Block 6 East	$4,999,989	Affordable Housing Development	$4,944,141	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Streetscaping / Street Furniture	$55,848	Construction of new highways and streets	99.80%
2014-2015	Meta Housing Corporation	El Segundo Family Apartments	$1,900,000	Affordable Housing Development	$1,843,750	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$56,250	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2014-2015	Meta Housing Corporation	127th Street Apartments	$1,500,000	Affordable Housing Development	$1,349,425	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$150,575	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	McCormack Baron Salazar	MacArthur Park Apartments Phase B	$5,000,000	Affordable Housing Development	$1,000,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Transit Station Area Improvements	$2,849,300	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$1,150,700	Architectural, engineering, and related services	95.66%
2014-2015	City of West Sacramento	Delta Lane Affordable Housing and Grand Gateway	$6,730,888	Affordable Housing Development	$2,600,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$2,851,600	Construction of new highways and streets	99.80%
				TRI: Transit Station Area Improvements	$139,980	Construction of new highways and streets	99.80%
				TRI: Other Costs - Landscaping	$67,500	Landscape and Horticultural Services	99.87%
				TRI: Other Costs - Wayfinding	$80,000	Construction of new highways and streets	99.80%
				TRI: Other Costs - Contingency	$627,400	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$364,408	Architectural, engineering, and related services	95.66%
2014-2015	EAH Inc.	3706 San Pablo Avenue	$5,532,400	Affordable Housing Development	$5,400,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Streetscaping / Street Furniture	$30,000	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$70,000	Architectural, engineering, and related services	95.66%
				Planning	$-		
				Programs: Free Resident Easy Passes	$32,400	Transit and ground passenger transportation	100.00%
2014-2015	Meta Housing Corporation	Civic Center 14 TOD Apartments	$1,500,000	Affordable Housing Development	$1,250,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Bike racks, storage,repair kiosks	$63,000	Construction of new highways and streets	99.80%
				TRI: Other Costs - Preliminary Engineering	$62,000	Architectural, engineering, and related services	95.66%
				TRI: Other Costs Bike Stair Channel	$125,000	Construction of new highways and streets	99.80%
2014-2015	TNDC	Eddy & Taylor Family Housing	$10,000,011	Affordable Housing Development	$9,423,930	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Walkways, crossings, and traffic calming	$195,898	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$380,183	Architectural, engineering, and related services	95.66%
2014-2015	Meta Housing Corporation	Hayward Senior Apartments	$2,183,000	Affordable Housing Development	$1,631,025	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$368,975	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Bike racks, storage,repair kiosks	$150,936	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$32,064	Architectural, engineering, and related services	95.66%

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2014-2015	Coachella Valley Housing Coalition	March Veterans Village	$6,109,114	Affordable Housing Development	$5,994,850	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Programs: Free Bus Passes	$114,264	Transit and ground passenger transportation	100.00%
2014-2015	Chelsea Investment Corporation	19th Street Senior Apartments	$2,559,394	Affordable Housing Development	$2,130,394	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$429,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	Truckee Development Associates	Truckee Railyard Downtown Corridor Improvements	$8,000,000	Affordable Housing Development	$-	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,000,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Bikeway	$180,000	Construction of new highways and streets	99.80%
				TRI: Walkways, crossings, and traffic calming	$4,920,000	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$500,000	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$1,400,000	Architectural, engineering, and related services	95.66%
2014-2015	Eden Housing, Inc.	El Cerrito Senior Mixed Use Apts.	$5,657,872	Affordable Housing Development	$5,271,696	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$116,100	Construction of new highways and streets	99.80%
				TRI: Bike racks, storage,repair kiosks	$19,200	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$45,600	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$182,596	Architectural, engineering, and related services	95.66%
				Planning	$-		
				Programs: Free Bus Vouchers	$22,680	Transit and ground passenger transportation	100.00%
2014-2015	Eden Housing, Inc.	Miraflores Senior Housing	$5,077,558	Affordable Housing Development	$4,024,606	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$472,620	Construction of new highways and streets	99.80%
				TRI: Bike racks, storage,repair kiosks	$3,000	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$80,938	Construction of new highways and streets	99.80%
				TRI: Other Costs: Construction Contingency and Construction Engineering	$74,800	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$393,154	Architectural, engineering, and related services	95.66%
				Programs: Free Bus Vouchers	$28,440	Transit and ground passenger transportation	100.00%
2014-2015	Domus Development, LLC	Anchor Village	$5,857,096	Affordable Housing Development	$3,852,581	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,360,866	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$418,550	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$152,620	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$72,479	Architectural, engineering, and related services	95.66%

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2014-2015	Habitat for Humanity	Central Commons	$1,000,000	Affordable Housing Development	$500,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$500,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	HACSC	777 Park Ave.	$4,000,000	Affordable Housing Development	$2,695,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Walkways, crossings, and traffic calming	$1,000,000	Construction of new highways and streets	99.80%
				TRI: Bike racks, storage,repair kiosks	$25,000	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$150,000	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$50,000	Architectural, engineering, and related services	95.66%
				Programs Free Transit Passes	$80,000	Transit and ground passenger transportation	100.00%
2014-2015	APEC International, LLC	Hotel Fresno	$4,800,000	Affordable Housing Development	$1,762,324	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$3,037,676	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure	$-	Construction of new highways and streets	99.80%
2014-2015	California Vanpool Authority	Vanpool Expansion Project	$3,000,000	Affordable Housing Development	$-	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Transit Service/Intelligent Transportation Systems (ITS) Technology	$2,496,000	Light truck and utility vehicle manufacturing	2.41%
				Planning	$4,000	Transit and ground passenger transportation	100.00%
				Programs: Outreach	$500,000	Transit and ground passenger transportation	100.00%
2014-2015	City of National City	Westside Infill Transit Oriented Development	$9,240,885	Affordable Housing Development	$3,760,614	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$4,550,000	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Bikeways	$772,500	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$36,000	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$121,771	Architectural, engineering, and related services	95.66%
2014-2015	Satellite Affordable Housing Associates	Camino 23	$3,062,730	Affordable Housing Development	$2,239,705	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure:			
				TRI: Walkways, crossings, and traffic calming	$487,233	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$238,817	Architectural, engineering, and related services	95.66%
				Planning	$50,000	Architectural, engineering, and related services	95.66%
				Programs: Free transit passes	$46,975	Transit and ground passenger transportation	100.00%

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2014-2015	Resources for Community Development	Riviera Family Apartments	$4,277,904	Affordable Housing Development	$1,935,744	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,706,722	Construction of new highways and streets	99.80%
				Transportation Related Infrastructure			
				TRI: Walkways, crossings, and traffic calming	$115,076	Construction of new highways and streets	99.80%
				TRI: Bike racks, storage,repair kiosks	$18,200	Construction of new highways and streets	99.80%
				TRI: Streetscaping / Street Furniture	$124,250	Construction of new highways and streets	99.80%
				TRI: Transit-Related Plans, Specifications & Estimates (PS&E)/Demolition/Site Prep	$377,912	Architectural, engineering, and related services	95.66%
2015-2016	Deep Green Housing & Community Development	7th & Witmer Apartments	$16,760,000	Affordable Housing Development	$6,256,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$2,092,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$5,710,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$2,642,000	Construction of new highways and streets	99.80%
				Programming:			
				P: Bike Share Operations and Maintenance	$60,000	Transit and ground passenger transportation	100.00%
2015-2016	East LA Community Corporation	Sun Valley Senior Veterans Apts & Sheldon Street Pedestrian Improvements	$11,110,020	Affordable Housing Development	$7,520,531	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,148,938	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,940,575	Construction of new highways and streets	99.80%
				Programming:			
				P: Shuttle Services	$351,968	Transit and ground passenger transportation	100.00%
				P: Free Transit Passes	$148,008	Transit and ground passenger transportation	100.00%
2015-2016	PATH Ventures	PATH Metro Villas Phase 2	$13,750,183	Affordable Housing Development	$12,413,648	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,192,345	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Bicycle Equipment	$6,250	Motorcycle, Bicycle, and Parts Manufacturing	16.39%
				P: Bicycle Training and group rides	$137,940	Civic, social, professional, and similar organizations	100.00%
2015-2016	City of Redding	Redding Downtown Loop and Affordable Housing Project	$20,000,000	Affordable Housing Development	$5,873,372	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$3,570,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,289,632	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$9,266,996	Construction of new highways and streets	99.80%
				Programming	$-		

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2015-2016	First Community Housing	St. James Station TOD	$12,889,611	Affordable Housing Development	$8,927,557	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$2,562,600	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$912,714	Construction of new highways and streets	99.80%
				Programming			
				P: Viva Calle Event: City of San Jose Police Staffing	$45,000	Employment and payroll only (local government, non-education)	100.00%
				P: Viva Calle Event: City of San Jose Police Permitting	$30,000	Employment and payroll only (local government, non-education)	100.00%
				P: Viva Calle Event: Event Planning and Production	$368,000	Civic, social, professional, and similar organizations	100.00%
				P: Free transit pass	$43,740	Transit and ground passenger transportation	100.00%
2015-2016	City of Fresno	South Stadium Phase I TOD	$5,738,730	Affordable Housing Development	$1,317,487	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,945,352	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$2,352,892	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$122,999	Construction of new highways and streets	99.80%
2015-2016	Abode Communities	Rolland Curtis West	$5,668,074	Affordable Housing Development	$3,911,504	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,208,750	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$503,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Community outreach and education	$44,820	Civic, social, professional, and similar organizations	100.00%
2015-2016	Satellite Affordable Housing Associates	Grayson Street Apartments	**$3,755,326**	**Affordable Housing Development**	$2,949,480	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$783,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Free bus passes	$15,246	Transit and ground passenger transportation	100.00%
				P: Bike education workshops	$7,600	Civic, social, professional, and similar organizations	100.00%
2015-2016	Wasco Affordable Housing, Inc.	Wasco Farmworker Housing Relocation Project	**$18,637,432**	**Affordable Housing Development**	$18,108,667	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$528,765	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
2015-2016	Charities Housing	Renascent San Jose	**$14,979,486**	**Affordable Housing Development**	$7,766,134	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$1,411,449	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$5,312,633	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$134,984	Construction of new highways and streets	99.80%
				Programming:			
				P: Free bus pass	$17,496	Transit and ground passenger transportation	100.00%
				P: Ranger Ride-along Program Staffing	$308,790	Employment and payroll only (local government, non-education)	100.00%
				P: Good Karma Bike Technician and Supplies	$28,000	Civic, social, professional, and similar organizations	100.00%

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Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2015-2016	The Michaels Development Company	MDC Jordan Downs	**$11,969,111**	**Affordable Housing Development**	$9,939,168	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$2,005,943	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Ad space at ten bus shelters	$24,000	Advertising, public relations, and related services	98.28%
2015-2016	Neighborhood Partners, LLC	Creekside Affordable Housing	**$11,881,748**	**Affordable Housing Development**	$10,904,172	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$300,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$500,136	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$112,440	Construction of new highways and streets	99.80%
				Programming:			
				P: Bike event staff	$12,000	Community food, housing, and other relief services, including rehabilitation services	100.00%
				P: Walking/Bike Route Maps	$2,500	Printing	Default
				P: Education/marketing campaign	$10,000	Community food, housing, and other relief services, including rehabilitation services	100.00%
				P: Free bus passes	$40,500	Transit and ground passenger transportation	100.00%
2015-2016	StoneBridge Properties	Coldstream Mixed Use Village	**$10,682,140**	**Affordable Housing Development**	$5,872,140	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$4,135,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$535,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$75,000	Construction of new highways and streets	99.80%
				Programming			
				P: Bike event staff	$12,000	Community food, housing, and other relief services, including rehabilitation services	100.00%
				P: Walking/Bike Route Maps	$2,500	Printing	Default
				P: Education/marketing campaign	$10,000	Community food, housing, and other relief services, including rehabilitation services	100.00%
				P: Free bus passes	$40,500	Transit and ground passenger transportation	100.00%
2015-2016	Cesar Chavez Foundation	Kings Canyon Connectivity Project - (Kings Canyon)	**$15,579,426**	**Affordable Housing Development**	$14,863,754	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$47,200	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$513,222	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$155,250	Construction of new highways and streets	99.80%
2015-2016	Domus Development, LLC	Cornerstone Place	**$12,090,713**	**Affordable Housing Development**	$7,970,705	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$3,485,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$531,922	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming			
				P: Free transit passes	$103,086	Transit and ground passenger transportation	100.00%
2015-2016	East Bay Asian Local Development Corporation	Lakehouse Connections	**$18,127,203**	**Affordable Housing Development**	$10,946,306	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$4,485,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,899,853	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$643,200	Construction of new highways and streets	99.80%
				Programming			
				P: Free transit passes	$66,792	Transit and ground passenger transportation	100.00%
				P: Free monthly bikeshare passes	$82,800	Transit and ground passenger transportation	100.00%
				P: Assistance to residents in setting up their passes	$3,252	Community food, housing, and other relief services, including rehabilitation services	100.00%

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Appendix 4.2. Affordable Housing and Sustainable Communities Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2015-2016	EAH Inc.	Avena Bella (Phase 2)	**$7,474,676**	**Affordable Housing Development**	$6,862,451	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$612,225	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
2015-2016	Meta Housing Corporation	Santa Ana Arts Collective	**$12,028,626**	**Affordable Housing Development**	$7,833,126	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$2,885,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,288,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Ad space at 15 bus shelters in	$22,500	Advertising, public relations, and related services	98.28%
2015-2016	Mercy Housing California	455 Fell	**$16,056,563**	**Affordable Housing Development**	$15,037,563	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,019,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
2015-2016	Skid Row Housing Trust	Six Four Nine Lofts	**$5,315,000**	**Affordable Housing Development**	$3,200,000	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$2,031,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming			
				P: Bus shelters marketing	$24,000	Advertising, public relations, and related services	98.28%
				P: Bike Share Operations and Maintenance	$60,000	Transit and ground passenger transportation	100.00%
2015-2016	Visionary Homebuilders of California, Inc.	Hunter Street Housing	**$8,941,370**	**Affordable Housing Development**	$8,228,370	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$449,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$239,000	Construction of new highways and streets	99.80%
				Programming:			
				P: Marketing Professional	$10,000	Management Consulting Services	99.38%
				P: Marketing Supplies (Billboard)	$15,000	Advertising, public relations, and related services	98.28%
2015-2016	Resources for Community Development	Empyrean & Harrison Hotel Housing and Transportation Improvements	**$16,807,556**	**Affordable Housing Development**	$15,631,118	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,048,053	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
				Programming:			
				P: Free transit passes	$52,635	Transit and ground passenger transportation	100.00%
				P: Free bike share memberships	$67,950	Transit and ground passenger transportation	100.00%
				P: Bike East Bay Bicycle Workshops	$7,800	Civic, social, professional, and similar organizations	100.00%
2015-2016	Self Help Enterprises	Sierra Village Affordable Housing & Transportation Improvement Project	**$4,646,731**	**Affordable Housing Development**	$4,096,731	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$-	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$550,000	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%

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Appendix 4.2. Affordable Housing and Sustainable Communities Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds (Requested)	Line Item Expenses	State Funds (Requested)	IIMPlan Industry	Local Purchase Rate
2015-2016	Self Help Enterprises	Lindsay Village Affordable Housing & Transportation Improvement Project	**$5,518,353**	**Affordable Housing Development**	$4,043,694	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$405,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$1,069,659	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$-	Construction of new highways and streets	99.80%
2015-2016	UrbanCore Development, LLC	Coliseum Connections	**$14,844,762**	**Affordable Housing Development**	$5,223,012	Construction of New Multi-Family Structures	99.99%
				Housing Related Infrastructure	$4,675,000	Construction of new highways and streets	99.80%
				Sustainable Transportation Infrastructure	$4,421,325	Construction of new highways and streets	99.80%
				Transportation Related Amenities	$498,200	Construction of new highways and streets	99.80%
				Programming:			
				P: Free transit passes	$27,225	Transit and ground passenger transportation	100.00%
			$417,208,297		**$417,208,297**		

Summary of Industry-Level Investments for Affordable Housing and Sustainable Communities

Total State Funds	Industry	Weighted Local Purchase Rates	Percent of State Funds (Excluding State Admin Costs)	Percent of State Funds (Including State Admin Costs)
$85,500	Advertising, public relations, and related services	98.28%	0.020%	0.020%
$5,935,420	Architectural, engineering, and related services	95.66%	1.423%	1.399%
$383,790	Employment and payroll only (local government, non-education)	100.00%	0.092%	0.090%
$594,160	Civic, social, professional, and similar organizations	100.00%	0.142%	0.140%
$47,252	Community food, housing, and other relief services, including rehabilitation services	100.00%	0.011%	0.011%
$274,641,091	Construction of New Multi-Family Structures	99.90%	65.828%	64.716%
$5,000	Construction of new power and communication structures	99.91%	0.001%	0.001%
$67,500	Landscape and Horticultural Services	99.87%	0.016%	0.016%
$1,380,000	Heavy duty truck manufacturing	28.30%	0.331%	0.325%
$129,544,629	Construction of new highways and streets	99.80%	31.050%	30.526%
$2,496,000	Light truck and utility vehicle manufacturing	2.41%	0.598%	0.588%
$10,000	Management Consulting Services	99.38%	0.002%	0.002%
$6,250	Motorcycle, Bicycle, and Parts Manufacturing	16.39%	0.001%	0.001%
$5,000	Printing	51.69%	0.001%	0.001%
$2,006,705	Transit and ground passenger transportation	100.00%	0.481%	0.473%
$417,208,297				

5. Sustainable Agricultural Lands Conservation

5.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Sustainable Agricultural Lands Conservation (SALC) program. See **Table A5.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A5.1. Indirect Jobs Supported by SALC

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment services	0.5	26.3%
Architectural, engineering, and related services	0.2	11.0%
Real estate	0.2	10.6%
Services to buildings	0.2	10.5%
Maintenance and repair construction of nonresidential structures	0.1	5.5%
Accounting, tax preparation, bookkeeping, and payroll services	0.1	5.5%
Management consulting services	0.1	5.5%
Landscape and horticultural services	0.1	5.3%
Investigation and security services	0.1	5.3%
Office administrative services	0.1	5.3%
Subtotal of Top 10 Industries	**1.6**	**90.7%**
Total of All Industries	**1.7**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.) See **Table A5.2.1** and **Table A5.2.2** for a summary of the induced jobs supported by SALC, as reported in FTE job-years.

Table A5.2.1. Induced Jobs Supported by California Climate Investment Funding for SALC

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	8.9	4.6%
Real estate	8.4	4.4%
Limited-service restaurants	8.2	4.3%
Hospitals	7.4	3.8%
Individual and family services	6.9	3.6%
Wholesale trade	6.5	3.4%
Offices of physicians	5.7	3.0%
Retail – Food and beverage stores	5.1	2.7%
Other financial investment activities	4.9	2.6%
Retail - General merchandise stores	4.9	2.5%
Subtotal of Top 10 Industries	**67.0**	**34.7%**
Total of All Industries	**192.9**	**100%**

Table A5.2.2. Induced Jobs Supported by Induced Co-investment for SALC

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	3.8	4.7%
Real estate	3.6	4.4%
Limited-service restaurants	3.5	4.3%
Hospitals	3.1	3.8%
Individual and family services	2.9	3.6%
Wholesale trade	2.8	3.4%
Offices of physicians	2.4	3.0%
Retail – Food and beverage stores	2.2	2.7%
Other financial investment activities	2.1	2.6%
Retail - General merchandise stores	2.1	2.5%
Subtotal of Top 10 Industries	**28.6**	**35.1%**
Total of All Industries	**81.4**	**100%**

Appendix 5.2. Sustainable Agricultural Lands Conservation Program Detailed Summary of Modeling Inputs for Agricultural Conservation Easements

Grant Cycle	Applicant	Location	State Funds	State Spending on Real Estate Transaction Costs	State Spending on Easement	Total Easement Value	Local Match Total (Including Donated Land Value)	Match Percent	Donated Land Value	Local Match Total (Excluding Donated Land Value)
2014 - 2015	Agricultural Land Trust	SALCP_PP5_Monterey	$392,000	$11,000	$381,000	$761,000	$380,000	50%	$190,000	$190,000
2014 - 2015	Eastern Sierra Land Trust	SALCP_PP25_Mono	$917,500	$-	$917,500	$3,710,000	$2,792,500	75%		$2,792,500
2014 - 2015	Lassen Land and Trails Trust	SALCP_PP11_Lassen	$226,500	$11,500	$215,000	$430,000	$215,000	50%		$215,000
2014 - 2015	Land Trust of Napa County	SALCP_PP16 a and b_Napa	$606,500	$26,500	$580,000	$1,170,000	$590,000	50%		$590,000
2014 - 2015	Northern California Regional Land Trust	SALCP_PP19_Butte and Tehama	$1,163,000	$-	$1,163,000	$3,795,000	$2,632,000	69%		$2,632,000
2014 - 2015	Marin Agricultural Land Trust	SALCP_PP22_Marin	$490,500	$-	$490,500	$1,485,000	$994,500	67%		$994,500
2014 - 2015	Sonoma County Agricultural Preservation and Open Space District	SALCP_PP16_Sonoma	$300,000	$-	$300,000	$1,495,000	$1,195,000	80%		$1,195,000
2015 - 2016	Agricultural Land Trust	SALCP15_PP2_Monterey	$473,150	$9,650	$463,500	$618,200	$154,700	25%	$154,700	$-
2015 - 2016	Agricultural Land Trust	SALCP15_PP4_Monterey	$1,603,000	$9,500	$1,593,500	$2,112,000	$518,500	25%	$518,500	$-
2015 - 2016	Agricultural Land Trust	SALCP15_PP5_Monterey	$999,000	$9,000	$990,000	$1,320,000	$330,000	25%	$330,000	$-
2015 - 2016	Agricultural Land Trust	SALCP15_PP6_Monterey	$755,625	$9,000	$746,625	$995,500	$248,875	25%	$248,875	$-
2015 - 2016	Agricultural Land Trust	SALCP15_PP7_Monterey	$511,925	$9,500	$502,425	$669,900	$167,475	25%	$167,475	$-
2015 - 2016	Brentwood Agricultural Land Trust	SALCP15_PP8_Contra Costa	$7,820,260	$34,000	$7,786,260	$8,651,400	$865,140	10%	$865,140	$-
2015 - 2016	Sonoma Land Trust	SALCP15_PP11_Sonoma	$1,027,000	$27,000	$1,000,000	$2,000,000	$1,000,000	50%		$1,000,000
2015 - 2016	Sequoia Riverlands	SALCP15_PP12_Tulare	$521,162	$39,999	$481,163	$6,415,550	$5,934,387	93%	$5,934,387	$-
2015 - 2016	Sequoia Riverlands Trust	SALCP15_PP14_Tulare	$1,600,000	$40,000	$1,560,000	$2,080,000	$520,000	25%	$520,000	$-
2015 - 2016	Placer County Community Development Res. Agency	SALCP15_PP15_Placer	$990,000	$-	$990,000	$1,380,500	$390,500	28%		$390,500
2015 - 2016	California Rangeland Trust	SALCP15_PP17_Calaveras	$5,842,000	$29,500	$5,812,500	$7,750,000	$1,937,500	25%		$1,937,500
2015 - 2016	California Rangeland Trust	SALCP15_PP26a-b_Yolo	$4,623,670	$105,270	$4,518,400	$6,218,400	$1,700,000	27%		$1,700,000
2015 - 2016	Northern California Regional Land Trust	SALCP15_APP1_Butte	$2,301,202	$51,000	$2,250,202	$2,500,000	$249,798	10%		$249,798
2015 - 2016	Eastern Sierra Land Trust	SALCP15_PP20_Mono	$1,739,117	$39,117	$1,700,000	$3,400,000	$1,700,000	50%		$1,700,000
2015 - 2016	Sierra Foothill Conservancy	SALCP15_PP22_Mariposa	$189,875	$10,500	$179,375	$358,750	$179,375	50%		$179,375
2015 - 2016	Land Trust of Santa Cruz County	SALCP15_PP24_Santa Cruz	$138,250	$18,250	$120,000	$160,000	$40,000	25%		$40,000
2015 - 2016	Land Trust of Napa County	SALCP15_PP25a-b_Napa	$3,166,800	$51,000	$3,115,800	$4,154,400	$1,038,600	25%	$1,038,600	$-
2015 - 2016	Pacific Forest Trust	SALCP15_PP28_Sierra	$345,598	$45,598	$300,000	$600,000	$300,000	50%		$300,000
2015 - 2016	Central Valley Farmland Trust	SALCP15_PP29a-b_San Joaquin	$1,837,000	$55,000	$1,782,000	$2,376,000	$594,000	25%		$594,000
2015 - 2016	Sonoma County Agricultural Preservation and Open Space District	SALCP15_APP2_Sonoma	$750,000	$-	$750,000	$2,000,000	$1,250,000	63%		$1,250,000
	Total		**$41,330,634**	**$641,884**	**$40,688,750**	**$68,606,600**	**$27,917,850**	**41%**	**$9,967,677**	**$17,950,173**

Appendix 5.3. Sustainable Agricultural Lands Conservation Program Detailed Summary of Modeling Inputs for Agricultural Land Conservation Strategies and Outcomes

Grant Cycle	Applicant	State Funds	Local Match Total (10%)	Total Project Cost
2014 - 2015	Butte County	$100,000	$10,000	$110,000
2014 - 2015	Mendocino County	$93,400	$9,340	$102,740
2014 - 2015	County of Mono	$100,000	$10,000	$110,000
2014 - 2015	Santa Clara County	$100,000	$10,000	$110,000
2014 - 2015	County of Santa Cruz	$99,095	$9,910	$109,005
2015 - 2016	Monterey County Resource Management Agency (RMA)	$182,366	$20,365	$202,731
Total		**$674,861**	**$69,615**	**$744,475**

Summary of Industry-Level Investments for Affordable Housing and Sustainable Communities

Total State Funds	Industry	Weighted Local Purchase Rates	Percent of State Funds (Excluding State Admin Costs)	Percent of State Funds (Including State Admin Costs)
$85,500	Advertising, public relations, and related services	98.28%	0.020%	0.020%
$5,935,420	Architectural, engineering, and related services	95.66%	1.423%	1.399%
$383,790	Employment and payroll only (local government, non-education)	100.00%	0.092%	0.090%
$594,160	Civic, social, professional, and similar organizations	100.00%	0.142%	0.140%
$47,252	Community food, housing, and other relief services, including rehabilitation services	100.00%	0.011%	0.011%
$274,641,091	Construction of New Multi-Family Structures	99.90%	65.828%	64.716%
$5,000	Construction of new power and communication structures	99.91%	0.001%	0.001%
$67,500	Landscape and Horticultural Services	99.87%	0.016%	0.016%
$1,380,000	Heavy duty truck manufacturing	28.30%	0.331%	0.325%
$129,544,629	Construction of new highways and streets	99.80%	31.050%	30.526%
$2,496,000	Light truck and utility vehicle manufacturing	2.41%	0.598%	0.588%
$10,000	Management Consulting Services	99.38%	0.002%	0.002%
$6,250	Motorcycle, Bicycle, and Parts Manufacturing	16.39%	0.001%	0.001%
$5,000	Printing	51.69%	0.001%	0.001%
$2,006,705	Transit and ground passenger transportation	100.00%	0.481%	0.473%
$417,208,297				

6. Clean Vehicle Rebate Project

6.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Clean Vehicle Rebate Project (CVRP). See **Table A6.1.1** and **Table A6.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A6.1.1. Indirect Jobs Supported by California Climate Investment Funding for CVRP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	4.3	9.5%
Employment services	3.4	7.4%
Real estate	3.3	7.2%
Accounting, tax preparation, bookkeeping, and payroll services	2.0	4.4%
Management of companies and enterprises	1.7	3.7%
Management consulting services	1.5	3.3%
Marketing research and all other miscellaneous professional, scientific, and technical services	1.3	2.9%
Truck transportation	1.2	2.7%
Warehousing and storage	1.1	2.5%
Full-service restaurants	1.1	2.4%
Subtotal of Top 10 Industries	**21.0**	**45.9%**
Total of All Industries	**45.7**	**100%**

Table A6.1.2. Indirect Jobs Supported by Induced Co-investment for CVRP

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	52.6	13.7%
Real estate	26.7	7.40%
Management of companies and enterprises	18.5	4.8%
Employment services	16.8	4.4%
Warehousing and storage	16.0	4.2%
Truck transportation	13.6	3.5%
Couriers and messengers	11.9	3.1%
Services to buildings	9.9	2.6%
Accounting, tax preparation, bookkeeping, and payroll services	9.9	2.6%
Scenic and sightseeing transportation and support activities for transportation	7.8	2.0%
Subtotal of Top 10 Industries	**183.8**	**48.0%**
Total of All Industries	**383.3**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A6.2.1** and **Table A6.2.2** for a summary of the induced jobs supported by the Clean Vehicle Rebate Project, as reported in FTE job-years.

Table A6.2.1. Induced Jobs Supported by California Climate Investment Funding for CVRP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	45.3	4.6%
Real estate	42.9	4.4%
Limited-service restaurants	42.7	4.3%
Hospitals	37.6	3.9%
Individual and family services	34.2	3.5%
Wholesale trade	32.6	3.3%
Offices of physicians	29.2	3.0%
Retail – Food and beverage stores	25.5	2.6%
Other financial investment activities	24.7	2.5%
Retail – General merchandise stores	24.2	2.5%
Subtotal of Top 10 Industries	**337.9**	**34.7%**
Total of All Industries	**974.9**	**100%**

Table A6.2.2. Induced Jobs Supported by Induced Co-investment for CVRP

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	28.2	4.6%
Real estate	28.1	4.6%
Limited-service restaurants	25.9	4.3%
Hospitals	23.9	3.9%
Individual and family services	21.3	3.5%
Wholesale trade	20.4	3.3%
Offices of physicians	18.7	3.1%
Retail – Food and beverage stores	15.9	2.6%
Other financial investment activities	15.4	2.5%
Retail – General merchandise stores	15.0	2.5%
Subtotal of Top 10 Industries	**212.8**	**34.9%**
Total of All Industries	**608.8**	**100%**

Appendix 6.2. Clean Vehicle Rebate Program Detailed Summary of Modeling Inputs

Make	Model	Vehicle Type	Year	MSRP	Average Rebate Amount 11/04/2013 - 06/21/2016	Number of Rebates 11/04/2013 - 06/21/2016	Total Rebate Amount	Total MSRP	Percent Induced	Number of Induced Purchases 11/04/2013 - 06/21/2016	State Spending on Induced Purchases 11/04/2013 - 06/21/2016	Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016	Induced Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016
Audi	A3 e-tron	PHEV	2016	$37,900	$1,537	402	$618,000	$15,235,800	11.07%	40	$61,587	$14,617,800	$1,456,751
BMW	i3	BEV	2014	$43,275	$2,495	815	$2,033,167	$35,269,125	17.96%	124	$309,585	$33,235,958	$5,060,752
			2015	$44,325	$2,497	1,877	$4,687,500	$83,198,025	17.98%	286	$714,397	$78,510,525	$11,965,366
			2016	$44,325	$2,531	1,606	$4,064,000	$71,185,950	18.22%	248	$626,332	$67,121,950	$10,344,642
Cadillac	ELR Plug-in Hybrid	PHEV	2014	$75,000	$1,494	123	$183,800	$9,225,000	10.76%	12	$17,854	$9,041,200	$878,253
			2015	$75,000	$1,500	76	$114,000	$5,700,000	10.80%	7	$11,112	$5,586,000	$544,484
			2016	$65,000	$1,500	34	$51,000	$2,210,000	10.80%	3	$4,971	$2,159,000	$210,444
Chevy	Spark Electric	BEV	2013	$26,685	$2,486	58	$144,167	$1,547,730	17.90%	9	$21,884	$1,403,563	$213,060
			2014	$26,685	$2,499	632	$1,579,334	$16,864,920	17.99%	96	$240,829	$15,285,586	$2,330,867
			2015	$26,685	$2,499	1,333	$3,331,000	$35,571,105	17.99%	203	$507,925	$32,240,105	$4,916,106
			2016	$25,995	$2,650	1,119	$2,964,833	$29,088,405	19.08%	179	$474,981	$26,123,572	$4,185,126
	Volt Plug-in Hybrid	PHEV	2013	$39,145	$1,500	857	$1,285,250	$33,547,265	10.80%	84	$125,255	$32,262,015	$3,144,121
			2014	$34,185	$1,499	6,255	$9,373,750	$213,827,175	10.79%	609	$912,918	$204,453,425	$19,911,898
			2015	$34,170	$1,498	4,287	$6,421,000	$146,486,790	10.78%	417	$625,039	$140,065,790	$13,634,416
			2016	$33,995	$1,543	3,857	$5,953,250	$131,118,715	11.11%	386	$595,423	$125,165,465	$12,518,608
Fiat	500e	BEV	2013	$31,800	$2,500	347	$867,500	$11,034,600	18.00%	53	$132,331	$10,167,100	$1,550,914
			2014	$31,800	$2,497	4,279	$10,683,582	$136,072,200	17.98%	652	$1,627,902	$125,388,618	$19,105,984
			2015	$32,300	$2,499	3,432	$8,576,416	$110,853,600	17.99%	523	$1,307,804	$102,277,184	$15,596,081
			2016	$31,800	$2,587	1,890	$4,890,000	$60,102,000	18.63%	297	$767,890	$55,212,000	$8,670,092

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Appendix 6.2. Clean Vehicle Rebate Program Detailed Summary of Modeling Inputs

Make	Model	Vehicle Type	Year	MSRP	Average Rebate Amount 11/04/2013 - 06/21/2016	Number of Rebates 11/04/2013 - 06/21/2016	Total Rebate Amount	Total MSRP	Percent Induced	Number of Induced Purchases 11/04/2013 - 06/21/2016	State Spending on Induced Purchases 11/04/2013 - 06/21/2016	Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016	Induced Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016
Ford	C-Max and Fusion Energi Plug-in Hybrid	PHEV	2013	$36,223	$1,495	436	$651,750	$15,793,010	10.76%	42	$63,331	$15,141,260	$1,471,279
			2014	$35,825	$1,499	4,459	$6,684,250	$159,743,675	10.79%	434	$651,160	$153,059,425	$14,910,593
			2015	$33,285	$1,500	3,284	$4,924,750	$109,307,940	10.80%	320	$479,920	$104,383,190	$10,172,205
			2016	$32,835	$1,560	2,619	$4,084,500	$85,994,865	11.23%	264	$412,342	$81,910,365	$8,269,081
	Focus Electric	BEV	2013	$35,200	$2,500	49	$122,500	$1,724,800	18.00%	7	$18,686	$1,602,300	$244,419
			2014	$35,200	$2,496	791	$1,973,999	$27,843,200	17.97%	120	$300,667	$25,869,201	$3,940,227
			2015	$29,170	$2,500	513	$1,282,500	$14,964,210	18.00%	78	$195,636	$13,681,710	$2,087,041
			2016	$29,170	$2,573	287	$738,500	$8,371,790	18.53%	45	$115,434	$7,633,290	$1,193,153
GEM		Other	2014	$9,000	$900	10	$9,000	$90,000	6.48%	1	$548	$81,000	$4,929
			2016	$9,000	$900	1	$900	$9,000	6.48%	0.1	$55	$8,100	$493
Honda	Accord Plug-in Hybrid	PHEV	2013	$39,800	$1,485	13	$19,300	$517,400	10.69%	1	$1,864	$498,100	$48,101
			2014	$39,780	$1,500	140	$210,000	$5,569,200	10.80%	14	$20,469	$5,359,200	$522,377
			2015	$40,000	$1,500	51	$76,500	$2,040,000	10.80%	5	$7,457	$1,963,500	$191,388
			2016	$40,000	$1,500	3	$4,500	$120,000	10.80%	0.3	$439	$115,500	$11,258
	Fit Electric	BEV	2013	$36,600	$2,500	20	$50,000	$732,000	18.00%	3	$7,627	$682,000	$104,034
			2014	$37,500	$2,500	151	$377,500	$5,662,500	18.00%	23	$57,585	$5,285,000	$806,186
			2015	$37,500	$2,500	15	$37,500	$562,500	18.00%	2	$5,720	$525,000	$80,085
			2016	$37,500	$2,500	1	$2,500	$37,500	18.00%	0.2	$381	$35,000	$5,339
	FCX Clarity	FCEV	2013	$54,198	$2,500	2	$5,000	$108,396	18.00%	0.3	$763	$103,396	$15,772
			2014	$54,198	$3,750	2	$7,500	$108,396	27.00%	0.4	$1,594	$100,896	$21,450
			2015	$54,198	$5,000	1	$5,000	$54,198	36.00%	0.3	$1,324	$49,198	$13,023
Hyundai	Sonata Plug-in Hybrid	PHEV	2015	$34,600	$1,500	24	$36,000	$830,400	10.80%	2	$3,509	$794,400	$77,432
			2016	$34,600	$1,579	189	$298,500	$6,539,400	11.37%	19	$30,478	$6,240,900	$637,219
	Tuscon Fuel Cell	FCEV	2014	$50,895	$5,000	38	$190,000	$1,934,010	36.00%	10	$50,294	$1,744,010	$461,650
			2015	$50,895	$5,000	25	$125,000	$1,272,375	36.00%	7	$33,088	$1,147,375	$303,717
			2016	$50,895	$5,000	18	$90,000	$916,110	36.00%	5	$23,824	$826,110	$218,676

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Appendix 6.2. Clean Vehicle Rebate Program Detailed Summary of Modeling Inputs

Make	Model	Vehicle Type	Year	MSRP	Average Rebate Amount 11/04/2013 - 06/21/2016	Number of Rebates 11/04/2013 - 06/21/2016	Total Rebate Amount	Total MSRP	Percent Induced	Number of Induced Purchases 11/04/2013 - 06/21/2016	State Spending on Induced Purchases 11/04/2013 - 06/21/2016	Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016	Induced Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016
Kia	Soul Electric	BEV	2014	$33,700	$2,500	180	$450,000	$6,066,000	18.00%	27	$68,644	$5,616,000	$856,678
			2015	$33,700	$2,500	367	$917,500	$11,725,650	18.00%	56	$139,958	$10,808,150	$1,648,701
			2016	$31,950	$2,538	235	$596,500	$7,508,250	18.28%	36	$92,170	$6,911,750	$1,067,991
Mercedes-Benz	B-Class 250e Electric	BEV	2014	$41,450	$2,493	321	$800,334	$13,305,450	17.95%	49	$121,805	$12,505,116	$1,903,195
			2015	$48,950	$2,500	684	$1,710,000	$33,481,800	18.00%	104	$260,847	$31,771,800	$4,846,546
			2016	$48,950	$2,527	224	$566,000	$10,964,800	18.19%	34	$87,122	$10,398,800	$1,600,637
	F-Cell	FCEV	2013	$41,500	$2,500	2	$5,000	$83,000	18.00%	0.3	$763	$78,000	$11,898
			2014	$41,500	$2,500	1	$2,500	$41,500	18.00%	0.2	$381	$39,000	$5,949
	S-Class 550e Plug-in Hybrid	PHEV	2015	$95,650	$1,500	17	$25,500	$1,626,050	10.80%	2	$2,486	$1,600,550	$156,010
			2016	$95,650	$1,500	28	$42,000	$2,678,200	10.80%	3	$4,094	$2,636,200	$256,958
Mitsubishi	I-MiEV Electric	BEV	2013	$22,500	$2,500	1	$2,500	$22,500	18.00%	0.2	$381	$20,000	$3,051
			2014	$22,495	$2,500	46	$115,000	$1,034,770	18.00%	7	$17,542	$919,770	$140,304
			2015	$32,000	$2,500	15	$37,500	$480,000	18.00%	2	$5,720	$442,500	$67,500
			2016	$22,995	$2,800	5	$14,000	$114,975	20.16%	1	$2,349	$100,975	$16,941
Motorcycle	Victory Empulse TT	Other	2013	$18,995	$900	2	$1,800	$37,990	6.48%	0	$110	$36,190	$2,202
			2014	$18,995	$900	13	$11,700	$246,935	6.48%	1	$712	$235,235	$14,316
			2015	$18,995	$900	5	$4,500	$94,975	6.48%	0.3	$274	$90,475	$5,506
			2016	$18,995	$900	1	$900	$18,995	6.48%	0.1	$55	$18,095	$1,101
	Zero	Other	2013	$12,995	$900	3	$2,700	$38,985	6.48%	0.2	$164	$36,285	$2,208
			2014	$12,995	$900	74	$66,600	$961,630	6.48%	5	$4,053	$895,030	$54,468
			2015	$11,995	$900	63	$56,700	$755,685	6.48%	4	$3,451	$698,985	$42,538
			2016	$10,995	$900	68	$61,200	$747,660	6.48%	4	$3,724	$686,460	$41,776
Nissan	Leaf S, SV, SL Electric	BEV	2013	$31,820	$2,497	743	$1,855,486	$23,642,260	17.98%	113	$282,780	$21,786,774	$3,320,352
			2014	$32,000	$2,497	7,994	$19,962,653	$255,808,000	17.98%	1,218	$3,042,264	$235,845,347	$35,942,311
			2015	$33,913	$2,500	3,410	$8,523,416	$115,643,330	18.00%	520	$1,299,977	$107,119,914	$16,337,753
			2016	$33,913	$2,528	1,829	$4,623,500	$62,026,877	18.20%	282	$711,935	$57,403,377	$8,839,075

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Appendix 6.2. Clean Vehicle Rebate Program Detailed Summary of Modeling Inputs

Make	Model	Vehicle Type	Year	MSRP	Average Rebate Amount 11/04/2013 - 06/21/2016	Number of Rebates 11/04/2013 - 06/21/2016	Total Rebate Amount	Total MSRP	Percent Induced	Number of Induced Purchases 11/04/2013 - 06/21/2016	State Spending on Induced Purchases 11/04/2013 - 06/21/2016	Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016	Induced Co-Investment for $196 Million of Distributed Rebates 11/04/2013 - 06/21/2016
Smart	Fortwo Coupe Electric	BEV	2013	$25,000	$2,500	100	$250,000	$2,500,000	18.00%	15	$38,136	$2,250,000	$343,220
			2014	$26,500	$2,498	954	$2,382,750	$25,281,000	17.98%	145	$363,180	$22,898,250	$3,490,160
			2015	$26,500	$2,500	349	$872,500	$9,248,500	18.00%	53	$133,093	$8,376,000	$1,277,695
			2016	$19,990	$2,595	205	$532,000	$4,097,950	18.68%	32	$83,754	$3,565,950	$561,397
Tesla	Model S and Model X Electric	BEV	2013	$69,900	$2,492	694	$1,729,597	$48,510,600	17.94%	106	$263,140	$46,781,003	$7,117,244
			2014	$69,900	$2,493	4,948	$12,335,750	$345,865,200	17.95%	753	$1,877,307	$333,529,450	$50,757,943
			2015	$71,070	$2,496	5,896	$14,719,000	$419,028,720	17.97%	898	$2,242,560	$404,309,720	$61,599,884
			2016	$73,343	$2,495	4,190	$10,455,500	$307,305,871	17.97%	638	$1,592,390	$296,850,371	$45,210,802
Th!nk	BEV	BEV	2013	$35,495	$2,500	1	$2,500	$35,495	18.00%	0.2	$381	$32,995	$5,033
			2016	$35,495	$2,500	1	$2,500	$35,495	18.00%	0.2	$381	$32,995	$5,033
Toyota	Mirai Fuel Cell	FCEV	2015	$58,335	$5,000	24	$120,000	$1,400,040	36.00%	6	$31,765	$1,280,040	$338,834
			2016	$58,335	$5,038	117	$589,500	$6,825,195	36.28%	31	$156,925	$6,235,695	$1,659,942
	Prius Plug-In Hybrid	PHEV	2013	$32,000	$1,498	422	$632,250	$13,504,000	10.79%	41	$61,561	$12,871,750	$1,253,305
			2014	$29,990	$1,498	5,818	$8,716,433	$174,481,820	10.79%	566	$848,688	$165,765,387	$16,139,978
			2015	$29,990	$1,499	1,480	$2,218,100	$44,385,200	10.79%	144	$216,038	$42,167,100	$4,106,975
			2016	$30,000	$1,496	173	$258,800	$5,190,000	10.77%	17	$25,165	$4,931,200	$479,488
	RAV4 Electric	BEV	2013	$49,800	$2,500	41	$102,500	$2,041,800	18.00%	6	$15,636	$1,939,300	$295,825
			2014	$49,800	$2,497	800	$1,997,917	$39,840,000	17.98%	122	$304,498	$37,842,083	$5,767,425
			2015	$50,000	$2,500	58	$145,000	$2,900,000	18.00%	9	$22,119	$2,755,000	$420,254
			2016	$50,000	$2,500	4	$10,000	$200,000	18.00%	1	$1,525	$190,000	$28,983
Volkswagen	e-Golf Electric	BEV	2014	$35,445	$2,500	117	$292,500	$4,147,065	18.00%	18	$44,619	$3,854,565	$587,984
			2015	$35,445	$2,492	1,748	$4,355,333	$61,957,860	17.94%	266	$662,482	$57,602,527	$8,761,821
			2016	$28,995	$2,527	1,154	$2,916,500	$33,460,230	18.20%	178	$449,000	$30,543,730	$4,702,253
Volvo	XC90 T8	PHEV	2016	$68,100	$1,500	51	$76,500	$3,473,100	10.80%	5	$7,457	$3,396,600	$331,077
					Total	92,097	$195,997,917	$3,703,856,688	13.2%	12,156	$27,165,772	$3,507,858,771	$474,477,614

7. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project

7.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). See **Table A7.1.1** and **Table A7.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A7.1.1. Indirect Jobs Supported by California Climate Investment Funding for HVIP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1.5	20.1%
Employment services	0.6	8.3%
Management of companies and enterprises	0.4	5.0%
Truck transportation	0.4	4.9%
Real estate	0.4	4.8%
Management consulting services	0.3	3.7%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	3.7%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.2	2.5%
Services to buildings	0.2	2.4%
Investigation and security services	0.2	2.4%
Subtotal of Top 10 Industries	**4.4**	**57.9%**
Total of All Industries	**7.6**	**100%**

Table A7.1.2. Indirect Jobs Supported by Induced Co-investment for HVIP

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	6.6	29.3%
Management of companies and enterprises	1.4	6.3%
Truck transportation	1.3	5.8%
Employment services	0.9	4.0%
Real estate	0.5	2.4%
Investigation and security services	0.5	2.4%
Business support services	0.5	2.4%
Services to buildings	0.5	2.0%
Turned product and screw, nut, and bolt manufacturing	0.4	1.7%
Warehousing and storage	0.4	1.7%
Subtotal of Top 10 Industries	**13.1**	**58.0%**
Total of All Industries	**22.7**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A7.2.1** and **Table A7.2.2** for a summary of the induced jobs supported by HVIP, as reported in FTE job-years.

Table A7.2.1. Induced Jobs Supported by California Climate Investment Funding for HVIP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.4	4.9%
Limited-service restaurants	0.4	4.9%
Hospitals	0.4	4.7%
Real estate	0.4	4.6%
Individual and family services	0.3	4.3%
Wholesale trade	0.3	3.6%
Offices of physicians	0.3	3.4%
Retail – Food and beverage stores	0.3	3.2%
Retail - General merchandise stores	0.3	3.2%
All other food and drinking places	0.2	2.9%
Subtotal of Top 10 Industries	**3.2**	**39.8%**
Total of All Industries	**8.0**	**100%**

Table A7.2.2. Induced Jobs Supported by Induced Co-investment for HVIP

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.7	5.1%
Full-service restaurants	0.7	4.9%
Limited-service restaurants	0.6	4.4%
Hospitals	0.6	4.0%
Individual and family services	0.5	3.6%
Wholesale trade	0.5	3.4%
Offices of physicians	0.4	3.1%
Retail – Food and beverage stores	0.4	3.0%
Other financial investment activities	0.4	2.7%
Nursing and community care facilities	0.4	2.6%
Subtotal of Top 10 Industries	**5.3**	**36.9%**
Total of All Industries	**14.3**	**100%**

Appendix 7.2. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Detailed Summary of Modeling Inputs

Manufacturer	Year	Average Vehicle Price	Average Rebate Amount 6/25/2014 - 12/31/2016	Number of Rebates 6/25/2014 - 12/31/2016	Total Rebate Amount	Total Vehicle Price	Co-Investment for $16.1 Million of Distributed Rebates 6/25/2014 - 12/31/2016	Local Purchase Rate (Percent Made in Calif.)
Altec	2016	$317,077	$22,000	6	$132,000	$1,902,460	$1,770,460	0%
Autocar	2014	$503,599	$50,000	1	$50,000	$503,599	$453,599	0%
	2015	$454,847	$45,714	7	$320,000	$3,183,926	$2,863,926	0%
	2016	$507,176	$50,000	2	$100,000	$1,014,352	$914,352	0%
BYD Motors	2014	$703,000	$97,500	4	$390,000	$2,812,000	$2,422,000	100%
	2015	$760,181	$96,917	12	$1,163,000	$9,122,173	$7,959,173	100%
	2016	$861,652	$120,000	1	$120,000	$861,652	$741,652	100%
EVI	2014	$106,454	$40,000	2	$80,000	$212,908	$132,908	100%
	2016	$174,025	$100,000	1	$100,000	$174,025	$74,025	100%
Hino Motors	2014	$86,789	$22,229	210	$4,668,000	$18,225,774	$13,557,774	0%
	2015	$83,445	$21,894	199	$4,357,000	$16,605,596	$12,248,596	0%
	2016	$83,426	$22,148	135	$2,990,000	$11,262,496	$8,272,496	0%
Motiv Power	2015	$240,873	$90,000	1	$90,000	$240,873	$150,873	100%
	2016	$226,295	$100,000	1	$100,000	$226,295	$126,295	100%
Phoenix Cars	2015	$173,456	$50,000	2	$100,000	$346,911	$246,911	0%
Proterra	2016	$957,858	$140,000	2	$280,000	$1,915,716	$1,635,716	0%
Smith Electric	2014	$160,995	$50,000	1	$50,000	$160,995	$110,995	0%
Zenith Motors	2015	$108,161	$60,455	11	$665,000	$1,189,770	$524,770	0%
	2016	$129,357	$57,500	6	$345,000	$776,141	$431,141	0%
		$349,403	**$65,071**	**$604**	**$16,100,000**	**$70,737,663**	**$54,637,663**	

8. Enhanced Fleet Modernization Program Plus-Up

8.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Enhanced Fleet Modernization Program Plus-Up (EFMP) Plus-up. See **Table A8.1.1** and **Table A8.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A8.1.1. Indirect Jobs Supported by California Climate Investment Funding for EFMP Plus-Up

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.4	16.5%
Warehousing and storage	0.2	8.5%
Employment services	0.2	8.2%
Nondepository credit intermediation and related activities	0.1	4.4%
Insurance agencies, brokerages, and related activities	0.1	4.4%
Wholesale trade	0.1	4.4%
Maintenance and repair construction of nonresidential structures	0.1	4.3%
Accounting, tax preparation, bookkeeping, and payroll services	0.1	4.3%
Management of companies and enterprises	0.1	4.3%
Advertising, public relations, and related services	0.1	4.3%
Subtotal of Top 10 Industries	**1.4**	**63.7%**
Total of All Industries	**2.2**	**100%**

Table A8.1.2. Indirect Jobs Supported by Induced Co-investment for EFMP Plus-Up

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	1.2	12.6%
Warehousing and storage	0.6	6.5%
Employment services	0.6	6.4%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	3.7%
Wholesale trade	0.3	3.2%
Truck transportation	0.4	3.2%
Couriers and messengers	0.3	3.2%
Nondepository credit intermediation and related activities	0.3	3.2%
Advertising, public relations, and related services	0.3	3.0%
Services to buildings	0.3	2.5%
Subtotal of Top 10 Industries	**4.4**	**47.5%**
Total of All Industries	**9.2**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A8.2.1** and **Table A8.2.2** for a summary of the induced jobs supported by the Enhanced Fleet Modernization Program Plus-Up, as reported in FTE job-years.

Table A8.2.1. Induced Jobs Supported by California Climate Investment Funding for EFMP Plus-Up

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.6	4.7%
Full-service restaurants	0.6	4.6%
Limited-service restaurants	0.6	4.6%
Hospitals	0.6	4.2%
Individual and family services	0.5	3.9%
Wholesale trade	0.5	3.6%
Offices of physicians	0.4	3.3%
Other financial investment activities	0.4	2.9%
Nursing and community care facilities	0.4	2.8%
Retail – Food and beverage stores	0.3	2.5%
Subtotal of Top 10 Industries	**5.0**	**37.1%**
Total of All Industries	**13.5**	**100%**

Table A8.2.2. Induced Jobs Supported by Induced Co-investment for EFMP Plus-Up

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.2	5.6%
Limited-service restaurants	1.1	5.2%
Real estate	1.1	5.0%
Hospitals	0.9	4.0%
Individual and family services	0.9	4.0%
Wholesale trade	0.7	3.2%
Offices of physicians	0.7	3.1%
Other financial investment activities	0.6	2.8%
Retail – Food and beverage stores	0.6	2.7%
Retail – General merchandise stores	0.6	2.7%
Subtotal of Top 10 Industries	**8.3**	**38.4%**
Total of All Industries	**21.6**	**100%**

Appendix 8.2. Enhanced Fleet Mobilization Programs Plus-Up. Incentive Summary for New Cars

Data through November 8, 2016										
Replacement Vehicle Make	Replacement Vehicle Model	Replacement Vehicle Technology	Replacement Vehicle Year	Average Vehicle Price	Average Plus-Up Incentive*	Average Total Incentive Amount	Number of Plus-Up Incentives	Total Spending on Plus-Up Incentives*	Total Rebate Amount	Total Out-of-Pocket Expenses (Co-investment)
Chevrolet	Spark	BEV	2016	$29,230	$5,000	$9,500	2	$10,000	$19,000	$39,460
	Volt	PHEV	2015 2016 2017	$30,980 $36,257 $33,637	$5,000 $4,833 $4,313	$9,500 $9,167 $8,250	2 6 8	$10,00 0 $29,000 $34,500	$19,000 $55,000 $66,000	$42,961 $167,541 $203,098
Ford	C-Max	PHEV	2015 2016	$34,235 $39,679	$4,667 $4,750	$8,833 $9,000	3 4	$14,000 $19,000	$26,500 $36,000	$76,205 $122,714
		Hybrid	2015	$27,423	$2,500	$7,000	2	$5,000	$14,000	$40,846
	Focus	BEV	2015	$28,101	$5,000	$9,500	2	$10,000	$19,000	$37,202
	Fusion	PHEV	2015 2016 2017	$31,846 $31,961 $37,635	$5,000 $4,000 $5,000	$9,500 $7,500 $9,500	1 5 4	$5,000 $20,000 $20,000	$9,500 $37,500 $38,000	$22,346 $122,306 $112,541
		Hybrid	2016	$33,123	$2,500	$7,000	3	$7,500	$21,000	$78,369
Honda	Civic	Hybrid	2016	$26,382	$2,167	$6,333	3	$6,500	$19,000	$60,147
Hyundai	Sonata	Hybrid	2016	$29,016	$2,357	$6,714	7	$16,500	$47,000	$156,111
		PHEV	2016	$35,876	$5,000	$9,500	4	$20,000	$38,000	$105,503
Kia	Optima	Hybrid	2015	$32,135	$2,250	$6,500	4	$9,000	$26,000	$102.538
	Soul	BEV	2016	$32,808	$3,500	$6,500	2	$7,000	$13,000	$52,615
Nissan	Leaf	BEV	2015	$26,389	$3,500	$6,500	2	$7,000	$13,000	$39,777
Subaru	Crosstrek	Hybrid	2106	$29,147	$2,500	$6,500	1	$2,500	$6,500	$22,647
Toyota	Avalon	Hybrid	2015 2016	$35,937 $45,685	$2,500 $2,500	$7,000 $7,000	1 1	$2,500 $2,500	$7,000 $7,000	$28,937 $38,685
	Camry	Hybrid	2015 2016	$35,362 $31,504	$2,500 $2,441	$7,000 $6,882	1 17	$2,500 $41,500	$7,000 $117,000	$28,362 $418,573
	Prius	Hybrid	2015 2016	$25,238 $28,005	$2,429 $2,589	$6,857 $6,857	42 28	$102,000 $72,500	$288,000 $192,000	$771,983 $594,638
		PHEV	2015	$34,256	$5,000	$9,500	2	$10,000	$19,000	$49,511
	RAV4	Hybrid	2016	$35,663	$2,500	$6,500	4	$10,000	$26,000	$116,651
Volkswagen	E-Golf	BEV	2015 2016	$23,777 $27,814	$5,000 $4,000	$9,500 $7,500	1 2	$5,000 $8,000	$9,500 $15,000	$14,277 $40,627
	Jetta	Hybrid	2016	$37,872	$2,500	$7,000	1	$2,500	$7,000	$30,872
				$32,232	**$3,593**	**$7,813**	**165**	**$511,500**	**$1,217,500**	**$3,738,044**

*Excluding EFMP and CVRP incentive funding that may have been issued

Appendix 8.3. Enhanced Fleet Mobilization Programs Plus-Up. Incentive Summary for Used Cars

Data through November 8, 2016										
Replacement Vehicle Make	Replacement Vehicle Model	Replacement Vehicle Technology"	Average Replacement Vehicle Year"	Average Vehicle Price	Average Plus-Up Incentive*	Average Total Incentive Amount	Number of Plus-Up Incentives	Total Spending on Plus-Up Incentives*	Total Rebate Amount	Total Out-of-Pocket Expenses (Co-investment)
Acura	ILX	Hybrid	2013	$26,326	$2,500	$7,000	2	$5,000	$14,000	$38,652
BMW	I3	BEV	2014	$29,809	$5,000	$9,500	1	$5,000	$9,500	$20,309
Chevrolet	Malibu	Hybrid	2009	$16,389	$2,500	$6,500	1	$2,500	$6,500	$9,889
	Spark	BEV	2014	$16,648	$5,000	$9,500	1	$5,000	$9,500	$7,148
	Volt	PHEV	2011	$16,920	$4,846	$9,192	13	$63,000	$119,500	$100,454
			2012	$19,932	$5,087	$9,500	52	$264,500	$494,000	$542,479
			2013	$19,770	$5,362	$9,256	123	$659,500	$1,138,500	$1,296,200
			2014	$17,846	$5,000	$9,500	2	$10,000	$19,000	$16,691
			2015	$29,549	$5,000	$9,500	1	$5,000	$9,500	$20,049
			2016	$31,115	$5,000	$9,500	1	$5,000	$9,500	$21,615
Fiat	500E	BEV	2014	$22,219	$3,000	$5,500	1	$3,000	$5,500	$16,719
		PHEV	2013	$12,186	$4,000	$7,500	1	$4,000	$7,500	$4,686
Ford	C-Max	PHEV	2013	$18,569	$5,352	$9,204	27	$144,500	$248,500	$252,855
			2014	$21,358	$5,643	$9,500	7	$39,500	$66,500	$83,004
		Hybrid	2013	$19,345	$4,036	$6,857	14	$56,500	$96,000	$174,828
			2014	$19,749	$2,500	$7,000	1	$2,500	$7,000	$12,749
	Escape	Hybrid	2008	$12,590	$2,500	$6,500	1	$2,500	$6,500	$8,590
			2009	$19,788	$2,500	$6,500	1	$2,500	$6,500	$13,288
	Focus	BEV	2012	$13,913	$5,273	$8,955	11	$58,000	$98,500	$54,546
			2013	$13,772	$5,000	$9,500	8	$40,000	$76,000	$34,174
			2014	$16,270	$5,000	$9,500	2	$10,000	$19,000	$13,540
	Fusion	PHEV	2013	$21,214	$5,719	$9,250	16	$91,500	$148,000	$191,423
			2014	$24,472	$6,500	$9,500	15	$97,500	$142,500	$224,581
		Hybrid	2010	$16,685	$2,500	$7,000	7	$17,500	$49,000	$67,798
			2011	$16,392	$2,500	$7,000	3	$7,500	$21,000	$28,176
			2013	$21,843	$3,250	$7,000	6	$19,500	$42,000	$89,058
Honda	Accord	Hybrid	2010	$18,145	$2,500	$7,000	1	$2,500	$7,000	$11,145
			2015	$32,135	$2,500	$7,000	1	$2,500	$7,000	$25,135
	Civic	Hybrid	2008	$14,517	$3,143	$7,000	7	$22,000	$49,000	$52,617
			2009	$13,285	$2,500	$7,000	2	$5,000	$14,000	$12,569
			2010	$13,933	$1,500	$5,000	1	$1,500	$5,000	$8,933
			2012	$18,614	$2,807	$7,000	44	$123,500	$308,000	$511,038
			2013	$20,545	$4,000	$7,000	12	$48,000	$84,000	$148,990
			2015	$21,932	$2,500	$7,000	2	$5,000	$14,000	$29,863
	CR-Z	Hybrid	2011	$14,252	$4,750	$7,000	2	$9,500	$14,000	$14,505
			2013	$20,459	$2,500	$6,500	1	$2,500	$6,500	$13,959
	Insight	Hybrid	2010	$13,082	$3,625	$7,000	4	$14,500	$28,000	$24,327
			2011	$15,936	$2,500	$7,000	6	$15,000	$42,000	$53,617
			2012	$15,151	$3,400	$7,000	5	$17,000	$35,000	$40,756
			2013	$20,272	$2,500	$7,000	1	$2,500	$7,000	$13,272

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Appendix 8.3. Enhanced Fleet Mobilization Programs Plus-Up. Incentive Summary for Used Cars

Data through November 8, 2016										
Replacement Vehicle Make	Replacement Vehicle Model	Replacement Vehicle Technology"	Average Replacement Vehicle Year"	Average Vehicle Price	Average Plus-Up Incentive*	Average Total Incentive Amount	Number of Plus-Up Incentives	Total Spending on Plus-Up Incentives*	Total Rebate Amount	Total Out-of-Pocket Expenses (Co-investment)
Hyundai	Sonata	Hybrid	2011	$18,058	$7,000	$7,000	1	$7,000	$7,000	$11,058
			2012	$19,438	$3,043	$6,913	23	$70,000	$159,000	$288,076
			2013	$21,059	$3,143	$7,000	7	$22,000	$49,000	$98,414
			2014	$24,132	$7,000	$7,000	1	$7,000	$7,000	$17,132
			2015	$22,502	$2,500	$7,000	1	$2,500	$7,000	$15,502
			2016	$23,396	$7,000	$7,000	2	$14,000	$14,000	$32,792
Infiniti	Q50	Hybrid	2014	$38,227	$2,500	$6,500	1	$2,500	$6,500	$31,727
Kia	Optima	Hybrid	2011	$20,033	$3,625	$7,000	4	$14,500	$28,000	$52,131
			2014	$19,874	$3,000	$7,000	36	$108,000	$252,000	$463,457
			2013	$22,060	$3,396	$6,917	24	$81,500	$166,000	$363,449
			2014	$23,370	$2,675	$6,900	20	$53,500	$138,000	$329,393
			2015	$23,349	$2,409	$6,818	11	$26,500	$75,000	$181,844
	Soul	BEV	2015	$30,640	$5,000	$9,500	1	$5,000	$9,500	$21,140
Lexus	CT 200	Hybrid	2012	$25,412	$2,500	$7,000	2	$5,000	$14,000	$36,825
			2013	$24,811	$2,500	$7,000	8	$20,000	$56,000	$142,490
			2014	$27,258	$2,500	$7,000	4	$10,000	$28,000	$81,032
			2016	$33,639	$2,500	$7,000	1	$2,500	$7,000	$26,639
	ES 300	Hybrid	2013	$32,162	$2,500	$7,000	3	$7,500	$21,000	$75,487
	HS 250	Hybrid	2010	$20,020	$2,500	$7,000	1	$2,500	$7,000	$13,020
			2011	$19,397	$7,000	$7,000	1	$7,000	$7,000	$12,397
	RX 350	Hybrid	2008	$25,427	$2,500	$6,500	1	$2,500	$6,500	$18,927
	RX 450	Hybrid	2010	$32,878	$2,500	$6,500	1	$2,500	$6,500	$26,378
			2013	$37,092	$2,500	$6,500	1	$2,500	$6,500	$30,592
	Unknown	Hybrid	2010	$26,199	$2,500	$7,000	1	$2,500	$7,000	$19,199
Mercedes-Benz	B-Class	BEV	2015	$39,002	$5,000	$9,500	1	$5,000	$9,500	$29,502
Mitsubishi	IMIEV	BEV	2012	$11,418	$5,000	$9,500	3	$15,000	$28,500	$5,753
Nissan	Altima	Hybrid	2008	$17,854	$2,500	$6,500	2	$5,000	$13,000	$22,709
			2009	$16,412	$4,500	$6,500	2	$9,000	$13,000	$19,824
			2010	$16,632	$2,500	$6,500	2	$5,000	$13,000	$20,264
			2011	$17,872	$2,500	$6,500	5	$12,500	$32,500	$56,860
	Leaf	BEV	2011	$11,113	$5,147	$9,087	25	$128,674	$227,174	$60,643
			2012	$11,670	$5,453	$9,376	85	$463,500	$797,000	$194,930
			2013	$12,975	$4,948	$9,397	59	$291,908	$554,408	$216,092
			2014	$12,549	$5,000	$9,500	1	$5,000	$9,500	$3,049
			2015	$19,571	$4,000	$7,500	1	$4,000	$7,500	$12,071

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Appendix 8.3. Enhanced Fleet Mobilization Programs Plus-Up. Incentive Summary for Used Cars

Data through November 8, 2016										
Replacement Vehicle Make	Replacement Vehicle Model	Replacement Vehicle Technology"	Average Replacement Vehicle Year"	Average Vehicle Price	Average Plus-Up Incentive*	Average Total Incentive Amount	Number of Plus-Up Incentives	Total Spending on Plus-Up Incentives*	Total Rebate Amount	Total Out-of-Pocket Expenses (Co-investment)
Toyota	Avalon	Hybrid	2013	$27,574	$2,500	$7,000	1	$2,500	$7,000	$20,574
			2015	$30,390	$2,500	$7,000	1	$2,500	$7,000	$23,390
			2016	$47,836	$2,500	$7,000	1	$2,500	$7,000	$40,836
	Camry	Hybrid	2007	$15,522	$2,500	$6,750	2	$5,000	$13,500	$17,543
			2008	$14,220	$2,500	$6,500	1	$2,500	$6,500	$7,720
			2009	$15,892	$2,500	$6,500	4	$10,000	$26,000	$37,567
			2010	$15,822	$2,500	$6,500	1	$2,500	$6,500	$9,322
			2011	$19,834	$2,500	$6,500	2	$5,000	$13,000	$26,668
			2012	$21,723	$3,063	$7,000	8	$24,500	$56,000	$117,786
			2013	$22,962	$3,389	$6,778	9	$30,500	$61,000	$145,657
			2014	$22,698	$2,389	$6,778	9	$21,500	$61,000	$143,279
			2015	$25,411	$2,500	$7,000	2	$5,000	$14,000	$36,823
	Prius	Hybrid	2007	$8,543	$2,500	$7,000	5	$12,500	$35,000	$7,714
			2008	$13,458	$2,500	$7,000	4	$10,000	$28,000	$25,830
			2009	$11,635	$2,300	$6,600	5	$11,500	$33,000	$25,177
			2010	$15,177	$2,500	$7,000	6	$15,000	$42,000	$49,061
			2011	$16,439	$2,500	$7,000	6	$15,000	$42,000	$56,632
			2012	$19,284	$2,517	$6,724	29	$73,000	$195,000	$365,727
			2013	$19,994	$3,349	$6,814	43	$144,000	$293,000	$566,727
			2014	$20,966	$3,239	$6,913	23	$74,500	$159,000	$323,227
			2015	$21,672	$2,333	$6,667	6	$14,000	$40,000	$90,034
			2016	$28,831	$2,500	$7,000	1	$2,500	$7,000	$21,831
		PHEV	2012	$19,001	$4,783	$8,891	23	$110,000	$204,500	$241,527
			2013	$20,027	$6,344	$9,375	16	$101,500	$150,000	$170,426
			2014	$23,626	$5,045	$8,773	11	$55,500	$96,500	$163,390
			2015	$30,299	$6,500	$9,500	3	$19,500	$28,500	$62,396
Volkswagen	E-Golf	BEV	2015	$34,507	$5,000	$9,500	1	$5,000	$9,500	$25,007
				$21,057	**$3,602**	**$7,497**	**972**	**$4,092,582**	**$7,921,082**	**$10,156,895**

*Excluding EFMP incentive funding that was issued

9. Car Sharing and Mobility Options Pilot

9.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Car Sharing and Mobility Options Pilot. See **Table A9.1.1** and **Table A9.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A9.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Car Sharing and Mobility Options Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.4	12.6%
Wholesale trade	0.2	6.6%
Employment services	0.2	6.3%
Independent artists, writers, and performers	0.2	5.6%
Full-service restaurants	0.2	5.4%
Monetary authorities and depository credit intermediation	0.1	3.3%
Nondepository credit intermediation and related activities	0.1	3.3%
Insurance agencies, brokerages, and related activities	0.1	3.3%
Maintenance and repair construction of nonresidential structures	0.1	3.3%
Management consulting services	0.1	3.3%
Subtotal of Top 10 Industries	**1.5**	**53.2%**
Total of All Industries	**2.9**	**100%**

Table A9.1.2. Indirect Jobs Supported by Induced Co-investment for the Car Sharing and Mobility Options Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	1.0	10.3%
Employment services	0.6	6.6%
Independent artists, writers, and performers	0.4	4.2%
Wholesale trade	0.4	4.0%
Full-service restaurants	0.3	3.2%
Management consulting services	0.3	2.9%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	2.9%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.3	2.9%
Services to buildings	0.3	2.8%
Commercial and industrial machinery and equipment repair and maintenance	0.2	2.8%
Subtotal of Top 10 Industries	**4.1**	**42.4%**
Total of All Industries	**9.7**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A9.2.1** and **Table A9.2.2** for a summary of the induced jobs supported by the Car Sharing and Mobility Options Pilot, as reported in FTE job-years.

Table A9.2.1. Induced Jobs Supported by California Climate Investment Funding for the Car Sharing and Mobility Options Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.4	6.3%
Full-service restaurants	0.3	5.4%
Limited-service restaurants	0.3	5.4%
Hospitals	0.3	4.9%
Individual and family services	0.3	4.5%
Other financial investment activities	0.2	3.3%
Wholesale trade	0.2	3.3%
Nursing and community care facilities	0.2	3.2%
Offices of physicians	0.2	3.1%
Retail – Food and beverage stores	0.2	2.9%
Subtotal of Top 10 Industries	**2.5**	**42.2%**
Total of All Industries	**5.8**	**100%**

Table A9.2.2. Induced Jobs Supported by Induced Co-investment for the Car Sharing and Mobility Options Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.8	5.1%
Full-service restaurants	0.8	4.8%
Limited-service restaurants	0.7	4.4%
Hospitals	0.7	4.1%
Individual and family services	0.6	3.8%
Wholesale trade	0.6	3.6%
Offices of physicians	0.5	3.3%
Retail – Food and beverage stores	0.5	3.0%
Retail – General merchandise stores	0.4	2.7%
Other financial investment activities	0.4	2.7%
Subtotal of Top 10 Industries	**6.0**	**37.3%**
Total of All Industries	**16.2**	**100%**

Appendix 9.2. Car Sharing and Mobility Operations Pilot Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Match Funding	Total Proposal Cost	Line Item Expenses	Line Item Cost	State Funds	Induced Co-investment	IMPLAN Industry	Local Purchase Rate
2014 - 2015	Sacramento Metropolitan Air Quality Management District	Our Community Car Share Sacramento	$1,363,847	$479,860	$1,843,707	Salaries and Wages	$208,949	$182,949	$26,000	Employment and payroll only (local government, non-education)	100.00%
						Vehicles and EVSE					
						Eight Zero Emission Vehicles	$360,000	$360,000	$-	Automobile manufacturing	0.00%
						Telematics/Datalogging	$38,340	$38,340	$-	Broadcast and wireless communications equipment manufacturing	Default (0.81%)
						EVSE	$683,668	$233,408	$450,260	All other miscellaneous electrical equipment and component manufacturing	Default (21.68%)
						Operation					
						Rent	$3,600	$-	$3,600	Real estate establishments	Default (100%)
						Reservation Access Points	$3,200	$3,200	$-	All other miscellaneous electrical equipment and component manufacturing	Default (21.68%)
						Participant Subsidies	$371,250	$371,250	$-	Automotive equipment rental and leasing	Default (88.82%)
						Outreach and Education	$60,500	$60,500	$-	Employment and payroll only (local government, non-education)	100.00%
						Reporting	$104,200	$104,200	$-	Employment and payroll only (local government, non-education)	100.00%
						Program Expansion Planning	$10,000	$10,000	$-	Employment and payroll only (local government, non-education)	100.00%
2014 - 2015	City of Los Angeles	Los Angeles Leading by Example	$1,669,343	$6,395,537	$8,064,880	BlueCalifornia Contract - Startup Cost	$2,898,702	$600,000	$2,298,702	Automotive equipment rental and leasing	Default (88.82%)
						Shared Use Mobility Center (SUMC) Contract	$1,056,785	$218,743	$838,042	Management consulting services	100.00%
						Steering Committee	$347,844	$72,000	$275,844	Employment and payroll only (local government, non-education)	100.00%
						Advertising	$483,117	$100,000	$383,117	Advertising and related services	Default (98.28%)
						Outreach Ambassador/Outreach Manager	$1,545,974	$320,000	$1,225,974	Advertising and related services	Default (98.28%)
						Parking Space Conversion (parking meter post removal, signage, etc.)	$512,104	$106,000	$406,104	Maintenance and Repair construction of highways, streets, bridges, and tunnels	Default (82.65%)
						Credits for Parking Fund (SPRF)	$1,220,354	$252,600	$967,754	Employment and payroll only (local government, non-education)	100.00%

Summary of Industry-Level Investments for the Car Sharing and Mobility Operations Pilot

Total State Funds	Total Induced Co-Investment	Industry	Weighted Local Purchase Rates	Percent of Total State Funds	Percent of Total Matching Funds
$420,000	$1,609,091	Advertising and related services	Default (98.28%)	13.8%	23.4%
$236,608	$450,260	All other miscellaneous electrical equipment and component manufacturing	Default (21.68%)	7.8%	6.5%
$360,000	$-	Automobile manufacturing	0.00%	11.9%	0.0%
$38,340	$-	Broadcast and wireless communications equipment manufacturing	Default (0.81%)	1.3%	0.0%
$682,249	$1,269,598	Employment and payroll only (local government, non-education)	100.00%	22.5%	18.5%
$106,000	$406,104	Maintenance and Repair construction of highways, streets, bridges, and tunnels	Default (82.65%)	3.5%	5.9%
$-	$3,600	Real estate establishments	Default (100%)	0.0%	0.1%
$218,743	$838,042	Management consulting services	100.00%	7.2%	12.2%
$971,250	$2,298,702	Automotive equipment rental and leasing	Default (88.82%)	32.0%	33.4%
$3,033,190	**$6,875,397**				

10. Public Fleet Pilot Project

10.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Public Fleet Pilot Project. See **Table A10.1.1** and **Table A10.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A10.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Public Fleet Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.2	21.8%
Wholesale trade	0.1	11.5%
Management consulting services	0.1	11.3%
Accounting, tax preparation, bookkeeping, and payroll services	0.1	11.3%
Warehousing and storage	0.1	11.2%
Couriers and messengers	0.1	11.2%
Employment services	0.1	10.8%
Services to buildings	0.1	10.8%
Total of All Industries	**0.8**	**100%**

Table A10.1.2. Indirect Jobs Supported by Induced Co-investment for the Public Fleet Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.5	11.0%
Warehousing and storage	0.3	6.8%
Employment services	0.3	6.6%
Wholesale trade	0.2	4.7%
Accounting, tax preparation, bookkeeping, and payroll services	0.2	4.6%
Couriers and messengers	0.2	4.6%
Services to buildings	0.2	4.4%
Internet publishing and broadcasting and web search portals	0.1	2.4%
Other financial investment activities	0.1	2.3%
Nondepository credit intermediation and related activities	0.1	2.3%
Subtotal of Top 10 Industries	**2.1**	**49.8%**
Total of All Industries	**4.1**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A10.2.1** and **Table A10.2.2** for a summary of the induced jobs supported by the Public Fleet Pilot Project, as reported in FTE job-years.

Table A10.2.1. Induced Jobs Supported by California Climate Investment Funding for the Public Fleet Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.2	9.1%
Full-service restaurants	0.2	7.8%
Limited-service restaurants	0.2	7.8%
Other financial investment activities	0.1	4.9%
Wholesale trade	0.1	4.8%
Hospitals	0.1	4.7%
Nursing and community care facilities	0.1	4.7%
Employment services	0.1	4.6%
Services to buildings	0.1	4.6%
Offices of physicians	0.1	4.5%
Subtotal of Top 10 Industries	**1.1**	**57.5%**
Total of All Industries	**2.0**	**100%**

Table A10.2.2. Induced Jobs Supported by Induced Co-investment for the Public Fleet Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.5	4.8%
Limited-service restaurants	0.5	4.8%
Real estate	0.5	4.7%
Wholesale trade	0.4	4.0%
Hospitals	0.4	3.9%
Offices of physicians	0.4	3.7%
Individual and family services	0.3	3.6%
Other financial investment activities	0.3	3.0%
Nursing and community care facilities	0.3	2.9%
Retail – Food and beverage stores	0.3	2.7%
Subtotal of Top 10 Industries	**3.7**	**38.1%**
Total of All Industries	**9.7**	**100%**

Appendix 10.2. Public Fleet Increased Incentives Pilot Detailed Summary of Modeling Inputs

Manufacturer	Vehicle Type	Year	Average Vehicle Price	Average Rebate Amount 7/2/2014 - 1/28/2016	Total Number of Rebates 7/2/2014 - 11/28/2016 "	Total Rebate Amount	Total Vehicle Price	Co-Investment for $2.75 Million of Distributed Rebates 7/2/2014 - 11/28/2016 "
Chevrolet	BEV	2015	$26,007	$10,000	16	$160,000	$416,105	$256,105
		2016	$25,862	$10,000	2	$20,000	$51,723	$31,723
	PHEV	2014	$35,078	$5,250	21	$110,250	$736,635	$626,385
		2015	$29,565	$5,250	10	$52,500	$295,654	$243,154
		2016	$32,187	$5,250	36	$189,000	$1,158,743	$969,743
Ford	BEV	2015	$31,995	$10,000	2	$20,000	$63,990	$43,990
		2016	$31,333	$10,000	7	$70,000	$219,334	$149,334
	PHEV	2014	$33,130	$5,250	12	$63,000	$397,558	$334,558
		2015	$31,998	$5,250	44	$231,000	$1,407,906	$1,176,906
		2016	$31,375	$5,250	61	$320,250	$1,913,877	$1,593,627
Ford	BEV	2015	$32,198	$10,000	1	$10,000	$32,198	$22,198
Mitsubishi	BEV	2015	$22,400	$10,000	3	$30,000	$67,200	$37,200
		2016	$15,943	$10,000	3	$30,000	$47,828	$17,828
Nissan	BEV	2014	$32,483	$10,000	11	$110,000	$357,310	$247,310
		2015	$29,308	$10,000	43	$430,000	$1,260,247	$830,247
		2016	$29,220	$10,000	16	$160,000	$467,515	$307,515
Smart	BEV	2015	$25,532	$10,000	19	$190,000	$485,107	$295,107
		2016	$23,107	$10,000	2	$20,000	$46,215	$26,215
Chevrolet	BEV	2015	$49,088	$10,000	33	$330,000	$1,619,898	$1,289,898
	FCEV	2014	$40,800	$15,000	4	$60,000	$163,200	$103,200
	PHEV	2014	$28,975	$5,250	8	$42,000	$231,797	$189,797
		2015	$30,531	$5,250	20	$105,000	$610,621	$505,621
To Date:			**$30,369**	**$8,500**	**374**	**$2,753,000**	**$12,050,659**	**$9,297,659**
Scaled up for Study Period:			**$31,737**	**$8,883**	**391**	**$2,877,000**	**$12,593,442**	**$9,716,442**

11. Financing Assistance Pilot Project

11.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Financing Assistance Pilot Project. See **Table A11.1.1** and **Table A11.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A11.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Financing Assistance Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.3	42.3%
Other financial investment activities	0.1	15.0%
Management consulting services	0.1	14.7%
Employment services	0.1	14.0%
Services to buildings	0.1	14.0%
Total of All Industries	**0.6**	**100%**

Table A11.1.2. Indirect Jobs Supported by Induced Co-investment for the Financing Assistance Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.2	49.3%
Other financial investment activities	0.1	26.2%
Employment services	0.1	24.6%
Total of All Industries	**0.4**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **table A11.2.1** and **Table A11.2.2** for a summary of the induced jobs supported by the Financing Assistance Pilot, as reported in FTE job-years.

Table A11.2.1. Induced Jobs Supported by California Climate Investment Funding for the Financing Assistance Pilot Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Other financial investment activities	0.1	9.2%
Wholesale trade	0.1	9.1%
Hospitals	0.1	8.9%
Nursing and community care facilities	0.1	8.9%
Real estate	0.1	8.6%
Offices of physicians	0.1	8.5%
Individual and family services	0.1	8.2%
Retail – Food and beverage stores	0.1	8.1%
Retail – General merchandise stores	0.1	8.1%
Full-service restaurants	0.1	7.4%
Subtotal of Top 10 Industries	**0.9**	**85.2%**
Total of All Industries	**1.1**	**100%**

Table A11.2.2. Induced Jobs Supported by Induced Co-investment for the Financing Assistance Pilot Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	0.1	15.6%
Hospitals	0.1	15.3%
Real estate	0.1	14.8%
Offices of physicians	0.1	14.6%
Individual and family services	0.1	14.1%
Full-service restaurants	0.1	12.7%
Limited-service restaurants	0.1	12.7%
Total of All Industries	**0.6**	**100%**

Appendix 11.2. Financing Assistance Pilot Project Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Total Awarded Grant Funds	Match Funding	Total Proposal Cost	Line Item Expenses	Line Item Cost	State Funds	State Investment Percent of Total	Agency Match	Matching Funds Percent of Total	IMPLAN Industry	Local Purchase Percentage
2013 - 2016	Community Housing Development Corporation	$932,456	$426,801	$1,359,257	Personnel Costs	$632,585	$317,517	34.1%	$315,068	73.8%	Individual and Family Services	100%
					Marketing	$15,000	$10,350	1.1%	$4,650	1.1%	Advertising and related services	Default
					Travel	$12,560	$8,666	0.9%	$3,894	0.9%	Individual and Family Services	100%
					Equipment (Computer equipment, hardware, software, mobile phones, etc.)	$12,630	$6,315	0.7%	$6,315	1.5%	Retail Stores - Electronics and appliances	Default
					Indirect Costs	$130,661	$90,156	9.7%	$40,505	9.5%	Individual and Family Services	100%
					Office Expenses							100%
					Postage/Shipping	$2,300	$1,800	0.2%	$500	0.1%	Postal service	Default
					Printing	$4,400	$3,300	0.4%	$1,100	0.3%	Printing	Default
					Supplies	$3,153	$2,400	0.3%	$753	0.2%	Retail Stores - Miscellaneous	Default
					Telephone	$2,669	$2,200	0.2%	$469	0.1%	Wired Telecommunications Carriers	Default
					Loan Committee Meetings	$2,400	$-	0.0%	$2,400	0.6%	Individual and Family Services	Default
					Credit Report Fees	$1,499	$1,127	0.1%	$372	0.1%	Business support services	Default
					Borrower Incentives	$2,500	$1,725	0.2%	$775	0.2%	Retail Stores - Motor vehicle and parts	Default
					Reserve (EVSE)	$75,000	$75,000	8.0%	$-	0.0%	All Other Miscellaneous Electrical Equipment and Component Manufacturing	Default
					ARB Price Buy-Down	$300,000	$300,000	32.2%	$-	0.0%	Retail Stores - Motor vehicle and parts	Default
					Record Retention/Transfer	$1,900	$1,900	0.2%	$-	0.0%	Individual and Family Services	100%
					Loan Loss Reserve	$160,000	$110,000	11.8%	$50,000	11.7%	Monetary authorities and depository credit intermediation activities	Default

Summary of Industry-Level Investments for the Financing Assistance Pilot Project

Total State Funds	Total Match Funds	Industry	Weighted Local Purchase Rates	Percent of Total State Funds	Percent of Total Matching Funds
$10,350	$4,650	Advertising and related services	Default	1.1%	1.1%
$75,000	$-	All other Miscellaneous Electrical Equipment and Component Manufacturing	Default	8.0%	0.0%
$1,127	$372	Business support services	Default	0.1%	0.1%
$418,239	$361,867	Individual and Family Services	100%	44.9%	84.8%
$110,000	$50,000	Monetary authorities and depository credit intermediation activities	Default	11.8%	11.7%
$1,800	$500	Postal service	Default	0.2%	0.1%
$3,300	$1,100	Printing	Default	0.4%	0.3%
$6,315	$6,315	Retail Stores - Electronics and appliances	Default	0.7%	1.5%
$2,400	$753	Retail Stores - Miscellaneous	Default	0.3%	0.2%
$301,725	**$775**	Retail Stores - Motor vehicle and parts	Default	32.4%	0.2%
$2,200	**$469**	Wired Telecommunications Carriers	Default	0.2%	0.1%
$932,456	**$426,801**			100.0%	100.0%

12. Zero-Emission Truck and Bus Pilot Projects

12.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by Zero-Emission Truck and Bus Pilot Projects. See **Table A12.1.1** and **Table A12.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A12.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Zero-Emission Truck and Bus Pilot Projects

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	6.3	26.6%
Management of companies and enterprises	1.4	5.9%
Truck transportation	1.3	5.5%
Employment services	1.1	4.6%
Real estate	0.7	3.1%
Investigation and security services	0.5	2.3%
Business support services	0.5	2.3%
Services to buildings	0.5	1.9%
Turned product and screw, nut, and bolt manufacturing	0.4	1.6%
Management consulting services	0.4	1.6%
Subtotal of Top 10 Industries	**13.2**	**55.4%**
Total of All Industries	**23.9**	**100%**

Table A12.1.2. Indirect Jobs Supported by Induced Co-investment for the Zero-Emission Truck and Bus Pilot Projects

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	4.9	14.9%
Insurance agencies, brokerages, and related activities	1.9	5.9%
Employment services	1.6	5.0%
Services to buildings	1.6	5.0%
Maintenance and repair construction of nonresidential structures	1.2	3.5%
Nondepository credit intermediation and related activities	1.1	3.2%
Management consulting services	1.0	3.2%
Management of companies and enterprises	1.0	3.2%
Truck transportation	1.0	3.2%
Real estate	0.9	2.8%
Subtotal of Top 10 Industries	**16.4**	**49.8%**
Total of All Industries	**32.9**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A12.2.1** and **Table A12.2.2** for a summary of the induced jobs supported by Zero-Emission Truck and Bus Pilot Projects, as reported in FTE job-years.

Table A12.2.1. Induced Jobs Supported by California Climate Investment Funding for the Zero-Emission Truck and Bus Pilot Projects

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.1	5.0%
Real estate	1.1	5.0%
Limited-service restaurants	1.0	4.6%
Hospitals	0.9	4.3%
Individual and family services	0.9	3.9%
Wholesale trade	0.8	3.5%
Offices of physicians	0.7	3.3%
Retail – Food and beverage stores	0.6	2.7%
Retail – General merchandise stores	0.6	2.7%
Other financial investment activities	0.6	2.6%
Subtotal of Top 10 Industries	**8.3**	**37.7%**
Total of All Industries	**22.0**	**100%**

Table A12.2.2. Induced Jobs Supported by Induced Co-investment for the Zero-Emission Truck and Bus Pilot Projects

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.6	4.9%
Real estate	1.6	4.8%
Limited-service restaurants	1.4	4.4%
Hospitals	1.3	4.1%
Wholesale trade	1.2	3.6%
Individual and family services	1.1	3.5%
Offices of physicians	1.0	3.1%
Other financial investment activities	0.9	2.7%
Retail – Food and beverage stores	0.9	2.7%
Retail – General merchandise stores	0.9	2.7%
Subtotal of Top 10 Industries	**11.7**	**36.3%**
Total of All Industries	**32.2**	**100%**

Appendix 12.2. Truck and Bus Pilot Projects Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Grant Funds (Approved)	Grant Funds (Requested)	Matching Funds	Total Project Cost (From Application)	Line Item Expenses	Line Item Cost	State Funds (Proposed)	Matching Funds (Proposed)	IMPLAN Industry	Local Purchase Rate
FY 2014-2015	City of Porterville	City of Porterville Transit Electrification	$2,365,800	$9,516,422	$7,437,280	$16,953,702	Project Management:					
							Design Project and Prepare Project Manual	$140,000		$140,000	Transit and ground passenger transportation	100%
							Unspecified Project Management	$25,100		$25,100	Transit and ground passenger transportation	100%
							Green Power Project Management	$19,000		$19,000	Heavy duty truck manufacturing	100%
							Construction/Delivery/Installation:					
							Construction (New utility Service, Underground Work, Electrical, Solar, etc.)	$1,400,000		$1,400,000	Construction of new power and communication structures	Default
							Delivery and Installation of Charging Equipment	$10,000		$10,000	Heavy duty truck manufacturing	100%
							Delivery of Buses	$20,000		$20,000	Heavy duty truck manufacturing	100%
							Equipment:					
							Equipment - 5 single chargers	$195,300	$195,300		Heavy duty truck manufacturing	100%
							Equipment - 6 single chargers	$390,600	$390,600		Heavy duty truck manufacturing	100%
							Equipment - 10 GP EV350 Transit Buses	$9,241,792	$8,457,022	$784,770	Heavy duty truck manufacturing	100%
							Training:					
							Transit Operator Proficiency Training	$26,500		$26,500	Heavy duty truck manufacturing	100%
							Operational Costs:					
							Revenue Service bus Operators	$3,653,710		$3,653,710	Transit and ground passenger transportation	100%
							Transit Mechanic	$790,200		$790,200	Transit and ground passenger transportation	100%
							Spare Parts, Electrical Utilities	$456,000		$456,000	Transit and ground passenger transportation	100%
							Vehicle Insurance for 10 GP EV350	$112,000		$112,000	Transit and ground passenger transportation	100%
							In Plant Bus Inspection	$20,000	$20,000		Transit and ground passenger transportation	100%
							Administration (SJVAPCD)	$453,500	$453,500		Employment and payroll only (local government, non-education)	100%

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Grant Cycle	Applicant	Project Name	Grant Funds (Approved)	Grant Funds (Requested)	Matching Funds	Total Project Cost (From Application)	Line Item Expenses	Line Item Cost	State Funds (Proposed)	Matching Funds (Proposed)	IMPLAN Industry	Local Purchase Rate
FY 2014-2015	San Joaquin Valley Air Pollution Control District	The San Joaquin Valley Transit Electrification Project	$11,829,000	$13,416,215	$8,764,606	$22,180,821	Build and Deliver Zero Emission Buses	$10,203,495	$6,045,914	$4,157,581	Heavy duty truck manufacturing	86.67%
							Build, Deliver, and Install Charging Infrastructure	$4,404,609	$2,609,879	$1,794,730	Heavy duty truck manufacturing	100%
							Optimization/Revenue Service	$6,901,905	$4,089,611	$2,812,294	Heavy duty truck manufacturing	100%
							Reporting/Implementation	$603,730	$603,730		Employment and payroll only (local government, non-education)	100%
							Submission of Final Report	$67,081	$67,081		Employment and payroll only (local government, non-education)	100%
FY 2014-2015	SunLine Transit Agency	SunLine Fuel Cell Buses and Hydrogen Onsite Generation Refueling Station Pilot Commercial Deployment Project	$9,463,200	$12,586,791	$5,214,619	$17,801,410	Equipment					
							New Flyer Fuel Cell Bus (telematic included)	$6,998,400	$4,248,400	$2,750,000	Heavy duty truck manufacturing	0%
							Telematic Equipments for Baseline buses	$4,000	$4,000	$-	Broadcast and wireless communications equipment manufacturing	0.81%
							Hydrogenics Electrolyzer	$3,911,818	$3,911,818	$-	Motor vehicle parts manufacturing	0%
							Hydrogenics Compressor, Storage and Dispenser	$2,990,000	$2,990,000	$-	Motor vehicle parts manufacturing	0%
							Other Cost for Hydrogen Infrastructure (Site design, permits, station design, installation, commissioning, shipping, and support)	$1,432,573	$1,432,573	$-	Construction of new power and communication structures	Default
							Administration					
							Sunline Transit	$145,848	$-	$145,848	Transit and ground passenger transportation	100%
							Labor and Material Cost for 1 Year Deployment:					
							1 Year Deployment Cost for Sunline	$1,454,375	$-	$1,454,375	Transit and ground passenger transportation	100%
							Water for 5 buses for 1 year	$730	$-	$730	Water, sewage and other treatment and delivery systems	100%
							Utility for 5 buses for 1 year	$863,666	$-	$863,666	Electric Power Generation - Solar	100%
			$23,658,000	$35,519,428	$21,416,505			$56,935,933	$35,519,428	$21,416,505		

Summary of Industry-Level Investments for the Zero Emission Truck and Bus Pilot

Total State Funds	Total Matching Funds	Industry	Weighted Local Purchase Rates for State Funds	Weighted Local Purchase Rates for Matching Funds	Percent of Total State Funds (Excluding State Admin Costs)	Percent of Total State Funds (Including State Admin Costs)	Percent of Total Matching Funds
$1,432,573	$1,400,000	Construction of new power and communication structures	Default	Default	4.033%	3.807%	6.54%
$-	$863,666	Electric Power Generation - Solar	100%	100.00%	0.000%	0.000%	4.03%
$1,124,311	$-	Employment and payroll only (local government, non-education)	100%	100.00%	3.165%	2.988%	0.00%
$26,036,726	$12,374,876	Heavy duty truck manufacturing	80.59%	73.30%	73.303%	69.198%	57.78%
$20,000	$6,777,233	Transit and ground passenger transportation	100%	100.00%	0.056%	0.053%	31.64%
$-	$730	Water, sewage and other treatment and delivery systems	100%	99.90%	0.000%	0.000%	0.00%
$6,901,818	$-	Motor vehicle parts manufacturing	0%	0.00%	19.431%	18.343%	0.00%
$4,000	$-	Broadcast and wireless communications equipment manufacturing	0.81%	0.81%	0.011%	0.011%	0.00%
$1,000,000		Management consulting services				4.000%	
$400,000		Employment and payroll only (state government, non-education)				1.600%	
$36,919,428							

13. Multi-Source Facility Demonstration Project

13.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Multi-Source Facility Demonstration Project. See **Table A13.1.1** and **Table A13.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A13.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Multi-Source Facility Demonstration Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	8.2	19.6%
Employment services	2.4	5.7%
Management of companies and enterprises	2.1	5.0%
Truck transportation	1.8	4.3%
Real Estate	1.4	3.3%
Architectural, engineering, and related services	1.3	3.2%
Marketing research and all other miscellaneous professional, scientific, and technical services	1.2	3.0%
Management consulting services	0.9	2.3%
Services to buildings	0.9	2.2%
Accounting, tax preparation, bookkeeping, and payroll services	0.9	2.0%
Subtotal of Top 10 Industries	**21.1**	**50.5%**
Total of All Industries	**41.7**	**100%**

Table A13.1.2. Indirect Jobs Supported by Induced Co-investment for the Multi-Source Facility Demonstration Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Couriers and messengers	6.2	12.6%
Scenic and sightseeing transportation and support activities for transportation	4.4	9.0%
Wholesale trade	3.7	7.6%
Postal service	2.8	5.7%
Employment service	2.5	5.2%
Warehousing and storage	2.4	4.8%
Real estate	1.8	3.7%
Truck transportation	1.5	3.1%
Services to buildings	1.5	2.9%
Management of companies and enterprises	1.3	2.7%
Subtotal of Top 10 Industries	**28.3**	**57.2%**
Total of All Industries	**49.4**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A13.2.1** and **Table A13.2.2** for a summary of the induced jobs supported by the Multi-Source Facility Demonstration Project, as reported in FTE job-years.

Table A13.2.1. Induced Jobs Supported by California Climate Investment Funding for the Multi-Source Facility Demonstration Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	1.8	4.7%
Full-service restaurants	1.8	4.7%
Limited-service restaurants	1.7	4.5%
Hospitals	1.6	4.2%
Individual and family services	1.4	3.6%
Wholesale trade	1.3	3.5%
Offices of physicians	1.3	3.3%
Retail – Food and beverage stores	1.0	2.7%
Other financial investment activities	1.0	2.5%
Retail – General merchandise stores	0.9	2.4%
Subtotal of Top 10 Industries	**13.9**	**36.1%**
Total of All Industries	**38.5**	**100%**

Table A13.2.2. Induced Jobs Supported by Induced Co-investment for the Multi-Source Facility Demonstration Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	2.3	4.7%
Full-service restaurants	2.3	4.7%
Limited-service restaurants	2;1	4.4%
Hospitals	1.9	3.9%
Individual and family services	1.7	3.6%
Wholesale trade	1.6	3.4%
Offices of physicians	1.5	3.2%
Retail – Food and beverage stores	1.3	2.7%
Other financial investment activities	1.3	2.6%
Retail – General merchandise stores	1.2	2.5%
Subtotal of Top 10 Industries	**17.2**	**35.5%**
Total of All Industries	**48.4**	**100%**

Appendix 13.2. Multi Source Facility Demonstration Project Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Match Funding	Total Proposal Cost	Line Item Expenses	Line Item Cost	State Funds	Matching Funds	IMPLAN Industry	Local Purchase Rate
2014 - 2015	Los Angeles Harbor Department (Port of Los Angeles)	Port of Los Angeles Green Omni Terminal Project	$15,057,200	12,092,000	$27,149,200	Project Management and Administration (Burns & McDonnell)	$750,000	$750,000		Architectural, engineering, and related services	100%
						1 Megawatt Solar Photovoltaic System (PermaCity)	$3,887,000	$840,000	$3,047,000	Solar PV Basket	100%
						2.6 Megawatt-hour Battery Storage System:					
						Battery System (BYD)	$1,300,000	$1,300,000		Heavy duty truck manufacturing	100%
						Installation (Burns & McDonnell)	$420,000	$420,000		Architectural, engineering, and related services	100%
						Energy Control System	$500,000	$500,000		Other electrical equipment and component manufacturing	Default (21.68%)
						Charging Equipment:					
						Charging Equipment (TransPower)	$205,000	$205,000		Heavy duty truck manufacturing	100%
						Charging Infrastructure (Burns & McDonnell)	$115,000	$115,000		Architectural, engineering, and related services	100%
						Lighting Control System	$40,000	$40,000		Other electrical equipment and component manufacturing	Default (21.68%)
						Engineering and Construction ...					
						Engineering (Burns & McDonnell)	$50,000	$50,000		Architectural, engineering, and related services	100%
						Commissioning ShoreCat System (Burns & McDonnell)	$60,000	$60,000		Architectural, engineering, and related services	100%
						Construction (Burns & McDonnell)	$1,051,200	$1,051,200		Construction of new power and communication structures	100%
						Wharf Crane Drive Upgrades (TMEIC)	$2,500,000		$2,500,000	Other electrical equipment and component manufacturing	0%
						ShoreCat on-dock vessel emissions capture and treatment system (CAEM)	$3,700,000	$3,700,000		Other industrial machinery manufacturing,	100%
						Electric Yard Tractors (Transpower and BYD)	$1,645,000	$1,445,000	$200,000	Heavy duty truck manufacturing	100%
						21-Ton Electric Forklifts (TransPower)	$2,188,000	$1,700,000	$488,000	Heavy duty truck manufacturing	100%
						Electric Top Handler (Transpower)	$1,767,000	$1,260,000	$507,000	Heavy duty truck manufacturing	100%
						On-Road Drayage Trucks (Transpower)	$1,105,000	$955,000	$150,000	Heavy duty truck manufacturing	100%
						Passenger Vehicle Solar Charger (Envision Solar)	$50,000	$50,000		Other electrical equipment and component manufacturing	100%
						Electric Passenger Bus (BYD)	$450,000	$450,000		Heavy duty truck manufacturing	100%
						Pasha Operator Labor (Pasha)	$5,200,000		$5,200,000	Other support activities for transportation	100%
						Data Collection and Analysis (UC Riverside)	$126,000	$126,000		Scientific research and development services	100%
						Data Loggers (I/O Controls)	$40,000	$40,000		Other electronic component manufacturing	100%

Continues next page.

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Match Funding	Total Proposal Cost	Line Item Expenses	Line Item Cost	State Funds	Matching Funds	IMPLAN Industry	Local Purchase Rate
2014 - 2015	San Bernardino Associated Governments	Multi-Class Heavy-Duty Zero-Emission Truck Development Project for Intermodal and Warehouse Facilities	$9,100,800	$10,212,171	$19,312,971	Equipment and Installation:					
						Phase 1 Yard Trucks (BYD)	$2,700,000	$2,700,000		Heavy duty truck manufacturing	100%
						Phase 1 Service Trucks (BYD)	$450,000	$450,000		Heavy duty truck manufacturing	100%
						Phase 2 Yard Trucks (BYD)	$4,200,000	$4,200,000		Heavy duty truck manufacturing	100%
						Phase 2 Service Trucks (BYD)	$150,000	$150,000		Heavy duty truck manufacturing	100%
						Electrical Service - Power Transformer, Panel Boards, Breakers, Switchgear, Conduit, and Conductors	$385,000	$385,000		Power, distribution, and specialty transformer manufacturing	Default 22.77%
						Equipment pads and bollards	$33,000	$33,000		Hardware Manufacturing	Default 16.07%
						Directional Boring - Hope Pipe and Conductors	$110,000	$110,000		Wiring device manufacturing	Default 45.81%
						Automatic Transfer Switches	$165,000	$165,000		Switchgear and switchboard apparatus manufacturing	Default 20.59%
						Electrical Panels	$20,000	$20,000		Switchgear and switchboard apparatus manufacturing	Default 20.59%
						Underground wiring and conduit terminals	$15,000	$15,000		Wiring device manufacturing	Default 45.81%
						Additional Materials	$5,000	$5,000		Other electrical equipment and component manufacturing	Default 21.68%
						Installation Labor	$348,800	$348,800		Construction of new power and communication structures	100%
						Engineering Labor	$110,000	$110,000		Architectural, engineering, and related services	100%
						Contingency Funding		(distributed above)			N/A
						Data Loggers (I/O Controls)	$54,000	$54,000		Other electronic component manufacturing	100%
						Admin Funds (CALSTART)	$355,000	$355,000		Environmental and other technical consulting services	100%
						Admin/Project Management (in-kind):					
						SANBAG	$148,400		$148,400	Employment and payroll only (local government, non-education)	100%
						BYD	$972,400		$972,400	Heavy duty truck manufacturing (BYD)	100%
						BNSF	$26,883		$26,883	Transport by rail	100%
						Daylight	$11,570		$11,570	Transport by truck	100%
						CALSTART	$19,000		$19,000	Environmental and other technical consulting services	100%
						Driver Training (Eagle, Parsec, Daylight)	$61,364		$61,364	Transport by truck	100%
						Maintenance Training (Eagle, Parsec, Daylight)	$18,180		$18,180	Transport by truck	100%
						Charging Equipment (BYD)	$460,000		$460,000	Heavy duty truck manufacturing (BYD)	100%
						Phase 1 Truck Rework (BYD)	$157,500		$157,500	Heavy duty truck manufacturing (BYD)	100%
						Equipment Transport (BYD)	$25,500		$25,500	Heavy duty truck manufacturing (BYD)	100%
						Maintenance - in-kind (BYD)	$187,500		$187,500	Heavy duty truck manufacturing (BYD)	100%
						Maintenance (BYD)	$146,261		$146,261	Heavy duty truck manufacturing (BYD)	100%
						SCE Charge for upgrading supply	$20,000		$20,000	Electric power generation, transmission, and distribution	100%
						Fuel Cost (i.e., electricity)	$536,231		$536,231	Electric power generation, transmission, and distribution	100%
						Driver Cost	$7,403,268		$7,403,268	Transport by truck	100%
						Data Logger Web Service (I/O Controls)	$18,114		$18,114	Other electronic component manufacturing	100%
			$24,158,000	**$22,304,171**	**$46,462,171**						

Summary of Industry-Level Investments for the Advanced Technology Freight Demonstration Project. Multi Source Facility

Total State Funds	Total Proposed Matching Funds	Total Combined Investment	Industry	Weighted State Funds Local Purchase Rate	Weighted Match Funds Local Purchase Rate	Percent of Total State Funds (Excluding Data Analysis Costs)	Percent of Total State Funds (Including Data Analysis Costs)	Percent of Total Matching Funds
$1,505,000	$-	$1,505,000	Architectural, engineering, and related services	100%	100%	6.2%	6.0%	0.0%
$126,000	$-	$126,000	Scientific research and development services	100%	100%	0.5%	0.5%	0.0%
$-	$148,400	$148,400	Employment and payroll only (local government, non-education)	N/A	100%	0.0%	0.0%	0.7%
$14,815,000	$3,294,161	$18,109,161	Heavy duty truck manufacturing	100%	100%	61.3%	58.8%	14.8%
$-	$5,200,000	$5,200,000	Other support activities for transportation	N/A	100%	0.0%	0.0%	23.3%
$1,400,000	$-	$1,400,000	Construction of new power and communication structures	100%	100%	5.8%	5.6%	0.0%
$595,000	$2,500,000	$3,095,000	Other electrical equipment and component manufacturing	28%	0%	2.5%	2.4%	11.2%
$94,000	$18,114	$112,114	Other electronic component manufacturing	100%	100%	0.4%	0.4%	0.1%
$3,700,000	$-	$3,700,000	Other industrial machinery manufacturing,	100%	N/A	15.3%	14.7%	0.0%
$840,000	$3,047,000	$3,887,000	Solar PV Basket	100%	100%	3.5%	3.3%	13.7%
$-	$556,231	$556,231	Electric power generation, transmission, and distribution	N/A	100%	0.0%	0.0%	2.5%
$355,000	$19,000	$374,000	Environmental and other technical consulting services	100%	100%	1.5%	1.4%	0.1%
$33,000	$-	$33,000	Hardware Manufacturing	16%	N/A	0.1%	0.1%	0.0%
$385,000	$-	$385,000	Power, distribution, and specialty transformer manufacturing	23%	N/A	1.6%	1.5%	0.0%
$185,000	$-	$185,000	Switchgear and switchboard apparatus manufacturing	21%	N/A	0.8%	0.7%	0.0%
$-	$26,883	$26,883	Transport by rail	N/A	100%	0.0%	0.0%	0.1%
$-	$7,494,382	$7,494,382	Transport by truck	N/A	100%	0.0%	0.0%	33.6%
$125,000	$-	$125,000	Wiring device manufacturing	46%	N/A	0.5%	0.5%	0.0%
			Management consulting services	Default (71.6%)			4.1%	
$24,158,000	**$22,304,171**	**$46,462,171**						

14. Zero-Emission Drayage Truck Demonstration Project

14.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Zero-Emission Drayage Truck Demonstration Project. See **Table A14.1.1** and **Table A14.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A14.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Zero-Emission Drayage Truck Demonstration Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	2.6	26.2%
Management of companies and enterprises	0.6	5.7%
Truck transportation	0.6	5.7%
Employment services	0.5	5.5%
Real Estate	0.4	3.7%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	2.9%
Investigation and security services	0.3	2.8%
Business support services	0.3	2.8%
Turned product and screw, nut, and bolt manufacturing	0.2	2.0%
Management consulting services	0.2	1.9%
Subtotal of Top 10 Industries	**5.9**	**59.1%**
Total of All Industries	**9.9**	**100%**

Table A14.1.2. Indirect Jobs Supported by Induced Co-investment for the Zero-Emission Drayage Truck Demonstration Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1.4	33.1%
Management of companies and enterprises	0.3	6.5%
Truck transportation	0.3	6.5%
Real estate	0.2	4.2%
Employment service	0.2	4.2%
Motor vehicle steering, suspension component (except spring), and brake systems manufacturing	0.1	2.3%
Machine shops	0.1	2.3%
Turned product and screw, nut, and bolt manufacturing	0.1	2.3%
Other rubber product manufacturing	0.1	2.2%
Paperboard container manufacturing	0.1	2.2%
Subtotal of Top 10 Industries	**2.9**	**65.7%**
Total of All Industries	**4.4**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A14.2.1** and **Table A14.2.2** for a summary of the induced jobs supported by the Zero-Emission Drayage Truck Demonstration Project, as reported in FTE job-years.

Table A14.2.1. Induced Jobs Supported by California Climate Investment Funding for the Zero-Emission Drayage Truck Demonstration Project

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.9	5.0%
Full-service restaurants	0.6	4.9%
Hospitals	0.6	4.4%
Limited-service restaurants	0.5	4.3%
Wholesale trade	0.5	3.8%
Offices of physicians	0.4	3.5%
Individual and family services	0.4	3.4%
Other financial investment activities	0.4	3.0%
Retail – Food and beverage stores	0.3	2.7%
Retail – General merchandise stores	0.3	2.7%
Subtotal of Top 10 Industries	**4.8**	**37.6%**
Total of All Industries	**12.8**	**100%**

Table A14.2.2. Induced Jobs Supported by Induced Co-investment for the Zero-Emission Drayage Truck Demonstration Project

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.2	7.7%
Hospitals	0.2	6.2%
Real estate	0.2	6.0%
Individual and family services	0.2	5.7%
Limited-service restaurants	0.2	5.1%
Other financial investment activities	0.1	3.2%
Monetary authorities and depository credit intermediation	0.1	3.2%
Insurance agencies, brokerages, and related activities	0.1	3.2%
Wholesale trade	0.1	3.1%
Nursing and community care facilities	0.1	3.1%
Subtotal of Top 10 Industries	**1.4**	**46.3%**
Total of All Industries	**3.1**	**100%**

Appendix 14.2. Zero-Emission Drayage Truck Demonstration Project Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Match Funding	Total Proposal Cost	Line Item Expenses	Line Item Cost	State Funds	Match Funds (OEMS)	Match Funds (SCAQMD / Partners)	IMPLAN Industry	Local Purchase Rate
2014-2105	South Coast Air Quality Management District (SCAQMD): Including $900k in EVSE in installation	California Collaborative Advanced Technology Drayage Truck Demonstration	$23,658,500	$32,927,940	40,122,470	BYD battery electric drayage trucks (up to 25)	$8,717,400	$5,545,064	$934,150	$2,238,186	Heavy duty truck manufacturing	100%
						Kenworth plug-in hybrid electric trucks (4)	$9,518,739	$5,601,764	$549,750	$3,367,225	Heavy duty truck manufacturing	0%
						Peterbilt Motors battery electric trucks (up to 12)	$10,781,340	$5,545,064	$2,950,090	$2,286,186	Heavy duty truck manufacturing	0%
						Volvo diesel hybrid electric trucks (2)	$9,233,447	$5,545,064	$1,403,449	$2,284,934	Heavy duty truck manufacturing	0%
						SCAQMD Administration Costs	$971,544	$971,544	$-	$-	Employment and payroll only (state & local govt, non-education)	100%
						EVSE infrastructure	$900,000	$450,000	$225,000	$225,000	Construction of new power and communication structures	Default
						Total	**$23,658,500**	**$6,062,439**	**$10,401,531**			

Summary of Industry-Level Investments for the Advanced Technology Freight Demonstration Project. Drayage Trucks

Total State Funds	Match Funds (OEMS)	Match Funds (SCAQMD / Partners)	Total	Industry	Weighted State Funds Local Purchase Rate	Weighted Matching Funds Local Purchase Rate	Percent of Total State Funds (Excluding Data Analysis Costs)	Percent of Total State Funds (Including Data Analysis Costs)	Percent of Total Matching Funds
$22,236,956	$5,837,439	$10,176,531	$38,250,926	Heavy duty truck manufacturing	24.9%	19.8%	94.0%	90.0%	97.3%
$971,544	$-	$-	$971,544	Employment and payroll only (local government, non-education)	100%	100%	4.1%	3.9%	0.0%
$450,000	$225,000	$225,000	$900,000	Construction of new power and communication structures	Default	Default	1.9%	1.8%	2.7%
$1,000,000	$-	$-	$1,000,000	Management consulting services	Default	Default	N/A	4.2%	N/A
$24,658,500	**$6,062,439**	**$10,401,531**							

Summary of Industry-Level Investments for the Advanced Technology Freight Demonstration Project. Multi Source Facility

Total State Funds	Total Proposed Matching Funds	Total Combined Investment	Industry	Weighted State Funds Local Purchase Rate	Weighted Match Funds Local Purchase Rate	Percent of Total State Funds (Excluding Data Analysis Costs)	Percent of Total State Funds (Including Data Analysis Costs)	Percent of Total Matching Funds
$1,505,000	$-	$1,505,000	Architectural, engineering, and related services	100%	100%	6.2%	6.0%	0.0%
$126,000	$-	$126,000	Scientific research and development services	100%	100%	0.5%	0.5%	0.0%
$-	$148,400	$148,400	Employment and payroll only (local government, non-education)	N/A	100%	0.0%	0.0%	0.7%
$14,815,000	$3,294,161	$18,109,161	Heavy duty truck manufacturing	100%	100%	61.3%	58.8%	14.8%
$-	$5,200,000	$5,200,000	Other support activities for transportation	N/A	100%	0.0%	0.0%	23.3%
$1,400,000	$-	$1,400,000	Construction of new power and communication structures	100%	100%	5.8%	5.6%	0.0%
$595,000	$2,500,000	$3,095,000	Other electrical equipment and component manufacturing	28%	0%	2.5%	2.4%	11.2%
$94,000	$18,114	$112,114	Other electronic component manufacturing	100%	100%	0.4%	0.4%	0.1%
$3,700,000	$-	$3,700,000	Other industrial machinery manufacturing,	100%	N/A	15.3%	14.7%	0.0%
$840,000	$3,047,000	$3,887,000	Solar PV Basket	100%	100%	3.5%	3.3%	13.7%
$-	$556,231	$556,231	Electric power generation, transmission, and distribution	N/A	100%	0.0%	0.0%	2.5%
$355,000	$19,000	$374,000	Environmental and other technical consulting services	100%	100%	1.5%	1.4%	0.1%
$33,000	$-	$33,000	Hardware Manufacturing	16%	N/A	0.1%	0.1%	0.0%
$385,000	$-	$385,000	Power, distribution, and specialty transformer manufacturing	23%	N/A	1.6%	1.5%	0.0%
$185,000	$-	$185,000	Switchgear and switchboard apparatus manufacturing	21%	N/A	0.8%	0.7%	0.0%
$-	$26,883	$26,883	Transport by rail	N/A	100%	0.0%	0.0%	0.1%
$-	$7,494,382	$7,494,382	Transport by truck	N/A	100%	0.0%	0.0%	33.6%
$125,000	$-	$125,000	Wiring device manufacturing	46%	N/A	0.5%	0.5%	0.0%
			Management consulting services	Default (71.6%)			4.1%	
$24,158,000	**$22,304,171**	**$46,462,171**						

15. Single Family/Small Multi-Family Energy Efficiency and Solar Water Heating

15.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Single Family/Small Multi-Family Energy Efficiency and Solar Water Heating program. See **Table A15.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A15.1. Indirect Jobs Supported by the Single Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail – Clothing and clothing accessories stores	16.1	10.3%
Retail – Nonstore retailers	15.0	9.6%
Real estate	11.0	7.1%
Retail – Miscellaneous store retailers	10.0	6.4%
Wholesale trade	7.4	4.7%
Retail – Health and personal care stores	6.7	4.3%
Employment services	5.1	3.3%
Architectural, engineering, and related services	4.7	3.0%
Retail – General merchandise stores	4.3	2.7%
Truck transportation	3.4	2.2%
Subtotal of Top 10 Industries	**83.8**	**53.7%**
Total of All Industries	**156.0**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A15.2** for a summary of the induced jobs supported by the Single Family/Small Multi-Family Energy Efficiency and Solar Water Heating Program, as reported in FTE job-years.

Table A15.2. Induced Jobs Supported by the Single Family / Small Multi-Family Energy Efficiency and Solar Water Heating Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	6.3	4.7%
Real estate	6.2	4.6%
Limited-service restaurants	5.8	4.3%
Hospitals	5.4	4.0%
Individual and family services	4.8	3.5%
Wholesale trade	4.5	3.3%
Offices of physicians	4.1	3.1%
Retail – Food and beverage stores	3.5	2.6%
Other financial investment activities	3.5	2.6%
Retail – General merchandise stores	3.5	2.5%
Subtotal of Top 10 Industries	**47.5**	**35.2%**
Total of All Industries	**135.0**	**100%**
Induced Co-investment		
N/A	N/A	N/A

16. Single-Family Solar Photovoltaics

16.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Single-Family Solar Photovoltaics program. See **Table A16.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A16.1.1. Indirect Jobs Supported by the Single-Family Solar Photovoltaics Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment services	8.6	8.2%
Wholesale trade	7.6	7.2%
Architectural, engineering, and related services	7.2	6.9%
Real estate	5.0	4.8%
Accounting, tax preparation, bookkeeping, and related services	3.3	3.2%
Management consulting services	3.0	2.9%
Marketing research and all other miscellaneous professional, scientific, and technical services	2.6	2.4%
Other personal services	2.4	2.3%
Services to buildings	2.4	2.3%
Management of companies and enterprises	2.4	2.3%
Subtotal of Top 10 Industries	**44.5**	**42.4%**
Total of All Industries	**104.8**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A16.2** for a summary of the induced jobs supported by Single-Family Solar PV, as reported in FTE job-years.

Table A16.2.1. Induced Jobs Supported by the Single-Family Solar Photovoltaics Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	7.3	4.7%
Real estate	7.2	4.6%
Limited-service restaurants	6.7	4.3%
Hospitals	6.1	3.9%
Individual and family services	5.5	3.5%
Wholesale trade	5.3	3.4%
Offices of physicians	4.8	3.1%
Retail – Food and beverage stores	4.1	2.6%
Other financial investment activities	4.0	2.6%
Retail – General merchandise stores	3.9	2.5%
Subtotal of Top 10 Industries	**54.7**	**35.2%**
Total of All Industries	**155.6**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 16.2. Low Income Weatherization Program Detailed Summary of Modeling Inputs

Project Name	Expenditure Type	IMPLAN Industry	Percent of Total State Funds	Percent of Grantee Budget
Single Family / Small Multi Family Energy Efficiency and Solar Water Heating	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Direct Costs - Weatherization and Solar Water Heating	Maintenance & Repair Construction of Residential Structures	73.22%	77.65%
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
Single Family Solar Photovoltaics	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Direct Costs - Solar PV Installation	Solar basket	73.22%	77.65%
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
Large Multi Family Energy Efficiency and Renewables	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
	Local Direct Costs		73.22%	77.65%
	Local Direct Costs - Weatherization	Maintenance & Repair Construction of Residential Structures	36.61%	38.83%
	Local Direct Costs - Solar PV Installation	Solar basket	36.61%	38.83%

17. Large Multi-Family Energy Efficiency and Renewables

17.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Large Multi-Family Energy Efficiency and Renewables Program. See **Table A17.1.1** and **Table A17.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A17.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Large Multi-Family Energy Efficiency and Renewables Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail – Clothing and clothing accessories stores	4.2	7.4%
Retail – Nonstore retailers	3.9	7.0%
Employment services	3.0	5.3%
Wholesale trade	2.9	5.1%
Real Estate	2.7	4.8%
Retail – Miscellaneous store retailers	2.7	4.7%
Architectural, engineering, and related services	2.3	4.0%
Retail – Health and personal care stores	1.7	3.0%
Accounting, tax preparation, bookkeeping, and payroll services	1.6	2.8%
Management consulting services	1.2	2.2%
Subtotal of Top 10 Industries	**26.3**	**46.4%**
Total of All Industries	**56.6**	**100%**

Table A17.1.2. Indirect Jobs Supported by Induced Co-investment for the Large Multi-Family Energy Efficiency and Renewables Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Retail – Clothing and clothing accessories stores	0.9	9.7%
Retail – Nonstore retailers	0.8	8.8%
Wholesale trade	0.7	7.6%
Retail – Miscellaneous store retailers	0.5	5.8%
Architectural, engineering, and related services	0.5	5.4%
Real estate	0.4	4.1%
Employment services	0.4	4.1%
Retail – Health and personal care stores	0.3	3.9%
Truck transportation	0.3	3.2%
Retail – General merchandise stores	0.3	2.9%
Subtotal of Top 10 Industries	**4.9**	**55.7%**
Total of All Industries	**8.8**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.) See **Table A17.2.1** and **Table A17.2.2** for a summary of the induced jobs supported by the Large Multi-Family Energy Efficiency and Renewables Program, as reported in FTE job-years.

Table A17.2.1. Induced Jobs Supported by California Climate Investment Funding for the Large Multi-Family Energy Efficiency and Renewables Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	2.9	4.8%
Real estate	2.8	4.7%
Limited-service restaurants	2.7	4.4%
Hospitals	2.5	4.0%
Individual and family services	2.2	3.6%
Wholesale trade	2.1	3.5%
Offices of physicians	1.9	3.1%
Retail – Food and beverage stores	1.6	2.7%
Other financial investment activities	1.6	2.6%
Retail – General merchandise stores	1.5	2.6%
Subtotal of Top 10 Industries	**21.7**	**35.9%**
Total of All Industries	**60.5**	**100%**

Table A17.2.2. Induced Jobs Supported by Induced Co-investment for the Large Multi-Family Energy Efficiency and Renewables Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.5	5.3%
Real estate	0.5	5.0%
Limited-service restaurants	0.4	4.3%
Hospitals	0.4	4.1%
Individual and family services	0.3	3.8%
Other financial investment activities	0.3	3.2%
Wholesale trade	0.3	3.2%
Nursing and community care facilities	0.3	3.1%
Offices of physicians	0.3	3.0%
Retail – Food and beverage stores	0.3	2.8%
Subtotal of Top 10 Industries	**3.4**	**37.7%**
Total of All Industries	**9.1**	**100%**

Appendix 17.2. Low Income Weatherization Program Detailed Summary of Modeling Inputs

Project Name	Expenditure Type	IMPLAN Industry	Percent of Total State Funds	Percent of Grantee Budget
Single Family / Small Multi Family Energy Efficiency and Solar Water Heating	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Direct Costs - Weatherization and Solar Water Heating	Maintenance & Repair Construction of Residential Structures	73.22%	77.65%
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
Single Family Solar Photovoltaics	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Direct Costs - Solar PV Installation	Solar basket	73.22%	77.65%
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
Large Multi Family Energy Efficiency and Renewables	State Administration	Employment and payroll only (state government)	5.71%	0
	Local Indirect Costs	Grant making, giving, and social advocacy organizations	21.07%	22.35%
	Local Direct Costs		73.22%	77.65%
	Local Direct Costs - Weatherization	Maintenance & Repair Construction of Residential Structures	36.61%	38.83%
	Local Direct Costs - Solar PV Installation	Solar basket	36.61%	38.83%

18. Dairy Digester Research and Development Program

18.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Dairy Digester Research and Development Program. See **Table A18.1.1** and **Table A18.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A18.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Dairy Digester Research and Development Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1.0	9.4%
Architectural, engineering, and related services	0.9	8.4%
Employment services	0.8	8.1%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.6	5.6%
Management consulting services	0.5	4.7%
Real Estate	0.5	4.5%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	2.8%
Management of companies and enterprises	0.3	2.8%
Truck transportation	0.3	2.8%
Services to buildings	0.3	2.7%
Subtotal of Top 10 Industries	**5.3**	**51.7%**
Total of All Industries	**10.2**	**100%**

Table A18.1.2. Indirect Jobs Supported by Induced Co-investment for the Dairy Digester Research and Development Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	2.2	9.1%
Architectural, engineering, and related services	2.0	8.2%
Employment services	1.7	7.1%
Marketing research and all other miscellaneous professional, scientific, and technical services	1.2	5.1%
Real estate	0.9	3.8%
Management consulting services	0.9	3.5%
Management of companies and enterprises	0.8	3.1%
Truck transportation	0.7	2.7%
Full-service restaurants	0.6	2.6%
Accounting, tax preparation, bookkeeping, and payroll services	0.6	2.3%
Subtotal of Top 10 Industries	**11.5**	**47.5%**
Total of All Industries	**24.3**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A18.2.1** and **Table A18.2.2** for a summary of the induced jobs supported by the Dairy Digester Research and Development Program, as reported in FTE job-years.

Table A18.2.1. Induced Jobs Supported by California Climate Investment Funding for the Dairy Digester Research and Development Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	0.7	5.0%
Full-service restaurants	0.7	4.8%
Limited-service restaurants	0.6	4.3%
Hospitals	0.6	3.8%
Individual and family services	0.5	3.5%
Wholesale trade	0.5	3.3%
Offices of physicians	0.4	3.0%
Retail – Food and beverage stores	0.4	2.9%
All other food and drinking places	0.4	2.7%
Other financial investment activities	0.4	2.6%
Subtotal of Top 10 Industries	**5.3**	**35.9%**
Total of All Industries	**14.7**	**100%**

Table A18.2.2. Induced Jobs Supported by Induced Co-investment for the Dairy Digester Research and Development Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.6	4.6%
Real estate	1.6	4.6%
Limited-service restaurants	1.5	4.4%
Hospitals	1.3	3.9%
Individual and family services	1.2	3.6%
Other financial investment activities	1.2	3.4%
Wholesale trade	1.1	3.2%
Nursing and community care facilities	0.9	2.6%
Offices of physicians	0.9	2.5%
Retail – Food and beverage stores	0.9	2.5%
Subtotal of Top 10 Industries	**12.0**	**35.4%**
Total of All Industries	**33.7**	**100%**

Appendix 18.2. Dairy Digester Research and Development Program Detailed Summary of Modeling Inputs

Project Name	Total Awarded Grant Funds	Line Item Expenses	IMPLAN Industry	Line Item Cost	Percent of Total State Funds	Percent of Grantee Budget
Dairy Digester Research Grants	$446,493	State Administration	Employment and payroll only (state government)		3.3%	0.0%
		Local Indirect Costs	Grant making, giving, and social advocacy organizations		0.0%	0.0%
		Local Direct Costs			96.7%	100.0%
		Local Direct Costs - Cement Work, Piping, Installation, Excavating/ Grading, Component Installation	Construction of new power and communication structures	$103,542	22.4%	23.2%
		Local Direct Costs - Cover	Textile Bag & Canvas Mills	$8,978	1.9%	2.0%
		Local Direct Costs - Digester Tank	Textile Bag & Canvas Mills	$119,889	26.0%	26.9%
		Local Direct Costs - Gas Pipes	Heating Equipment, Except Warm Air Furnaces	$25,727	5.6%	5.8%
		Local Direct Costs - Manure Pump and Gas Pump/Meter	Pump and pumping equipment manufacturing	$16,210	3.5%	3.6%
		Local Direct Costs - Engine-generator	Power, distribution, and specialty transformer manufacturing	$125,456	27.2%	28.1%
		Local Direct Costs - Architectural & Engineering Services	Architectural, engineering, and related services	$46,691	10.1%	10.5%
				$446,493		

19. State Water Efficiency and Enhancement Program

19.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the State Water Efficiency and Enhancement Program (SWEEP). See **Table A19.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A19.1. Indirect Jobs Supported by SWEEP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	8.0	12.3%
Retail – Clothing and clothing accessories stores	3.7	5.7%
Retail – Nonstore retailers	3.3	5.1%
Retail – Miscellaneous store retailers	2.3	3.6%
Truck transportation	2.3	3.5%
Management of companies and enterprises	2.0	3.1%
Real estate	1.9	3.0%
Employment services	1.6	2.5%
Other electronic component manufacturing	1.6	2.4%
Retail – General merchandise stores	1.5	2.4%
Subtotal of Top 10 Industries	**28.3**	**43.5%**
Total of All Industries	**64.9**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A19.2** for a summary of the induced jobs supported by the State Water Efficiency and Enhancement Program, as reported in FTE job-years.

Table A19.2. Induced Jobs Supported by SWEEP

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	3.2	4.8%
Real estate	3.2	4.8%
Limited-service restaurants	2.9	4.3%
Hospitals	2.7	4.1%
Individual and family services	2.4	3.6%
Wholesale trade	2.3	3.5%
Offices of physicians	2.1	3.1%
Retail – Food and beverage stores	1.8	2.7%
Other financial investment activities	1.7	2.6%
Retail – General merchandise stores	1.7	2.6%
Subtotal of Top 10 Industries	**24.1**	**36.2%**
Total of All Industries	**66.6**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 19.2. State Water Efficiency and Enhancement Program Detailed Summary of Modeling Inputs

Project* Industry Matrix (Avg. Distribution													
		IMPLAN Code	Irrigation scheduling: 75% Other Electronic Component Manufacturing 25 % Maintenance & repair construction of nonresidential structures	Micro Irrigation: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Pump Efficiency: 25% Pump and Pumping Equipment Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Soil Moisture Sensor: 25% Other Electronic Component Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Other - Renewable Energy (Solar): 25% Hardware Manufacture 25% All other Miscellaneous Electrical Equipment Manufacturing 25% Other Electronic Components Manufacturing 25% Construction of new power and communication structures	Other - Low Pressure System: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Open Ditch to Pipeline: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Pipeline Improvement: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Water Capture: 25% Metal Tank (heavy gauge) Manufacture 75% Maintenance & repair construction of nonresidential structures	Other - Water Reuse: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Total Number of Project Types	Reciprocal (for apportioning funds by project)
Project ID	**Project Name**	**Project Description**											
SWE10001	WYSIWYG Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10004	Triple K Orchards LLC	micro irrigation; pump efficiency; soil moisture sensors; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE10005	Terranova Ranch, Inc.	micro irrigation; pump efficiency	0	1	1	0	0	0	0	0	0	0	2	0.50
SWE10006	Dougherty Brothers	micro irrigation; pump efficiency	0	1	1	0	0	0	0	0	0	0	2	0.50
SWE10007	Costa Farms, Inc.	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE10009	Colliver Farms	soil moisture sensors; irrigation scheduling; micro irrigation	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE10010	American Farms, LLC	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE10011	Heavenly Avocado Ranch	other - renewable energy (solar)	0	0	0	0	1	0	0	0	0	0	1	1.00
SWE10012	Freitas Farms 1	soil moisture sensors; irrigation scheduling; micro irrigation; pump efficiency	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE10013	Sakakihara Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10015	Daniel Jackson Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10016	Mike Jackson Farms	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10017	David Jackson Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10018	Rick Jackson Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10019	Trent Jackson Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10022	Henry Pruitt Anderson, III & Betty Jean Anderson	micro irrigation; irrigation scheduling	1	1	0	0	0	0	0	0	0	0	2	0.50
SWE10023	Adagio Olive Farms	soil moisture sensors; irrigation scheduling; other - renewable energy (solar)	1	0	0	1	1	0	0	0	0	0	3	0.33
SWE10024	C AND E OTT FARMS LLC	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE10025	Braga Ranch Partnership	soil moisture sensors; irrigation scheduling; micro irrigation; pump efficiency	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE10026	Lock Agricultural Ventures, LLC	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE10027	Wade Jackson Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10028	Ty Muxlow Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10029	Broken Earth Winery	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10030	Dewlson Farm	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE10031	Bengard Ranch, LLC	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10034	Rancho Rendezvous Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10035	Nick Huerta	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10036	Fuentes Berry, LLC	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE10037	Byrd Cattle Company LLC	other - open ditch to pipeline; irrigation scheduling	1	0	0	0	0	0	1	0	0	0	2	0.50
SWE10038	R B Farms LLC	pump efficiency; irrigation scheduling; soil moisture sensors	1	0	1	1	0	0	0	0	0	0	3	0.33

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Appendix 19.2. State Water Efficiency and Enhancement Program Detailed Summary of Modeling Inputs

Project* Industry Matrix (Avg. Distribution													
		IMPLAN Code	Irrigation scheduling: 75% Other Electronic Component Manufacturing 25 % Maintenance & repair construction of nonresidential structures	Micro Irrigation: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Pump Efficiency: 25% Pump and Pumping Equipment Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Soil Moisture Sensor: 25% Other Electronic Component Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Other - Renewable Energy (Solar): 25% Hardware Manufacture 25% All other Miscellaneous Electrical Equipment Manufacturing 25% Other Electronic Components Manufacturing 25% Construction of new power and communication structures	Other - Low Pressure System: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Open Ditch to Pipeline: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Pipeline Improvement: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Water Capture: 25% Metal Tank (heavy gauge) Manufacture 75% Maintenance & repair construction of nonresidential structures	Other - Water Reuse: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Total Number of Project Types	Reciprocal (for apportioning funds by project)
Project ID	**Project Name**	**Project Description**											
SWE10040	Scott Raven Farms	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10041	Hope Family Vineyard	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10042	Jim Rossi DBA Four Oaks Farming	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10043	Reamer Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10047	Sun Drenched Farms	soil moisture sensors; irrigation; pump efficiency; micro irrigation; other - water capture	0	1	1	1	0	0	0	0	1	0	4	0.25
SWE10048	Clark Bros. Farming	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10049	Wm. Bolthouse Farms, Inc.	pump efficiency	0	0	1	0	0	0	0	0	0	0	1	1.00
SWE10050	Tony & Amie Azevedo	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10052	Theldor Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10055	Stone Ranch	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10056	Stone Family Limited Partnership	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10057	Pasatiempo Vineyards, LLC	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10059	Jon and Joy Lee	other - renewable energy (solar); other - water capture	0	0	0	0	1	0	0	0	1	0	2	0.50
SWE10060	Jackson Family Investments, LLC	other - KISSS subsurface irrigation; soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE10063	Six K's	micro irrigation; pump efficiency; other -renewable energy (solar)	0	1	1	0	1	0	0	0	0	0	3	0.33
SWE10064	Danell Brother Farms	micro irrigation; other - mulch	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10065	Amberglow Ranch	micro irrigation; other -renewable energy	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10067	Yangs Capital, LLC	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE10068	Kenneth L. Puryear	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10072	DP Farms	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10073	Netto West Farming	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10074	Mumma Brothers	soil moisture sensors; micro irrigation; pump efficiency; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE10079	David Santos Farming	micro irrigation; soil moisture sensors	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE10081	Sunny Acre Farming Inc	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10082	Kingsburg Citrus Farm Inc	soil moisture sensors; irrigation scheduling; pump efficiency; other - mulch	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE10084	Lagier Ranches, Inc.	micro irrigation; pump efficiency	0	1	1	0	0	0	0	0	0	0	2	0.50
SWE10085	Troy Jackson Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10087	Andy Muxlow Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE10090	Moniz Vineyards	micro irrigation; soil moisture sensors	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE10091	Yamamoto Brothers Farms	soil moisture sensors; micro irrigation; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE10092	Bobby Yamamoto Farms, Inc.	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE10093	Grapery, Inc.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50

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Appendix 19.2. State Water Efficiency and Enhancement Program Detailed Summary of Modeling Inputs

Project* Industry Matrix (Avg. Distribution													
		IMPLAN Code	Irrigation scheduling: 75% Other Electronic Component Manufacturing 25 % Maintenance & repair construction of nonresidential structures	Micro Irrigation: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Pump Efficiency: 25% Pump and Pumping Equipment Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Soil Moisture Sensor: 25% Other Electronic Component Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Other - Renewable Energy (Solar): 25% Hardware Manufacture 25% All other Miscellaneous Electrical Equipment Manufacturing 25% Other Electronic Components Manufacturing 25% Construction of new power and communication structures	Other - Low Pressure System: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Open Ditch to Pipeline: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Pipeline Improvement: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Water Capture: 25% Metal Tank (heavy gauge) Manufacture 75% Maintenance & repair construction of nonresidential structures	Other - Water Reuse: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Total Number of Project Types	Reciprocal (for apportioning funds by project)
Project ID	**Project Name**	**Project Description**											
SWE20001	Wm. Bolthouse Farms, Inc.	other - pipeline improvement	0	0	0	0	0	0	0	1	0	0	1	1.00
SWE20002	KG Vineyard Management	micro irrigation; pump efficiency; other -mulch	0	1	1	0	0	0	0	0	0	0	2	0.50
SWE20003	Rio Farms LLC	pump efficiency; micro irrigation; soil moisture sensors; other - pipeline improvement	0	1	1	1	0	0	0	1	0	0	4	0.25
SWE20004	Rio Blanco Dairy	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE20005	Oak Creek Ranch	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20006	Colusa Indian Community Council	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20007	Tayyeba Farms LLC	irrigation scheduling; soil moisture sensors	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20008	Haleakala Ranch	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20009	JJB Farms	pump efficiency; soil moisture sensors	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20010	Brandon Chapla	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20011	Vital Farmland LP	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20012	Stephens Ranch	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20013	Borzini Farms, Inc	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20014	OSR Enterprises Inc	pump efficiency; soil moisture sensors; irrigation scheduling;	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE20015	Jacob's Farm	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20016	Rio Viento Vineyards	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20017	The Cloverleaf Farm	soil moisture sensors; other - renewable energy (solar); other - water reuse	0	0	0	1	1	0	0	0	0	1	3	0.33
SWE20018	Grivey Brothers, Inc.	micro irrigation; other- renewable energy (solar)	0	1	0	0	1	0	0	0	0	0	2	0.50
SWE20019	Scheid Vineyards, Inc.	soil moisture sensors; pump efficiency; micro irrigation	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20020	Altman Plants	energy efficiency; other - water reuse	0	0	0	0	0	0	0	0	0	1	1	1.00
SWE20021	Terranova Ranch, Inc.	pump efficiency	0	0	1	0	0	0	0	0	0	0	1	1.00
SWE20022	Uvas, Inc.	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20023	Creston Valley Vineyards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20024	Gary Dutro Orchards LLC	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20025	Neal Spring Vineyards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20026	Parrlon Farming	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20027	Almont Orchards Inc.	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20028	A&J Family Farms Inc.	soil moisture sensors; pump efficiency; irrigation scheduling	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE20029	Nicolaus Nut Company	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20030	R&D Farms LLC	micro irrigation; soil moisture sensors; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20031	Collin's Vineyards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20032	Rudd Orchards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20033	Crane Mills	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50

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Appendix 19.2. State Water Efficiency and Enhancement Program Detailed Summary of Modeling Inputs

Project* Industry Matrix (Avg. Distribution														
		IMPLAN Code	Irrigation scheduling: 75% Other Electronic Component Manufacturing 25 % Maintenance & repair construction of nonresidential structures	Micro Irrigation: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Pump Efficiency: 25% Pump and Pumping Equipment Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Soil Moisture Sensor: 25% Other Electronic Component Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Other - Renewable Energy (Solar): 25% Hardware Manufacture 25% All other Miscellaneous Electrical Equipment Manufacturing 25% Other Electronic Components Manufacturing 25% Construction of new power and communication structures	Other - Low Pressure System: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Open Ditch to Pipeline: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Pipeline Improvement: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Water Capture: 25% Metal Tank (heavy gauge) Manufacture 75% Maintenance & repair construction of nonresidential structures	Other - Water Reuse: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Total Number of Project Types	Reciprocal (for apportioning funds by project)
Project ID	**Project Name**	**Project Description**												
SWE20034	Alex Ortiz	soil moisture sensors; irrigation scheduling; micro irrigation	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE20035	Tablas Creek Vineyard, A CA Limited Partnership	other- renewable energy (solar); soil moisture sensors; irrigation scheduling	1	0	0	1	1	0	0	0	0	0	3	0.33
SWE20036	Ann B. Montgomery 2007 Trust	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20037	Vic Werlhof	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20039	F & D Giacomazzi Farms	pump efficiency; irrigation scheduling; soil moisture sensors; micro irrigation; other -renewable energy (solar)	1	1	1	1	1	0	0	0	0	0	5	0.20
SWE20040	Ann B. Montgomery Farms L.P.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20041	Ira Compton	soil moisture sensors; pump efficiency; micro irrigation	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20042	Clark Bros. Farming	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE20043	Noble Orchard Company	soil moisture sensors; other -water capture; other -renewable energy (solar)	0	0	0	1	1	0	0	0	1	0	3	0.33
SWE20044	Clarksburg Vines	soil moisture sensors; irrigation scheduling; micro irrigation	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE20045	Paso Robles Vineyard Inc.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20046	Channel Islands Berry Farms, Inc	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20047	Ben J Schroeder	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20048	Sipple Orchards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20049	Aline's Vineyard	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20050	Pasatiempo Vineyards, LLC	micro irrigation; pump efficiency; soil moisture sensors	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20051	Hahn	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20052	Legacy Growers, LLC	other - pipeline improvement; micro irrigation	0	1	0	0	0	0	0	1	0	0	2	0.50
SWE20053	Bertagna Custom Farming, Inc.	micro irrigation; soil moisture sensors	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20054	Jason Bertagna	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20056	Nock Orchards Inc	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE20057	Paiva Farms Limited Partnership	soil moisture sensors; micro irrigation; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20058	Robert J. Silva Farms	pump efficiency; soil moisture sensors; micro irrigation	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20059	MJB	pump efficiency	0	0	1	0	0	0	0	0	0	0	1	1.00
SWE20060	Linne Calodo Cellars	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20061	Warren Leslie Davis	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20062	Flight Investment, Inc	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20063	Patricia Diane Vineyard, LLC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20065	Reamer Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE20066	Gill Ranch Company LLC	soil moisture sensors; pump efficiency; micro irrigation	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20067	Bernadette Davis	micro irrigation	0	1	0	0	0	0	0	0	0	0	1	1.00
SWE20068	Hammond Vineyards L.P.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20069	Eade Ranch Management Inc	soil moisture sensors; other - renewable energy (solar)	0	0	0	1	1	0	0	0	0	0	2	0.50
SWE20070	RBZ Vnyds LLC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE20071	3R Land and Development	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE20072	American Farms LLC	soil moisture sensors; micro irrigation; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE20073	Steve Fukagawa	micro irrigation; other -renewable energy (solar)	0	1	0	0	1	0	0	0	0	0	2	0.50
SWE20074	JMAD Enterprises LLC	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30001	Nick Huerta	soil moisture sensors; micro irrigation; pump efficiency; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25

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Project ID	**Project Name**	**Project Description**												
SWE30002	Navdip Badhesha	micro irrigation; pump efficiency; irrigation scheduling; other - renewable energy (solar)	1	1	1	0	1	0	0	0	0	0	4	0.25
SWE30003	Becky Muxlow Farms	soil moisture sensors; irrigation scheduling; other - renewable energy (solar)	1	0	0	1	1	0	0	0	0	0	3	0.33
SWE30004	Richard Kahn	pump efficiency; micro irrigation	0	1	1	0	0	0	0	0	0	0	2	0.50
SWE30005	Dougherty Brothers	soil moisture sensors; pump efficiency; irrigation scheduling; micro irrigation	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30006	William Pruitt	micro irrigation; pump efficiency; irrigation scheduling; soil moisture sensors	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30007	Stratford Ranch	soil moisture sensors; irrigation scheduling; other - renewable energy (solar); pump efficiency	1	0	1	1	1	0	0	0	0	0	4	0.25
SWE30008	Melissa Pruitt Farms	micro irrigation; pump efficiency; soil moisture sensors; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30009	Terranova Ranch, Inc.	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE30010	CH Farming Inc.	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE30011	Leroy Del Don - Del Mar Farms Dos Palos	other - renewable energy (solar); micro irrigation; pump efficiency; soil moisture sensors; irrigation scheduling	1	1	1	1	1	0	0	0	0	0	5	0.20
SWE30012	DP Farms	soil moisture sensors; micro irrigation; other- renewable energy (solar); irrigation scheduling; pump efficiency	1	1	1	1	1	0	0	0	0	0	5	0.20
SWE30013	Karl te Velde Ranch, Inc.	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30014	Tiffany Del Don	pump efficiency; micro irrigation; soil moisture sensors; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30015	Merrill Farms LLC	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30016	John D Weddington and Jan S Holcomb	pump efficiency; other - low pressure conversion; soil moisture sensors; irrigation scheduling; other -water reuse	1	0	1	1	0	1	0	0	0	1	5	0.20
SWE30017	Stone Ranch	micro irrigation; soil moisture sensors; pump efficiency; other - renewable energy (solar)	0	1	1	1	1	0	0	0	0	0	4	0.25
SWE30018	Her Produce	micro irrigation; soil moisture sensors	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE30019	Henry Pruitt Anderson, III & Betty Jean Anderson	micro irrigation; soil moisture sensors; pump efficiency; other- renewable energy (solar); irrigation scheduling	1	1	1	1	1	0	0	0	0	0	5	0.20
SWE30020	Huerta Family Farms Inc.	micro irrigation; soil moisture sensors; pump efficiency; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30021	Innovative Produce Inc.	soil moisture sensors; pump efficiency; irrigation scheduling	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30022	Orosi Premium Citrus, LLC	micro irrigation; pump efficiency; soil moisture sensors	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE30023	Holmes Ag Management	irrigation scheduling; soil moisture sensors; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30024	DAMCO Investments	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30025	C AND E OTT FARMS LLC	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30026	Freedom Farms	micro irrigation; pump efficiency; soil moisture sensors; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30027	Andrew Clark	other -renewable energy (solar); soil moisture sensors; irrigation scheduling	1	0	0	1	1	0	0	0	0	0	3	0.33
SWE30028	Godinho Orchards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30029	Opolo Wines, LP	other -renewable energy (solar); soil moisture sensors	0	0	0	1	1	0	0	0	0	0	2	0.50
SWE30030	Sierra Shadows Ranch LP	micro irrigation; soil moisture sensors; pump efficiency; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30031	Wm. Bolthouse Farms, Inc.	other - pipeline improvement	0	0	0	0	0	0	0	1	0	0	1	1.00

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Project ID	**Project Name**	**Project Description**											
SWE30032	Sarvjeet Panach	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30033	Baker Farming	soil moisture sensors; micro irrigation; other -renewable energy (solar)	0	1	0	1	1	0	0	0	0	0	3	0.33
SWE30034	Iron Horse Ranches	pump efficiency; other -renewable energy (solar)	0	0	1	0	1	0	0	0	0	0	2	0.50
SWE30035	Andrew Castillo	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30036	DLP Ag Partnership, LP	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30038	Paiva Farms	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30039	Sipma Farms Inc.	micro irrigation; pump efficiency; soil moisture sensors; irrigation scheduling	1	1	1	1	0	0	0	0	0	0	4	0.25
SWE30040	Farming M's, Inc.	microirrigation; pump efficiency; soil moisture sensors; irrigation scheduling; other -renewable energy (solar)	1	0	1	1	1	0	0	0	0	0	4	0.25
SWE30041	Michael G Jackson	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30042	Sami Jadallah	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30043	James Moore Farm	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30044	Bertagna Orchards, Inc.	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE30045	Sharyne Merritt	irrigation scheduling; soil moisture sensors; other - mulch	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30046	Charles E. Langel Orchards	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30047	Watanabe Farms	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30048	Anthony Gentile	other -renewable energy (solar); soil moisture sensors	0	0	0	1	1	0	0	0	0	0	2	0.50
SWE30049	Stephens Farm	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30050	Kaweah's Run Vineyard	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30051	Knott Farms	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30052	Myers Seed	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30053	Baugher	soil moisture sensors; pump efficiency; micro irrigation	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE30054	Peter Chapla	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30055	Babe Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30056	Isidro Hurtado	micro irrigation; soil moisture sensors; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE30057	Boparai Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30058	Samuelson Farms	micro irrigation; soil moisture sensors; pump efficiency	0	1	1	1	0	0	0	0	0	0	3	0.33
SWE30059	Bertagna Custom Farming, Inc.	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30060	Old Colony Partnership	soil moisture sensors; pump efficiency; other -renewable energy (solar)	0	0	1	1	1	0	0	0	0	0	3	0.33
SWE30061	Patricia Diane Vineyard, LLC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30062	Ken Braunschmidt	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30063	Rahul Family Farms, L.P.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30064	X Line Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30065	Cordi Family Farms	soil moisture sensors; micro irrigation	0	1	0	1	0	0	0	0	0	0	2	0.50
SWE30066	S&F Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30067	Alborz Farms LLC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30068	Holtermann Farms	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30069	Martella Farm	soil moisture sensors; pump efficiency; other -renewable energy (solar)	0	0	1	1	1	0	0	0	0	0	3	0.33
SWE30070	J & R Sanguinetti Farms Inc.	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30071	Doug Les Farms	micro irrigation; soil moisture sensors; irrigation scheduling	1	1	0	1	0	0	0	0	0	0	3	0.33
SWE30072	Greene and Hemly	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30073	Travioli Family Farms	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50

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Appendix 19.2. State Water Efficiency and Enhancement Program Detailed Summary of Modeling Inputs

Project* Industry Matrix (Avg. Distribution														
		IMPLAN Code	Irrigation scheduling: 75% Other Electronic Component Manufacturing 25 % Maintenance & repair construction of nonresidential structures	Micro Irrigation: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Pump Efficiency: 25% Pump and Pumping Equipment Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Soil Moisture Sensor: 25% Other Electronic Component Manufacturing 75 % Maintenance & repair construction of nonresidential structures	Other - Renewable Energy (Solar): 25% Hardware Manufacture 25% All other Miscellaneous Electrical Equipment Manufacturing 25% Other Electronic Components Manufacturing 25% Construction of new power and communication structures	Other - Low Pressure System: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Open Ditch to Pipeline: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Pipeline Improvement: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Other - Water Capture: 25% Metal Tank (heavy gauge) Manufacture 75% Maintenance & repair construction of nonresidential structures	Other - Water Reuse: 25% Plastics Pipe and Pipe Fitting Manufacturing 75% Maintenance & repair construction of nonresidential structures	Total Number of Project Types	Reciprocal (for apportioning funds by project)
Project ID	**Project Name**	**Project Description**												
SWE30074	Bidart Bros.	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30075	Richardson Family Irrv. Trust	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30076	Rapp Family 2001 Trust	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30077	Porto Brothers	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30078	Naimi Ranch Inc	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30079	Jed Webster	pump efficiency	0	0	1	0	0	0	0	0	0	0	1	1.00
SWE30080	Twin Oaks Vineyard LLC	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30081	American Farms, LLC	pump efficiency; soil moisture sensors	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30082	Mission Holdings	pump efficiency; soil moisture sensors; irrigation scheduling	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30083	Mission Ranches, LLC	pump efficiency; soil moisture sensors; other -renewable energy (solar)	0	0	1	1	1	0	0	0	0	0	3	0.33
SWE30084	Adam Agricultural Limited Partnership	pump efficiency; other -renewable energy (solar); soil moisture sensors; irrigation scheduling	1	0	1	1	1	0	0	0	0	0	4	0.25
SWE30085	MEK Group, Inc.	other - renewable energy (solar); other- low pressure system	0	0	0	0	1	1	0	0	0	0	2	0.50
SWE30086	K&R Farms, LP	pump efficiency; soil moisture sensors; other - renewable energy (solar)	0	0	1	1	1	0	0	0	0	0	3	0.33
SWE30087	Ben Bertagna Farming	soil moisture sensors; other -renewable energy (solar)	0	0	0	1	1	0	0	0	0	0	2	0.50
SWE30088	Beck Ag Operations, Inc	other -renewable energy (solar); soil moisture sensors; irrigation scheduling	1	0	0	1	1	0	0	0	0	0	3	0.33
SWE30089	West Coast Tomato Growers INC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30090	Nick Bertagna Farming	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30091	ARC Vineyards, LLC	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30092	James Davidson	soil moisture sensors; irrigation scheduling; pump efficiency	1	0	1	1	0	0	0	0	0	0	3	0.33
SWE30093	G and N Creekside Farms Inc	soil moisture sensors; pump efficiency	0	0	1	1	0	0	0	0	0	0	2	0.50
SWE30094	Pavo Real Vineyard LLC.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30095	Jennifer Tucker	micro irrigation; soil moisture sensors; other - renewable energy (solar)	0	1	0	1	1	0	0	0	0	0	3	0.33
SWE30096	Diamond West Farming Inc.	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30098	Tanimura Brothers, LP	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30099	Kemp Orchard	soil moisture sensors; pump efficiency; other - renewable energy (solar)	0	0	1	1	1	0	0	0	0	0	3	0.33
SWE30100	R & J Sanguinetti	soil moisture sensors; irrigation scheduling	1	0	0	1	0	0	0	0	0	0	2	0.50
SWE30101	Hidden Oak Winery	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
SWE30102	Charles F. Manhart	soil moisture sensors	0	0	0	1	0	0	0	0	0	0	1	1.00
	Total Implemented Funds		$2,656,636	$3,164,370	$2,885,704	$7,224,120	$1,371,649	$50,297	$7,937	$412,500	28,574	164,662	$17,966,448	
	Total Appropriated Funds		$8,206,592	$9,775,029	$8,914,203	$22,315,966	$4,237,149	$155,372	$24,518	$1,274,250	88,267	$508,655	$55,500,000	
	Appropriated to Implemented Funds Ratio												3.09	

Summary of Industry-Level Investments for the Dairy Digester Research and Development Program

Industry	Total State Funds	Percent of Total State Funds
Other electronic component manufacturing	$22,891,918	41.2%
Plastics pipe and pipe fitting manufacturing	$8,803,368	15.9%
Pump and pumping equipment manufacturing	$6,685,652	12.0%
Metal tank (heavy gauge) manufacture	$66,200	0.1%
Solar PV – Hardware manufacture	$1,059,287	1.9%
Solar PV – All other miscellaneous electrical equipment manufacturing	$1,059,287	1.9%
Solar PV – Other electronic component manufacturing	$1,059,287	1.9%
Maintenance and repair construction of nonresidential structures	$12,815,713	23.1%
Construction of new power and communication structures	$1,059,287	1.9%
	$55,500,000	**100.0%**

20. Water-Energy Grant Program

20.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Water-Energy Grant Program. See **Table A20.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A20.1. Indirect Jobs Supported by the Water-Energy Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	6.5	7.7%
Employment services	5.4	6.4%
Retail – Clothing and clothing accessories stores	4.0	4.8%
Wholesale trade	3.9	4.7%
Retail – Nonstore retailers	3.8	4.5%
Architectural, engineering, and related services	3.0	3.6%
Retail – Miscellaneous store retailers	2.6	3.1%
Management consulting services	2.6	3.1%
Marketing research and all other miscellaneous professional, scientific, and technical services	2.4	2.8%
Accounting, tax preparation, bookkeeping, and payroll services	2.1	2.5%
Subtotal of Top 10 Industries	**36.3**	**43.3%**
Total of All Industries	**83.7**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A20.2** for a summary of the induced jobs supported by the Water-Energy Grant Program, as reported in FTE job-years.

Table A20.2. Induced Jobs Supported by the Water-Energy Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	5.1	4.7%
Real estate	5.0	4.6%
Limited-service restaurants	4.7	4.3%
Hospitals	4.3	4.0%
Individual and family services	3.8	3.5%
Wholesale trade	3.7	3.4%
Offices of physicians	3.3	3.1%
Retail – Food and beverage stores	2.8	2.6%
Other financial investment activities	2.8	2.6%
Retail – General merchandise stores	2.7	2.5%
Subtotal of Top 10 Industries	**38.3**	**35.4%**
Total of All Industries	**108.2**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2014	Alpaugh Community Services District	Water Conservation Kit Project	$34,953	$34,953	$33,953	$33,953						
							Project Administration	$4,215	$4,215	$-	Employment and payroll only (local govt, non-education)	100.0%
							Environmental Documentation	$360	$360	$-	Employment and payroll only (local govt, non-education)	100.0%
							Proposal Monitoring Plan	$300	$300	$-	Employment and payroll only (local govt, non-education)	100.0%
							Finalize Kit Components	$150	$150	$-	Employment and payroll only (local govt, non-education)	100.0%
							Material Purchase & Assembly	$24,292	$24,292	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Educational Component (Prepare brochure)	$2,536	$2,536	$-	Employment and payroll only (local govt, non-education)	100.0%
							Outreach Costs (Brochures and Signage)	$150	$150	$-	Printing	Default (51.69%)
							Distribution	$1,200	$1,200	$-	Employment and payroll only (local govt, non-education)	100.0%
							Assessment & Performance Measures	$750	$750	$-	Employment and payroll only (local govt, non-education)	100.0%
2014	Association of California Community and Energy Services	Low Income Water and Energy Measures for Tulare County	$155,500	$340,642	$339,798	$340,641						
							Personnel Services: Project Administration / Management	$69,156	$69,156	$-	Individual and Family Services	100.0%
							Grantee Operational Expenses:					
							Overhead	$16,675	$15,832	$-	Individual and Family Services	100.0%
							Rent, utilities, Internet service and telephone	$-	$-	$843	Individual and Family Services	100.0%
							Construction/Implementation Costs:					
							High Efficiency Washers	$44,775	$44,775	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							High Efficiency Dryers	$22,747	$22,747	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							High Efficiency Gas Dryers	$9,885	$9,885	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							Ultra low Flow Toilets	$75,840	$75,840	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Plastic Water Buckets for Showers	$5,467	$5,467	$-	Other Plastics Product Manufacturing	Default (33.07%)
							Energy education (audits)	$96,096	$96,096	$-	Individual and Family Services	100.0%
2014	Bakersfield, City of	Smart Irrigation Controller Project	$681,739	$712,739	$681,739	$712,739						
							Personnel Services	$31,000	$-	$31,000	Employment and payroll only (local govt, non-education)	100.0%
							Equipment:					
							6-Channel Cluster Control Unit	$88,272	$88,272	$-	Other electronic component manufacturing	Default (46.51%)
							Power Supplied Cellular Modem	$24,200	$24,200	$-	Other electronic component manufacturing	Default (46.51%)
							CCU Terminal Strip	$8,470	$8,470	$-	Other electronic component manufacturing	Default (46.51%)
							Flow Transmitter	$11,739	$11,739	$-	Other electronic component manufacturing	Default (46.51%)
							Pulse Decoder	$11,606	$11,606	$-	Other electronic component manufacturing	Default (46.51%)
							Flow Sensor	$15,887	$15,887	$-	Other electronic component manufacturing	Default (46.51%)
							Bermad Master Valve	$13,341	$13,341	$-	Other electronic component manufacturing	Default (46.51%)
							Satellite Control	$132,035	$132,035	$-	Other electronic component manufacturing	Default (46.51%)
							Multi Station Terminal Strip sub-assembly	$41,140	$41,140	$-	Other electronic component manufacturing	Default (46.51%)
							Stainless Steel Enclosures	$152,460	$152,460	$-	Hardware Manufacturing	Default (16.07%)
							Grounding Plate with Rod Package	$13,794	$13,794	$-	Other electronic component manufacturing	Default (46.51%)
							10% Contingency on equipment (applied above)	$-	$-	$-		
							Construction/Installation of Irrigation Controller Systems	$168,795	$168,795	$-	Landscape and Horticultural Services	Default (99.87%)
2014	California Water Service	Bathroom Fixture Replacement Program in Bakersfield District	$490,500	$504,580	$490,500	$504,580						
							Personnel Services	$14,080	$-	$14,080	Water, sewage and other treatment and delivery systems	100.0%
							Fixture Installation	$440,500	$440,500	$-	Maintenance and repair construction of residential structures	Default (86.42%)
							Impact Evaluation	$50,000	$50,000	$-	Management and consulting services	Default (71.95%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2014	California Water Service	Bathroom Fixture Replacement Program in Dominguez and East Los Angeles Districts	$797,400	$811,480	$797,400	$811,480						
							Personnel Services	$14,080	$-	$14,080	Water, sewage and other treatment and delivery systems	100.0%
							Fixture Installation	$747,400	$747,400	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Impact Evaluation	$50,000	$50,000	$-	Management and consulting services	Default (71.95%)
2014	East Valley Water District	Advanced Metering Infrastructure Pilot Implementation Project	$2,011,465	$2,011,465	$2,011,465	$2,011,465						
							Professional and Consultant Services:					
							Gas Company Data Acquisition Lease	$3,965	$3,965	$-	Commercial and Industrial Machinery and Equipment Rental and Leasing	100.0%
							Server Software, Data Storage and Management	$100,000	$100,000	$-	Software Publishers	Default (99.83%)
							Contractual/Implementation Costs:					
							Installation/Retrofit of existing AMR meters	$108,000	$108,000		Maintenance and Repair construction of residential structures	Default (86.42%)
							Meter Transmission Units to replace AMR meters	$612,000	$612,000	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
2014	East Valley Water District	Advanced Metering Infrastructure Pilot Implementation Project					Installation/Retrofit of manual read meters	$178,125	$178,125		Maintenance and Repair construction of residential structures	Default (86.42%)
							Meter Transmission Units to replace manual read meters	$1,009,375	$1,009,375	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
2014	Ecology Action	WaterLink: A program of Ecology Action in collaboration with the SCVWD & the CCCs	$2,495,743	$3,034,682	$2,495,743	$1,577,650						
							Project Administration	$74,765	$74,765	$-	Architectural, engineering, and related services	100.0%
							Direct Install Personnel					
							Project 1: Residential Direct Install		$809,241	$11,594	Architectural, engineering, and related services	100.0%
							Project 2: Commercial Pre Rinse Spray Valves Direct Install		$444,037	$2,596	Architectural, engineering, and related services	100.0%
							Institutional and Multi Family Turf Replacement Direct Install "		$77,961		Architectural, engineering, and related services	100.0%
							Ozone Laundry Rebate Program		$62,253		Architectural, engineering, and related services	100.0%
							Monitoring & Verification of Water / Energy Savings		$45,631		Architectural, engineering, and related services	100.0%
							Grantee Operational Costs:					
							Desktop Computer for program manager	$4,000	$4,000	$-	Electronic computer manufacturing	Default (83.37%)
							Cell enabled tablets	$6,400	$6,400	$-	Electronic computer manufacturing	Default (83.37%)
							Monthly data charges for tablets	$7,200	$7,200	$-	Wireless Telecommunications Carriers	Default (99.43%)
							Installation cart and tools	$2,400	$2,400	$-	Retail Stores - Building material and garden supply	Default (94.61%)
							WaterLink vests and name tags	$1,360	$1,360	$-	Retail Stores - Clothing and clothing accessories	Default (100%)
							Storage Space rental for supplies	$4,000	$4,000	$-	Real estate establishments	Default (100%)
							Mileage to project sites	$34,658	$34,658	$-	Mileage Basket	Default (4-100%)
							Cell and land line phone charges ($3,720)	$-				
							Cell charges (assumed 50%)		$1,860		Wireless Telecommunications Carriers	Default (99.43%)
							Phone charges (assumed 50%)		$1,860		Wired Telecommunications Carriers	Default (93.90%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
	Ecology Action	WaterLink: A program of Ecology Action in collaboration with the SCVWD & the CCCs					Occupancy expense based on staff project hours	$94,450	$94,450	$-	Real estate establishments	Default (100%)
							Labor compliance contractor	$6,000	$6,000	$-	Management and consulting services	Default (71.95%)
							Outreach Costs:					
							Brochures/Mailers/Leave behind agreement print	$15,742	$9,742	$6,000	Printing	Default (51.69%)
							Outreach Costs: Postage	$1,225	$1,225	$-	Postal Service	Default (90.26%)
							Programmatic Costs:					
							Aerators	$74,520	$60,000	$14,520	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							High efficiency commercial clothes washer	$165,000	$125,000	$40,000	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Demand recirculation pump	$125,000	$125,000	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							Water heater replacement	$75,000	$75,000	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							Toilet tank tablets	$930	$-	$930	Toilet Preparation Manufacturing	Default (47.3%)
							Pre-rinse spray valves	$192,000	$192,000	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Compost/mulch/plant/irrigation materials	$50,000	$-	$50,000	Retail Stores - Building material and garden supply	Default (94.61%)
							California conservation corps contractor (compost/mulch/plant/irrigation installation)	$100,000	$50,000	$50,000	Landscape and Horticultural Services	100.0%
2014	Elsinore Valley Municipal Water District	Automated Metering Infrastructure DAC Implementation	$858,625	$858,625	$858,625	$858,625				$-		
							Personnel Services	$48,440	$48,440	$-	Water, sewage and other treatment and delivery systems	100.0%
							Meter Transmission Units (MTUs)	$548,835	$548,835	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
							MTU Meter Installation/Retrofit of Existing Meters	$261,350	$261,350	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
2014	Farmersville, City of	Farmersville DAC Water Energy Savings Initiative	$1,361,593	$1,361,593	$1,361,593	$1,361,593						
							Project Administration (Contractor - Quad Knopf)	$184,500	$184,500	$-	Architectural, engineering, and related services	100.0%
							Grant management (Contractor - Blais & Associates, Inc.)	$18,000	$18,000	$-	Management and consulting services	100.0%
							Contractor ARM Installations	$130,541	$130,541	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Contractor ARM Units	$739,732	$739,732	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
							System Conversion and Training	$17,700	$17,700	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Flow restrictor kits for faucets	$8,000	$8,000	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Rebates toilets	$20,000	$20,000	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Turf removal and replacement (contractor)	$243,120	$243,120	$-	Landscape and Horticultural Services	Default (99.87%)
2014	Irvine Ranch Water District	IRWD Water and Energy Residential Resource Savings Program	$1,932,621	$2,536,415	$2,500,000	$2,536,415						
							Personnel Services	$31,415		$31,415	Water, sewage and other treatment and delivery systems	100.0%
							5x7 Postcard	$18,836.40	$18,836	$-	Printing	Default (51.69%)
							Materials/Handouts	$5,232.33	$5,232	$-	Printing	Default (51.69%)
							Clothes washers	$663,328.80	$663,329	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							Showerheads	$162,565.28	$162,565	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Aerators	$38,100.32	$38,100	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Toilets	$1,611,936.64	$1,611,937	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Legal fees	$5,000		$5,000	Legal Services	Default (98.92%)
							Contingency Funds: $111,009 (Distributed proportionally above)		$-	$-		

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2014	Local Government Commission	Water Energy Community Action Network (WE CAN) San Joaquin Valley	$2,499,367	$2,499,367	$2,498,417	$2,499,367						
							Personnel Services	$392,830	$392,830	$-	Management and consulting services	100.0%
							Office supplies	$2,305	$2,305	$-	Office supplies (except paper) manufacturing	Default (5.88%)
							Telecommunications (faxes, phone calls, etc.) - $950			$-		
							Faxes	$475			Wireless Telecommunications Carriers	Default (99.43%)
							Phones	$475			Wired Telecommunications Carriers	Default (93.90%)
							Travel (airfare, car rental, hotel, food, etc.)	$7,186	$7,186	$-	Management and consulting services	100.0%
							Equipment and Facilities (rental fees)	$1,000	$1,000	$-	Real estate establishments	Default (100%)
							Mailing Costs	$13,505	$13,505	$-	Postal Service	Default (90.26%)
							Printing	$34,341	$34,341	$-	Printing	Default (51.69%)
							Miscellaneous ($1,000 rebates) Turf Conversion/ Irrigation Efficiency	$1,800,000	$1,800,000	$-	Landscape and Horticultural Services	100.0%
							Light refreshments and landscaping events	$2,000	$2,000		Retail Stores - Food and beverage	Default (99.99%)
							Professional and Consultant Services	$245,250	$245,250	$-	Management and consulting services	Default (71.95%)
2014	Merced, City of	City of Merced Water Energy Savings Proposal	$2,500,000	$3,456,162	$2,613,468	$3,456,162						
							Set up fee	$7,500	$3,750	$3,750	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
							Training fee	$3,700	$1,850	$1,850	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
							Reoccurring software/data charges	$223,212	$107,868	$115,344	Wireless Telecommunications Carriers	Default (99.43%)
							Administrative costs and overhead	$40,000	$-	$40,000	Employment and payroll only (local govt, non-education)	100.0%
							Installation Labor	$681,750	$-	$681,750	Employment and payroll only (local govt, non-education)	100.0%
							Materials (10,800 Metered Units)	$2,500,000	$2,500,000	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
2014	Orange Cove, City of	2014 Orange Cove Water Energy Efficiency Program	$280,000	$690,000	$280,000	$690,000						
							Personnel					
							Advertise/Notice program	$14,000	$14,000		Employment and payroll only (local govt, non-education)	100.0%
							Program Administration	$45,000	$35,000	$10,000	Employment and payroll only (local govt, non-education)	100.0%
							Verification/monitoring	$15,000	$15,000	$-	Employment and payroll only (local govt, non-education)	100.0%
							Grantee Expenses:					
							Document reproduction	$1,000	$1,000	$-	Printing	Default (51.69%)
							Equipment:					
							30hp Premium Efficiency Electric Motor	$30,000	$-	$30,000	Other electronic component manufacturing	Default (46.51%)
							50hp Premium Efficiency Electric Motor	$45,000	$-	$45,000	Other electronic component manufacturing	Default (46.51%)
							75hp Premium Efficiency Electric Motor	$67,500	$-	$67,500	Other electronic component manufacturing	Default (46.51%)
							Variable Frequency Drive (30hp)	$8,000	$-	$8,000	Other electronic component manufacturing	Default (46.51%)
							Variable Frequency Drive (50hp)	$14,250	$-	$14,250	Other electronic component manufacturing	Default (46.51%)
							Variable Frequency Drive (75hp)	$18,750	$-	$18,750	Other electronic component manufacturing	Default (46.51%)
							Variable Frequency Drive Housing w/AC	$62,000	$-	$62,000	Other electronic component manufacturing	Default (46.51%)
							Professional an Consultant Services					
							Electrical Engineer Design	$35,000	$-	$35,000	Architectural, engineering, and related services	Default (95.66%)
							Construction/Implementation Costs:					
							PROGRAM 1: REBATE PROGRAM					
							Toilet (WaterSense) Rebate	$114,219	$114,219	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Showerhead (WaterSense) Rebate	$20,156	$20,156	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Faucet (WaterSense) Rebate	$48,375	$48,375	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Home evaluations / Applications	$32,250	$32,250	$-	Employment and payroll only (local govt, non-education)	100.0%
							Contingency Funds: $15,000 (Distributed proportionally above)					

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
							PROGRAM 2: WTP ELECTRIC MOTOR/VFD					
							Construction mobilization (electrical)	$14,436	$-	$14,436	Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Electric Motor SCADA Controller setup	$16,842	$-	$16,842	Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							SCADA feeder and controller wiring	$56,141	$-	$56,141	Wiring device manufacturing	Default (45.81%)
							Construction Electrical Engineering	$32,081	$-	$32,081	Architectural, engineering, and related services	Default (95.66%)
							Contingency Funds: $15,000 (Distributed proportionally above)					
2014	Regional Water Authority	Sacramento Regional Water Energy Efficiency Program	$2,500,000	$2,500,000	$2,500,000	$2,500,000						
							Personnel Services	$15,990	$15,990	$-	Water, sewage and other treatment and delivery systems	100.0%
							Toilets	$657,976	$657,976	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Aerators	$48,544	$48,544	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Showerheads	$60,660	$60,660	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Contractor - Water surveys (audits)	$26,700	$26,700	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Contractor - Installs equipment	$223,212	$223,212	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Outreach (bill inserts, mailers, etc.)	$53,368	$53,368	$-	Printing	Default (51.69%)
							Commercial toilet	$580,000	$580,000	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							Commercial Aerator	$25,000	$25,000	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Urinal	$600,000	$600,000	$-	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
							High efficiency residential clothes washer	$14,800	$14,800	$-	Household Laundry Equipment Manufacturing	Default (11.2%)
							Contractor - Follow up Inspection / Documentation	$193,750	$193,750	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
2014	Sacramento, City of	City of Sacramento Department of Utilities District Metered Areas (DMAs) for Water Loss Control	$2,500,000	$2,500,000	$2,500,116	$2,500,116						
							Project Management					
							Personnel services	$32,239	$32,239	$-	Employment and payroll only (local govt, non-education)	100.0%
							Document Reproductions and Office Supplies	$500	$500		Printing	Default (51.69%)
							DMA implementation and analysis					
							Personnel services	$36,793	$36,793	$-	Employment and payroll only (local govt, non-education)	100.0%
							Document Reproductions and Office Supplies	$1,000	$1,000		Printing	Default (51.69%)
							Construction/installation of meters = 15% of $450k	$63,000	$63,000	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Meters = 85% of $450k	$357,000	$357,000		Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
							Professional Services for DMA Analysis and Setup	$320,000	$320,000	$-	Management and consulting services	Default (71.95%)
							Leak detection					
							Personnel services	$153,312	$153,312	$-	Employment and payroll only (local govt, non-education)	100.0%
							Document Reproductions and Office Supplies)	$500	$500		Printing	Default (51.69%)
							Leak detection consultant	$80,000	$80,000	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Main Line / City Asset Repairs & Replacement					
							Personnel services	$327,524	$327,524	$-	Employment and payroll only (local govt, non-education)	100.0%
							Document Reproductions and Office Supplies	$200	$200		Printing	Default (51.69%)
							Construction/installation	$500,000	$500,000	$-	Maintenance and Repair construction of residential structures	Default (86.42%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
							DAC homeowner funding repair program					
							Personnel services	$67,548	$67,548	$-	Employment and payroll only (local govt, non-education)	100.0%
							Outreach materials- pamphlets, mailers, door hangers, etc.	$30,000	$30,000		Printing	Default (51.69%)
							Document Reproductions and Office Supplies	$500	$500		Printing	Default (51.69%)
							Outreach consultant	$30,000	$30,000	$-	Management and consulting services	Default (71.95%)
							Construction/installation	$500,000	$500,000	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
2014	San Gabriel Valley Municipal Water District	San Gabriel Valley Municipal Water District Water and Energy Conservation Rebate Program	$231,915	$600,000	$300,000	$600,000						
							Printing (banners, table tents, water saving tips, etc.,)	$29,950	$14,975	$14,975	Printing	Default (51.69%)
							Rebate consultant	$104,700	$52,350	$52,350	Management and consulting services	Default (71.95%)
							Marketing	$10,350	$5,175	$5,175	Management and consulting services	Default (71.95%)
							Grant application preparation	$20,000	$10,000	$10,000	Management and consulting services	Default (71.95%)
							Washing machine rebate	$120,000	$60,000	$60,000	Household Laundry Equipment Manufacturing	Default (11.2%)
							Dishwasher rebate	$120,000	$60,000	$60,000	Other Major Household Appliance Manufacturing	Default (0.71%)
							Smart irrigation controller rebate	$120,000	$60,000	$60,000	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Waterless urinals rebate	$75,000	$37,500	$37,500	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)
2014	Santa Ana Watershed Project Authority	Water Energy Community Action Network Program	$2,339,823	$3,017,263	$2,497,263	$3,012,053						
							Personnel Services	$150,000	$150,000	$-	Employment and payroll only (local govt, non-education)	100.0%
							Grantee Expenses:					
							Program Signage (Door hanger and lawn sign)	$2,515	$2,515	$-	Printing	Default (51.69%)
							Infrastructure Subtotal (Phone, laptop, etc.):					
							Phone	$100	$100	$-	Telephone apparatus manufacturing	Default (50.43%)
							Laptop	$1,760	$1,760	$-	Electronic computer manufacturing	Default (83.37%)
							Phone/Internet Connection	$3,350	$3,350		Wired Telecommunications Carriers	Default (93.90%)
							Professional and Consultant Services					
							Orange County coastkeeper smartscape manuals & workshops	$92,520	$92,520	$-	Environmental and other technical consulting services	100.0%
							Six Outreach personnel	$192,300	$192,300	$-	Individual and Family Services	Default (100%)
							Central Project manager	$149,500	$149,500	$-	Employment and payroll only (local govt, non-education)	100.0%
							Hotline operator	$31,625	$31,625	$-	Employment and payroll only (local govt, non-education)	100.0%
							Construction/Implementation Costs:					
							Energy Savings Retrofit: Community Action Partnership of SBC Contractor	$709,361	$709,361	$-	Individual and Family Services	100.0%
							Energy Saving Retrofit: CSE Training, Contractor Programming and materials					
							CSE Create Outreach Manual/Checklist for Outreach Personnel	$10,000	$10,000	$-	Management and consulting services	100.0%
							CSE Support to Outreach Personnel	$38,792	$38,792	$-	Management and consulting services	100.0%
							CSE Train Outreach Personnel	$30,000	$30,000	$-	Management and consulting services	100.0%
							LEDs (60w equivalent)	$153,600	$153,600	$-	Other electronic component manufacturing	Default (46.51%)
							Low-flow showerheads	$64,000	$64,000	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Thermostatic shower shut-off valves	$64,000	$64,000	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Adjust water heater temp	$3,840	$3,840	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Water Saving Retrofit Landscaping Contractor RFP	$20,000	$20,000		Employment and payroll only (local govt, non-education)	100.0%
							Water Saving Retrofit - Landscaping Contractor Implementation					

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
							Water saving retrofit landscaping contractor (drought tolerant planting installation)	$1,300,000	$780,000	$520,000	Landscape and Horticultural Services	Default (99.87%)
2014	Santa Rosa, City of	Santa Rosa Efficient Fixtures Direct Installation Program	$2,499,724	$2,517,070	$2,499,724	$2,517,070						
							Personnel Services	$17,346	$-	$17,346	Employment and payroll only (local govt, non-education)	100.0%
							Printing of participation forms/bill inserts	$7,309	$7,309	$-	Printing	Default (51.69%)
							Bathroom faucet aerators	$4,399	$4,399	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Kitchen faucet aerators	$6,599	$6,599	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Showerheads	$13,197	$13,197	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Pre-rinse spray valves	$62,500	$62,500	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Radio advertising	$9,000	$9,000	$-	Radio and Television Broadcasting	100.0%
							Residential fixture installations	$2,331,470	$2,331,470	$-	Maintenance and Repair construction of residential structures	Default (86.42%)
							Commercial spray valve installations	$65,250	$65,250	$-	Maintenance and Repair construction of residential structures	Default (85.93%)
2014	SEMCU Foundation Inc	SEMCU Area Retrofitting Project	$218,594	$218,594	$218,594	$218,594						
							Personnel services	$19,431	$19,431	$-	Labor and Civic Organizations	100.0%
							Consultant	$4,858	$4,858	$-	Management and consulting services	Default (71.95%)
							Bath faucet	$23,536	$23,536	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Kit faucet	$11,768	$11,768	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Shower	$128,862	$128,862	$-	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.36%)
							Water Meter	$30,140	$30,140	$-	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)
2014	Upper San Gabriel Valley Municipal Water District	Large Landscape Survey and Retrofit Program	$1,396,500	$2,627,750	$1,396,500	$2,627,750						
							Project Administration	$114,250	$-	$114,250	Water, sewage and other treatment and delivery systems	100.0%
							Project evaluation/design/engineering	$114,250	$-	$114,250	Architectural, engineering, and related services	100.0%
							Proposal Monitoring Plan	$114,250	$-	$114,250	Water, sewage and other treatment and delivery systems	100.0%
							Project implementation	$2,285,000	$1,396,500	$888,500	Landscape and Horticultural Services	Default (99.87%)
2016	Proteus, Inc.	Billion Gallon Challenge: Tulare & Kern Counties	$3,000,000	$3,000,000	$3,000,000	$3,000,000	Project Administration	$149,985	$149,985		Maintenance and Repair construction of residential structures	100.0%
							Project Implementation	$402,444	$402,444		Maintenance and Repair construction of residential structures	100.0%
							Grantee Overhead and Indirect Costs	$421,781	$421,781		Maintenance and Repair construction of residential structures	100.0%
							Construction/Implementation:	$-				
							Subcontractor (Syzergy Billion Gallon Challenge Campaign)	$150,000	$150,000		Management and consulting services	100.0%
							Water Efficient Fixtures & Appliances	$-				
							Ultra-Efficient Next Generation Showerheads	$800,000	$800,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Ultra-Efficient Next Generation Faucet Aerators	$250,790	$250,790		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							High Efficiency Clothes washers	$825,000	$825,000		Household Laundry Equipment Manufacturing	Default (11.2%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2016	Proteus, Inc.	Billion Gallon Challenge: Tulare & Kern Counties	3,000,000	$3,000,000	$3,000,000	$3,000,000	Project Administration	$149,985	$149,985		Maintenance and Repair construction of residential structures	100.0%
							Project Implementation	$402,444	$402,444		Maintenance and Repair construction of residential structures	100.0%
							Grantee Overhead and Indirect Costs	$421,781	$421,781		Maintenance and Repair construction of residential structures	100.0%
							Construction/Implementation:	$-				
							Subcontractor (Syzergy Billion Gallon Challenge Campaign)	$150,000	$150,000		Management and consulting services	100.0%
							Water Efficient Fixtures & Appliances	$-				
							Ultra-Efficient Next Generation Showerheads	$800,000	$800,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Ultra-Efficient Next Generation Faucet Aerators	$250,790	$250,790		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							High Efficiency Clothes washers	$825,000	$825,000		Household Laundry Equipment Manufacturing	Default (11.2%)
2016	Ecology Action	WaterLink-Monterey Bay Area	$2,468,585	$2,491,085	$2,468,585	$2,491,085	Personnel Services	$1,792,926	$1,792,926		Architectural, engineering, and related services	100.0%
							Grantee Operational Expenses:	$-				
							Admin Copy, print and Mail	$1,200	$1,200		Printing	Default (51.69%)
							CEQA NOE Filing Fees	$400	$400		Employment and payroll only (state government, non-education)	100.0%
							Installation Carts and Tools	$1,500	$1,500		Retail Stores - Building material and garden supply	Default (94.61%)
							Land Line Phone Charges for Program Manager and Installation Manager	$480	$480		Wired Telecommunications Carriers	Default (93.90%)
							Cell Phones for field data input	$5,600	$5,600		Broadcast and wireless communications equipment manufacturing	Default (0.81%)
							Monthly data charges for cell phones and tablets	$13,300	$13,300		Wireless Telecommunications Carriers	Default (99.43%)
							Storage space rental for supplies	$8,000	$8,000		Real estate establishments	Default (100%)
							Waterlink branded uniforms and name tags	$1,500	$1,500		Retail Stores - Clothing and clothing accessories	Default (100%)
							Tablets for Field Team Leads	$2,000	$2,000		Electronic computer manufacturing	Default (83.37%)
							Geopointe data acquisition for DAC census tracts	$2,400	$2,400		Software publishers	Default (99.83%)
							Software licenses and access log-ins for salesforce and geopointe	$4,536	$4,536		Software publishers	Default (99.83%)
							Software license and access log-ins for Tableau	$1,000	$1,000		Software publishers	Default (99.83%)
							Marketing Media and Customer Testimonials and Website Update	$1,500	$1,500		Data processing, hosting, ISP, web search portals and related services	Default (95.82%)
							Program Expenses:	$-				
							P1: 1.5 gpm Shower Aerators w/shut off	$52,000	$52,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P1: 1.5 gpm Kitchen Sink Aerators	$9,360	$9,360		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P1 & P2: 0.5 and 1 gpm Lavatory Aerators	$6,602	$6,602		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P2: Pre-Rinse Spray Valves	$10,880	$10,880		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Outreach Expenses:	$-				
							Printed marketing materials / program agreements	$6,800	$6,800		Printing	Default (51.69%)
							P1: Door Hanger / Postcard Leave Behind	$1,500	$1,500		Printing	Default (51.69%)
							Professional Consultant Services	$-				
							Creative design and translation services consultants	$2,000	$2,000		Management and consulting services	Default (71.95%)
							P1: DI_Energy Star Clothes Washer Installation	$110,000	$100,000	$10,000	Maintenance and Repair construction of residential structures	100.0%
							P1: DI_Energy Star Dishwasher Installation Contractors	$25,000	$25,000		Maintenance and Repair construction of nonresidential structures	100.0%

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
							P1: DI-HE Multi-Family Clothes Washer Installation Contractors	$192,500	$180,000	$12,500	Maintenance and Repair construction of residential structures	100.0%
							Plumbing Trainer for Field Team	$600	$600		Maintenance and Repair construction of residential structures	100.0%
							P1: DI_Leak Repair Plumbing Contractors	$45,000	$45,000		Maintenance and Repair construction of residential structures	100.0%
							P2: DI_Energy Star Commercial Dishwasher Rebate/Installation Contractors	$192,500	$192,500		Maintenance and Repair construction of nonresidential structures	100.0%
2016	Ecology Action	WaterLink-South San Francisco Bay Area	$2,463,609	$2,478,609	$2,463,609	$2,478,609	Personnel Services	$1,736,743	$1,736,743		Architectural, engineering, and related services	100.0%
							Grantee Operational Expenses:	$-				
							Admin Copy, print and Mail	$1,200	$1,200		Printing	Default (51.69%)
							CEQA NOE Filing Fees	$400	$400		Employment and payroll only (state government, non-education)	100.0%
							Installation Carts and Tools	$1,200	$1,200		Retail Stores - Building material and garden supply	Default (94.61%)
							Land Line Phone Charges for Program Manager and Installation Manager	$480	$480		Wired Telecommunications Carriers	Default (93.90%)
							Cell Phones for field data input	$4,000	$4,000		Broadcast and wireless communications equipment manufacturing	Default (0.81%)
							Monthly data charges for cell phones and tablets	$9,500	$9,500		Wireless Telecommunications Carriers	Default (99.43%)
							Storage space rental for supplies	$8,000	$8,000		Real estate establishments	Default (100%)
							Waterlink branded uniforms and name tags	$1,200	$1,200		Retail Stores - Clothing and clothing accessories	Default (100%)
							Tablets for Field Team Leads	$2,000	$2,000		Electronic computer manufacturing	Default (83.37%)
							Geopointe data acquisition for DAC census tracts	$2,400	$2,400		Software publishers	Default (99.83%)
							Software license and access log-ins for Tableau	$1,000	$1,000		Software publishers	Default (99.83%)
							Marketing Media and Customer Testimonials and Website Update	$1,500	$1,500		Data processing, hosting, ISP, web search portals and related services	Default (95.82%)
							Equipment Expenses:	$-				
							P1: 1.5 gpm Shower Aerators w/shut off	$46,000	$46,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P1: 1.5 gpm Kitchen Sink Aerators	$8,280	$8,280		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P1 & P2: 0.5 and 1 gpm Lavatory Aerators	$7,466	$7,466		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							P2: Pre-Rinse Spray Valves	$23,100	$23,100		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Outreach Expenses:	$-				
							Printed marketing materials / program agreements	$6,800	$6,800		Printing	Default (51.69%)
							P1: Door Hanger / Postcard Leave Behind	$1,500	$1,500		Printing	Default (51.69%)
							Professional Consultant Services:	$-				
							Creative design and translation services consultants	$2,000	$2,000		Management and consulting services	Default (71.95%)
							P1: DI_Energy Star Clothes Washer Installation	$115,000	$100,000	$15,000	Maintenance and Repair construction of residential structures	100.0%
							P1: DI_Energy Star Dishwasher Installation Contractors	$25,000	$25,000		Maintenance and Repair construction of nonresidential structures	100.0%
							P1: DI-HE Multi-Family Clothes Washer Installation Contractors	$180,000	$180,000		Maintenance and Repair construction of residential structures	100.0%
							Plumbing Trainer for Field Team	$600	$600		Maintenance and Repair construction of residential structures	100.0%
							P1: DI_Leak Repair Plumbing Contractors	$45,000	$45,000		Maintenance and Repair construction of residential structures	100.0%
							P2: DI_Energy Star Commercial Dishwasher Rebate/Installation Contractors	$245,000	$245,000		Maintenance and Repair construction of nonresidential structures	100.0%

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2016	Long Beach Water Department	Commercial Food Service Pre-Rinse Spray Valve and Faucet Aerator Project	$28,445	$37,762	$28,445	$37,761	Personnel Services	$8,716	$-	$8,716	Water, sewage and other treatment and delivery systems	100.0%
							Grantee Expenses:					
							Marketing Printing and Postage	$600		$600	Printing	Default (51.69%)
							Equipment:					
							Pre-Rinse Spray Valves	$27,244	$27,244		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Kitchen Hand Sink Faucet Aerators	$400	$400		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Lavatory Faucet Aerators	$801	$801		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
2016	West Basin Municipal Water District	Cash For Kitchens	$294,125	$550,998	$294,125	$550,998	Personnel Services	$31,748		$31,748	Water, sewage and other treatment and delivery systems	100.0%
							Equipment:	$-				
							Pre-Rinse Spray Valve	$16,000	$16,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Flow Restrictors	$10,000	$5,000	$5,000	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Air-Cooled Ice Machine	$330,000	$180,000	$150,000	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Professional Consultant Services	$-				
							Administration (Vendor / SBESC)	$14,025	$5,625	$8,400	Management and consulting services	100.0%
							Kitchen Surveys (Vendor / SBESC)	$84,225	$22,500	$61,725	Management and consulting services	100.0%
							ICE Machine Installations (Vendor)	$45,000	$45,000		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							PRSV & Flow Restrictor Installations	$20,000	$20,000		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
2016	Sonoma County Water	Sonoma-Marin Saving Water Partnership Water-Energy Rebate Program for Restaurants	$370,500	$392,806	$370,000	$392,306	Personnel Services	$22,306		$22,306	Water, sewage and other treatment and delivery systems	100.0%
							Grantee Expenses:					
							Printing Rebates forms & Marketing literature	$2,000	$2,000		Printing	Default (51.69%)
							Construction/Implementation Costs:					
							Dishwasher Low Temperature Stationary Single Tank Door	$105,000	$105,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Dishwasher Low Temperature Single Tank Conveyor	$15,000	$15,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Dishwasher High Temperature Under Counter	$10,000	$10,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Dishwasher High Temperature Stationary Single Tank Door	$10,000	$10,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Ice Machine Batch Self Contained Unit	$105,000	$105,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Steam Cooker Electric	$105,000	$105,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Steam Cooker Natural Gas	$5,000	$5,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Pre Rinse Spray Value	$6,000	$6,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Faucet	$7,000	$7,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
2016	SEMCU Foundation Inc.	SEMCU Residential Washer Rebate Program	$199,500	$199,500	$199,500	$199,500	Grantee Expenses (Advertising)	$15,000	$15,000		Labor and Civic Organizations	100.0%
							Professional and Consultant Services	$9,500	$9,500		Management and consulting services	Default (71.95%)
							Construction/Implementation Costs: Residential Washers	$175,000	$175,000		Household Laundry Equipment Manufacturing	Default (11.2%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2016	Amador Tuolumne Community Action Agency	A-TCAA DAC Residential Water-Energy Conservation Program	$720,770	$720,770	$720,767	$720,767	Direct Administration	$25,488	$25,488		Individual and Family Services	100.0%
							Monitoring Plan	$2,700	$2,700		Individual and Family Services	100.0%
							Project Implementation :	$-				
							Material Costs:	$-				
							Low Flow Showerheads	$31,484	$31,484		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Faucet-Bathroom	$60,624	$60,624		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Faucet - Kitchen	$30,087	$30,087		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Washing Machine	$156,948	$156,948		Household Laundry Equipment Manufacturing	Default (11.2%)
							Dishwasher	$121,023	$121,023		Other Major Household Appliance Manufacturing	Default (0.71%)
							Labor Costs:	$-				
							Assessment	$20,412	$20,412		Maintenance and Repair construction of residential structures	100.0%
							Installation of Low Flow Showerheads	$22,453	$22,453		Maintenance and Repair construction of residential structures	100.0%
							Installation of Faucet-Bathroom	$33,680	$33,680		Maintenance and Repair construction of residential structures	100.0%
							Installation of Faucet - Kitchen	$11,227	$11,227		Maintenance and Repair construction of residential structures	100.0%
							Installation of Washing Machine	$22,453	$22,453		Maintenance and Repair construction of residential structures	100.0%
							Installation of Dishwasher	$28,067	$28,067		Maintenance and Repair construction of residential structures	100.0%
							Post Inspection	$4,698	$4,698		Maintenance and Repair construction of residential structures	100.0%
							Disposal Costs:	$-				
							Washing Machine / Dishwasher	$21,433	$21,433		Waste Management and Remediation Services	Default (99.86%)
							Material and Installation Cost Contingency:	$-				
							10% (Distributed Above)	$-				
							Mobilization / Demobilization	$97,373	$97,373		Individual and Family Services	100.0%
							Implementation Admin	$30,618	$30,618		Individual and Family Services	100.0%
2016	West Basin Municipal Water District	DAC Water-Energy Savings Initiative Program	$506,500	$641,047	$506,500	$641,047	Personnel Services	$82,047		$82,047	Water, sewage and other treatment and delivery systems	100.0%
							Equipment:	$-				
							Clothes Washer	$250,000	$207,500	$42,500	Household Laundry Equipment Manufacturing	Default (11.2%)
							Evolve Showerhead	$15,000	$15,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Bathroom Sink Aerators	$5,000	$5,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Kitchen Sink Aerators	$5,000	$5,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Professional and Consultant Services:	$-				
							Vendor Administration	$39,000	$39,000		Management and consulting services	100.0%
							Indoor Surveys	$100,000	$100,000		Management and consulting services	Default (71.95%)
							Marketing	$20,000	$20,000		Printing	Default (51.69%)
							Water Savings Study	$10,000		$10,000	Management and consulting services	Default (71.95%)
							Clothes Washer Installation Cost	$100,000	$100,000		Maintenance and Repair construction of residential structures	Default (86.42%)
							Showerhead Installation Cost	$10,000	$10,000		Maintenance and Repair construction of residential structures	Default (86.42%)
							Sink Aerators Installation Cost	$5,000	$5,000		Maintenance and Repair construction of residential structures	Default (86.42%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2016	City of Rialto	Rialto Water Savings Initiative	$191,250	$196,250	$191,750	$196,750	Personnel Services	$57,500	$52,500	$5,000	Employment and payroll only (local govt, non-education)	100.0%
							Grantee Expenses:	$-				
							Shower Heads	$1,000	$1,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Faucets	$20,000	$20,000		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Top Load Washer	$12,000	$12,000		Household Laundry Equipment Manufacturing	Default (11.2%)
							Professional and Consultant Services:	$-				
							Program Advertisement (Rialto Family Health Services)	$5,000	$5,000		Individual and Family Services	100.0%
							In-home Evaluations (Rialto Family Health Services)	$16,250	$16,250		Individual and Family Services	100.0%
							Statistical Evaluations (MHM and Associates)	$3,000	$3,000		Management and consulting services	100.0%
							Grant Management (MHM and Associates)	$5,000	$5,000		Management and consulting services	100.0%
							Project Monitoring (MHM and Associates)	$7,000	$7,000		Management and consulting services	100.0%
							Recycling services	$5,000	$5,000		Maintenance and Repair construction of residential structures	Default (86.42%)
							Installation	$65,000	$65,000		Maintenance and Repair construction of residential structures	Default (86.42%)
2016	California State University Foundation	Water and Energy Efficiency Retrofits for the California State University	$1,272,654	$1,272,654	$1,272,654	$1,272,654	Equipment:					
							Commercial Dishwashers	$102,917	$102,917		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Clothes Washers	$15,000	$15,000		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Ice Machines	$27,657	$27,657		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Steam Cookers	$28,540	$28,540		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Combination Oven	$81,230	$81,230		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Pre-Rinse Spray Valve	$1,250	$1,250		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Commercial Faucet	$290,566	$290,566		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Commercial Shower	$229,540	$229,540		Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Professional and Consultant Services:	$-				
							Commercial Dishwashers	$115,700	$115,700		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Clothes Washers	$300	$300		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Ice Machines	$680	$680		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Steam Cookers	$170	$170		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Combination Oven	$170	$170		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Pre-Rinse Spray Valve	$680	$680		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Faucet	$278,630	$278,630		Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Commercial Shower	$99,625	$99,625		Maintenance and Repair construction of nonresidential structures	Default (85.93%)

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Appendix 20.2. Water-Energy Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total State Funds Reported in Award Summaries	Total Proposal Cost in Award Summaries	Total State Funds Reported in Project Budget	Total Project Cost Reported in Project Budget	Line Item Expenses	Line Item Cost	State Funds (Requested)	Match Funds (Reported)	IMPLAN Industry	Local Purchase Rate
2016	Pasadena Water and Power	Water and Energy Direct Install Program (WeDIP) Expansion	$1,245,570	$1,620,570	$1,245,570	$1,620,570	Equipment:					
							Commercial Dishwasher (stationary single tank door)	$199,125	$194,125	$5,000	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Commercial Dishwasher (under counter)	$162,500	$157,500	$5,000	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Ice Machine	$151,875	$151,875		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Steam Cooker	$78,220	$78,220		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Clothes Washer (Commercial)	$375,000	$322,250	$52,750	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Boiler-less Combination Oven	$216,600	$216,600		Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)
							Pre-Rinse Spray Valve	$6,250		$6,250	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Faucets (Bathroom)	$6,000		$6,000	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)
							Professional and Consultant Services:	$-				
							Direct Installations	$375,000	$125,000	$250,000	Maintenance and Repair construction of nonresidential structures	Default (85.93%)
							Site Evaluations and Energy/Water Surveys	$50,000		$50,000	Maintenance and Repair construction of nonresidential structures	Default (85.93%)
2016	Association of California Community and Energy Services	Low Income Residential Water Measures	$1,960,297	$1,960,297	$1,960,297	$1,960,297	Personnel Services	$132,001	$132,001		Individual and Family Services	100.0%
							Grantee operational expenses:					
							Printing, creating documents, office supplies and other office expenses (phone use, Internet use, and electricity)	$4,765	$4,765		Individual and Family Services	100.0%
							Equipment:					
							Residential Clothes Washer	$561,746	$561,746		Household Laundry Equipment Manufacturing	Default (11.2%)
							Residential Dishwashers	$629,660	$629,660		Household Laundry Equipment Manufacturing	Default (11.2%)
							Construction/Implementation:					
							Residential Clothes Washer	$313,625	$313,625		Maintenance and Repair construction of residential structures	Default (86.42%)
							Residential Dishwashers	$318,500	$318,500		Maintenance and Repair construction of residential structures	Default (86.42%)
			$45,507,867	**$51,395,728**	**$46,596,699**	**$49,932,596**		**$49,937,806**	**$46,596,699**	**$4,797,190**		

Summary of Industry-Level Investments for the Water Energy Grant Program

State Funds	Matching Funds	Industry	Weighted Local Purchase Rates	Percent of State Funds (Excluding Post-Project Monitoring)	Percent of State Funds (Including Post-Project Monitoring)	Percent of Total Match Funds
$5,252,057	$195,521	Architectural, engineering, and related services	100.0%	11.271%	10.958%	4.076%
$9,600	$-	Broadcast and wireless communications equipment manufacturing	Default (0.81%)	0.021%	0.020%	
$3,000	$-	Data processing, hosting, ISP, web search portals and related services	Default (95.82%)	0.006%	0.006%	
$3,965	$-	Commercial and Industrial Machinery and Equipment Rental and Leasing	100.0%	0.009%	0.008%	
$16,160	$-	Electronic computer manufacturing	Default (83.37%)	0.035%	0.034%	
$1,126,802	$785,096	Employment and payroll only (local govt, non-education)	100.0%	2.418%	2.351%	16.366%
$800	$-	Employment and payroll only (state government, non-education)	100.0%	0.002%	0.002%	
$92,520	$-	Environmental and other technical consulting services	100.0%	0.199%	0.193%	
$152,460	$-	Hardware Manufacturing	Default (16.07%)	0.327%	0.318%	
$4,564,089	$465,800	Household Laundry Equipment Manufacturing	Default (11.2%)	9.795%	9.523%	9.710%
$1,396,940	$843	Individual and Family Services	100.0%	2.998%	2.915%	0.018%
$4,438,415	$1,458,500	Landscape and Horticultural Services	99.9%	9.525%	9.261%	30.403%
$34,431	$-	Labor and Civic Organizations	100.0%	0.074%	0.072%	
$-	$5,000	Legal Services	Default (98.92%)			0.104%
$1,766,066	$147,650	Management and consulting services	85.9%	3.790%	3.685%	3.078%
$1,173,455	$331,279	Maintenance and Repair construction of nonresidential structures	91.8%	2.518%	2.448%	6.906%
$9,426,732	$37,500	Maintenance and Repair construction of residential structures	90.4%	20.230%	19.669%	0.782%
$34,658	$-	Mileage Basket	Default (4-100%)	0.074%	0.072%	
$2,305	$-	Office supplies (except paper) manufacturing	Default (5.88%)	0.005%	0.005%	
$2,035,913	$252,750	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)	4.369%	4.248%	5.269%
$514,084	$245,500	Other electronic component manufacturing	Default (46.51%)	1.103%	1.073%	5.118%
$181,023	$60,000	Other Major Household Appliance Manufacturing	Default (0.71%)	0.388%	0.378%	1.251%
$5,467	$-	Other Plastics Product Manufacturing	Default (33.07%)	0.012%	0.011%	
$3,697,471	$37,500	Pottery, Ceramics, and Plumbing Fixture Manufacturing	Default (10.01%)	7.935%	7.715%	0.782%
$14,730	$-	Postal Service	Default (90.26%)	0.032%	0.031%	
$221,169	$21,575	Printing	Default (51.69%)	0.475%	0.461%	0.450%
$4,147,658	$91,770	Plumbing Fixture Fitting and Trim Manufacturing	Default (51.38%)	8.901%	8.654%	1.913%
$9,000	$-	Radio and Television Broadcasting	100.0%	0.019%	0.019%	
$115,450	$-	Real estate establishments	Default (100%)	0.248%	0.241%	
$5,100	$50,000	Retail Stores - Building material and garden supply	Default (94.61%)	0.011%	0.011%	1.042%
$4,060	$-	Retail Stores - Clothing and clothing accessories	Default (100%)	0.009%	0.008%	
$2,000	$-	Retail Stores - Food and beverage	Default (99.99%)	0.004%	0.004%	
$114,576	$-	Software publishers	Default (99.83%)	0.246%	0.239%	
$100	$-	Telephone apparatus manufacturing	Default (50.43%)	0.000%	0.000%	
$-	$930	Toilet Preparation Manufacturing	Default (47.3%)	0.000%	0.000%	0.019%
$5,802,682	$5,600	Totalizing Fluid Meter and Counting Device Manufacturing	Default (4.66%)	12.453%	12.107%	0.117%
$21,433	$-	Waste Management and Remediation Services	Default (99.86%)	0.046%	0.045%	
$64,430	$432,892	Water, sewage and other treatment and delivery systems	100.0%	0.138%	0.134%	9.024%
$6,170	$-	Wired Telecommunications Carriers	Default (93.90%)	0.013%	0.013%	
$-	$56,141	Wiring device manufacturing	Default (45.81%)			1.170%
$139,728	$115,344	Wireless Telecommunications Carriers	Default (99.43%)	0.300%	0.292%	2.404%
		Post project monitoring			2.778%	
$46,596,699	**$4,797,190**			**100.00%**	**100.00%**	**100.00%**

21. State Water Project Turbines

21.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the State Water Project Turbines program. See **Table A21.1.1** and **Table A21.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A21.1.1. Indirect Jobs Supported by California Climate Investment Funding for the State Water Project Turbines Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment services	4.0	14.6%
Architectural, engineering, and related services	2.7	9.7%
Management consulting services	2.4	8.7%
Marketing research and all other miscellaneous professional, scientific, and technical services	2.0	7.3%
Full-service restaurants	1.4	5.2%
Real estate	1.4	5.0%
Environmental and other technical consulting services	1.3	4.9%
Office administrative services	1.0	3.7%
Accounting, tax preparation, bookkeeping, and payroll services	0.9	14.6%
Specialized design services	0.7	9.7%
Subtotal of Top 10 Industries	**17.8**	**64.9%**
Total of All Industries	**27.4**	**100%**

Table A21.1.2. Indirect Jobs Supported by Induced Co-investment for the State Water Project Turbines Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Employment services	1.2	16.1%
Architectural, engineering, and related services	0.8	10.4%
Management consulting services	0.8	10.4%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.6	7.8%
Real estate	0.5	6.2%
Full-service restaurants	0.4	5.3%
Environmental and other technical consulting services	0.4	5.2%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	3.9%
Office administrative services	0.3	3.7%
Specialized design services	0.2	2.6%
Subtotal of Top 10 Industries	**5.2**	**71.5%**
Total of All Industries	**7.3**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A21.2.1** and **Table A21.2.2** for a summary of the induced jobs supported by the State Water Project Turbines program, as reported in FTE job-years.

Table A21.2.1. Induced Jobs Supported by California Climate Investment Funding for the State Water Project Turbines Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.6	4.7%
Real estate	1.6	4.7%
Limited-service restaurants	1.6	4.4%
Hospitals	1.4	4.0%
Individual and family services	1.3	3.7%
Wholesale trade	1.2	3.5%
Offices of physicians	1.1	3.1%
Retail – Food and beverage stores	0.9	2.7%
Other financial investment activities	0.9	2.5%
All other food and drinking places	0.9	2.4%
Subtotal of Top 10 Industries	**12.6**	**35.7%**
Total of All Industries	**35.3**	**100%**

Table A21.2.2. Induced Jobs Supported by Induced Co-investment for the State Water Project Turbines Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Hospitals	0.5	4.8%
Full-service restaurants	0.5	4.8%
Limited-service restaurants	0.5	4.8%
Real estate	0.5	4.7%
Wholesale trade	0.4	3.9%
Offices of physicians	0.4	3.7%
Individual and family services	0.3	3.5%
Other financial investment activities	0.3	3.0%
Nursing and community care facilities	0.3	2.9%
Retail – Food and beverage stores	0.3	2.6%
Subtotal of Top 10 Industries	**3.8**	**38.7%**
Total of All Industries	**9.8**	**100%**

Appendix 21.2. State Water Project Turbines Program Detailed Summary of Modeling Inputs

Project Name	Total Awarded Grant Funds	Line Item Expenses	Line Item Cost	IMPLAN Industry	Local Purchase Rate
State Water Project Turbines Program	$20,000,000	External Consultant Design & Manufacture Hyatt Unit 1 Runner	$5,000,000	Turbine and turbine generator set units manufacturing	0%
		External Consultant Replace Hyatt Unit 1 Thrust Bearing	$1,000,000	Architectural, engineering, and related services	100%
		External Consultant Rehabilitate Hyatt Unit 1 Turbine Casing	$4,000,000	Architectural, engineering, and related services	100%
		External Consultant Design & Manufacture Thermalito Unit 1 Runner	$6,000,000	Turbine and turbine generator set units manufacturing	0%
		External Consultant Replace Thermalito Unit 1 Runner	$1,000,000	Architectural, engineering, and related services	100%
		External Consultant Rehabilitate Thermalito Unit 1 Turbine Casing	$3,000,000	Architectural, engineering, and related services	100%

Summary of Industry-Level Investments for the State Water Project Turbines Program

Total State Funds	Industry	Local Purchase Rate	Percent of State Funds
$9,000,000	Architectural, engineering, and related services	100%	45%
$11,000,000	Turbine and turbine generator set units manufacturing	0%	55%
$20,000,000			

22. Sacramento-San Joaquin Delta and Coastal Wetlands Restoration

22.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program. See **Table A22.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A22.1. Indirect Jobs Supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	2.6	8.2%
Real estate	2.6	8.1%
Architectural, engineering, and related services	1.7	5.4%
Retail – Clothing and clothing accessories stores	1.5	4.9%
Retail – Nonstore retailers	1.5	4.6%
Employment services	1.5	4.6%
Truck transportation	1.0	3.3%
Retail – Miscellaneous store retailers	0.9	3.0%
Services to buildings	0.9	2.9%
Management consulting services	0.7	2.5%
Subtotal of Top 10 Industries	**14.9**	**47.2%**
Total of All Industries	**31.5**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.) See **Table A22.2** for a summary of the induced jobs supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration program, as reported in FTE job-years.

Table A22.2. Induced Jobs Supported by the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	1.8	4.8%
Full-service restaurants	1.8	4.7%
Limited-service restaurants	1.7	4.5%
Hospitals	1.5	3.9%
Individual and family services	1.4	3.6%
Wholesale trade	1.3	3.5%
Offices of physicians	1.2	3.0%
Retail – Food and beverage stores	1.0	2.7%
Other financial investment activities	1.0	2.5%
Retail – General merchandise stores	0.9	2.5%
Subtotal of Top 10 Industries	**13.7**	**35.7%**
Total of All Industries	**38.3**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 22.2. Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Total Proposal Cost	Budget State Funds	Budget Total Cost	Line Item Expenses	Line Item Cost	State Funds	Co-invest-ment	IMPLAN Industry	Local Purchase Rate
2014-2015	Reclamation District 341	Sherman Island Wetland Restoration Project	$10,386,139	$17,542,271	$10,382,139	$10,382,139	Personnel Services	$-	$-		Employment and payroll only (local government, non-education)	100%
							Operating Expenses: Subcontractors	$-				
							Construction Phase 1	$3,090,909	$3,090,909		Construction of other new nonresidential structures	Default (99.91%)
							Maintenance Phase 1	$286,250	$286,250		Maintenance and repair construction of nonresidential structures	Default (85.93%)
							Planning and Design Phase 2	$473,250	$473,250		Architectural, engineering, and related services	Default (95.66%)
							Construction Phase 2	$5,424,325	$5,424,325		Construction of other new nonresidential structures	Default (99.91%)
							Maintenance Phase 2	$222,500	$222,500		Maintenance and repair construction of nonresidential structures	Default (85.93%)
							GHG Monitoring	$-	$-		Environmental and other technical consulting services	Default (100%)
							Delta-wide Model and Protocol	$132,345	$132,345		Environmental and other technical consulting services	Default (100%)
							Operating Expenses: Other					
							Permits	$2,000	$2,000		Employment and payroll only (state government, non-education)	100%
							Travel (miles)	$560	$560		Mileage basket	4-100%
							Operating Expenses: Electronic and Purchase Equipment					
							Eddy Flux Equipment	$300,000	$300,000		Watch, clock, and other measuring and controlling device manufacturing	Default (6.91%)
							N20 Auto Chambers	$450,000	$450,000		Watch, clock, and other measuring and controlling device manufacturing	Default (6.91%)
2014-2015	Regents of the University of California, Santa Barbara	North Campus Open Space Wetlands Restoration	$999,989	$2,944,798	$999,989	$999,989	Personnel Services	$264,470	$264,470		Scientific research and development services	100%
							Operating Expenses: Subcontractors	$-				
							UCSB Design and Construction Services Recharge	$57,300	$57,300		Architectural, engineering, and related services	100%
							Grown Plants	$55,077	$55,077		Greenhouse, nursery, and floriculture production	Default (73.12%)
							Grading	$500,000	$500,000		Landscape and horticultural services	Default (99.87%)
							Hydro-sprigging	$18,000	$18,000		Landscape and horticultural services	Default (99.87%)
							Operating Expenses: Other					
							Irrigation supplies	$5,000	$5,000		Retail Stores - Building material and garden supply	Default (94.61%)
							Monitoring Supplies	$1,000	$1,000		Retail Stores - Building material and garden supply	Default (94.61%)
							Greenhouse Supplies	$10,000	$10,000		Retail Stores - Building material and garden supply	Default (94.61%)
							LOI % C	$2,400	$2,400		Architectural, engineering, and related services	Default (95.66%)
							Gas Exchange Costs	$16,807	$16,807		Architectural, engineering, and related services	Default (95.66%)
							Isotope Analyses	$8,333	$8,333		Architectural, engineering, and related services	Default (95.66%)
							Indirect Charge Rate (20%)	$61,602	$61,602		Scientific research and development services	100%
2014-2015	Elkhorn Slough Foundation	Blue Carbon at Elkhorn Slough: Increasing Regional Carbon Sequestration Through Salt Marsh Restoration	$2,996,768	$5,283,758	$2,987,768	$2,987,768	Personnel Services	$781,307	$781,307		Museums, historical sites, zoos, and parks	100%
							Operating Expenses: Subcontractors	$-				
							Drexel University	$59,830	$59,830		Scientific research and development services	0%
							MLML GIS Contract	$39,131	$39,131		Architectural, engineering, and related services	100%
							Carbon Field Sampling Contract	$6,000	$6,000		Environmental and other technical consulting services	Default (100%)
							Education Deliverables Contract	$20,000	$20,000		Management and consulting services	Default (71.95%)
							Final Design Contract	$100,000	$100,000		Architectural, engineering, and related services	Default (95.66%)
							Construction Contract	$1,603,700	$1,603,700		Construction of other new nonresidential structures	Default (99.91%)

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Appendix 22.2. Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Awarded Grant Funds	Total Proposal Cost	Budget State Funds	Budget Total Cost	Line Item Expenses	Line Item Cost	State Funds	Co-invest-ment	IMPLAN Industry	Local Purchase Rate
							Planting Contract (plant plugs)	$50,000	$50,000		Support activities for agriculture and forestry	Default (99.92%)
							Planting Contract (assist with nursery production)	$41,600	$41,600		Support activities for agriculture and forestry	Default (99.92%)
							Planting Contract (assist with field seed production)	$20,800	$20,800		Support activities for agriculture and forestry	Default (99.92%)
							Planting Contract (labor crews for planting)	$41,000	$41,000		Support activities for agriculture and forestry	Default (99.92%)
							Operating Expenses: Other					100%
							Planting supplies - soil and pots	$8,000	$8,000		Retail Stores - Building material and garden supply	Default (94.61%)
							Herbicide	$2,500	$2,500		Retail Stores - Building material and garden supply	Default (94.61%)
							Field Monitoring supplies, PVC, boots, feldspar, coring supplies (bulk)	$3,500	$3,500		Retail Stores - Building material and garden supply	Default (94.61%)
							Tuck rental	$1,500	$1,500		Automotive equipment rental and leasing	Default (88.82%)
							Shipping cores	$650	$650		US Postal Service	Default (90.26%)
							Education: interpretive sign and exhibit materials	$4,960	$4,960	$-	Printing	Default (51.69%)
							Boat/otter monitoring supplies - boat and trailer repairs, binoculars	$2,000	$2,000		Electronic and precision equipment repair and maintenance	Default (99.73%)
							Direct project supplies - software, toner, tools, tool and equipment repair, meeting supplies, shipping, presentation workshop costs, and other field supplies	$9,964	$9,964		Retail Stores - Miscellaneous	Default (99.96%)
							Operating Expenses: Electronic and Purchased Equipment					
							Water Quality supplies - sondes	$27,430	$27,430		Watch, clock, and other measuring and controlling device manufacturing	Default (6.91%)
							Computers	$1,020	$1,020		Electronic computer manufacturing	Default (83.37%)
							Indirect Charge Rate (20%)	$162,876	$162,876		Museums, historical sites, zoos, and parks	100%
2014-2015	U.S. Fish and Wildlife Service, San Diego National Wildlife Refuge Complex	Initiation of Thin-layered Sediment Augmentation on the Pacific Coast: An Action to Ensure the Long Term Availability of Coastal Salt Marsh for Carbon Sequestration/Storage, as well as to Support the Conservation of Habitat to Support Listed and Sensitive Wetland Species	$1,055,827	$2,038,675	$1,055,827	$1,132,707	Personnel Services	$133,261	$56,381	$76,880	Museums, historical sites, zoos, and parks	100%
							Subcontractors:	$-	$870,563		Museums, historical sites, zoos, and parks	100%
							Southwest Wetlands Interpretive Association (SWIA)	$870,563	$125,500		Employment and payroll only (state government, non-education)	100%
							County of Orange Parks Department (OC Parks)	$125,500	$3,383		Museums, historical sites, zoos, and parks	100%
							Indirect costs (6%)	$3,383				
			$15,438,723	**$27,809,502**	**$15,425,723**			**$15,502,603**	**$15,425,723**	**$76,880**		

Summary of Industry-Level Investments for the Sacramento-San Joaquin Delta and Coastal Wetlands Restoration Program

Total Funds	Total State Funds	Total Matching Funds	Industry	Weighted Local Purchase Rates	Percent of Total State Funds	Percent of Total Matching Funds
$697,221	$697,221	$-	Architectural, engineering, and related services	96.3%	4.52%	0.00%
$1,500	$1,500	$-	Automotive equipment rental and leasing	Default (88.82%)	0.01%	0.00%
$10,118,934	$10,118,934	$-	Construction of other new nonresidential structures	Default (99.91%)	65.60%	0.00%
$2,000	$2,000	$-	Electronic and precision equipment repair and maintenance	Default (99.73%)	0.01%	0.00%
$1,020	$1,020	$-	Electronic computer manufacturing	Default (83.37%)	0.01%	0.00%
$127,500	$127,500	$-	Employment and payroll only (state government, non-education)	100%	0.83%	0.00%
$138,345	$138,345	$-	Environmental and other technical consulting services	Default (100%)	0.90%	0.00%
$55,077	$55,077	$-	Greenhouse, nursery, and floriculture production	Default (73.12%)	0.36%	0.00%
$518,000	$518,000	$-	Landscape and horticultural services	Default (99.87%)	3.36%	0.00%
$20,000	$20,000	$-	Management and consulting services	Default (71.95%)	0.13%	0.00%
$508,750	$508,750	$-	Maintenance and repair construction of nonresidential structures	Default (85.93%)	3.30%	0.00%
$560	$560	$-	Mileage basket	4-100%	0.00%	0.00%
$1,951,390	$1,874,510	$76,880	Museums, historical sites, zoos, and parks	100%	12.15%	100.00%
$4,960	$4,960	$-	Printing	Default (51.69%)	0.03%	0.00%
$30,000	$30,000	$-	Retail stores - Building material and garden supply	Default (94.61%)	0.19%	0.00%
$9,964	$9,964	$-	Retail stores - Miscellaneous	Default (99.96%)	0.06%	0.00%
$385,902	$385,902		Scientific research and development services	84.5%	2.50%	0.00%
$153,400	$153,400		Support activities for agriculture and forestry	Default (99.92%)	0.99%	0.00%
$650	$650	$-	U.S. Postal Service	Default (90.26%)	0.00%	0.00%
$777,430	$777,430	$-	Watch, clock, and other measuring and controlling device manufacturing	Default (6.91%)	5.04%	0.00%
$15,502,603	**$15,425,723**	**$76,880**			**100.00%**	**100.00%**

23. Mountain Meadow Ecosystems Restoration

23.1 Program Overview

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Mountain Meadow Ecosystems Restoration program. See **Table A23.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A23.1. Indirect Jobs Supported by the Mountain Meadow Ecosystems Restoration Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Real estate	1.0	9.3%
Employment services	1.0	9.3%
Architectural, engineering, and related services	0.7	6.1%
Management consulting services	0.6	5.3%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.6	5.3%
Wholesale trade	0.5	4.4%
Legal services	0.3	2.6%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	2.6%
Services to buildings	0.3	2.5%
Retail – Clothing and clothing accessories stores	0.3	2.4%
Subtotal of Top 10 Industries	**5.4**	**49.8%**
Total of All Industries	**10.8**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A23.2** for a summary of the induced jobs supported by the Mountain Meadow Ecosystems Restoration program, as reported in FTE job-years.

Table A23.2. Induced Jobs Supported by the Mountain Meadow Ecosystems Restoration Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.8	5.0%
Real estate	1.8	4.7%
Limited-service restaurants	1.7	4.5%
Hospitals	1.5	4.2%
Individual and family services	1.4	3.9%
Wholesale trade	1.3	3.7%
Offices of physicians	1.2	3.4%
Retail – Food and beverage stores	1.0	2.7%
Retail – General merchandise stores	1.0	2.7%
All other food and drinking places	0.9	2.5%
Subtotal of Top 10 Industries	**5.8**	**37.5%**
Total of All Industries	**15.6**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 23.2. Mountain Meadow Ecosystems Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds	Total Proposal Cost	Budget State Funds	Line Item Expenses	Line Item Cost	State Funds	IMPLAN Industry	Local Purchase Rate
2014-2015	Plumas Corporation	Mountain Meadows Restoration Project at Greenville Creek and Upper Goodrich and Effects on Greenhouse Gases	$679,566	$699,248	$679,566	Personnel Services	$148,326	$148,326	Management and consulting services	100%
						Operating Expenses: Other				
						Native Sedge and Grass Seed	$11,000	$11,000	Greenhouse, nursery, and floriculture production	Default (73.1%)
						Mileage	$4,306	$4,306	Mileage Basket	Default (4 to 100%)
						Lodging	$720	$720	Hotels and motels	Default (17.13%)
						Per Diem	$690	$690	Food services and drinking places	Default (99.54%)
						Shipping Soil Samples	$490	$490	US Postal Service	Default (90.3%)
						Lab Processing Fees	$1,200	$1,200	Architectural, engineering, and related services	Default (95.66%)
						Soil carbon monitoring Supplies	$1,534	$1,534	Retail Stores - Building material and garden supply	Default (94.6%)
						Operating Expenses: Subcontractors	$-			
						Excavator	$72,000	$72,000	Landscape and horticultural services	Default(99.87%)
						Wheel Loader	$72,000	$72,000	Landscape and horticultural services	Default(99.87%)
						Truck Loader	$54,000	$54,000	Truck Transportation	Default(90.95%)
						Water Truck	$45,000	$45,000	Truck Transportation	Default(90.95%)
						Soil Compactor	$10,000	$10,000	Support Activities for Agriculture and Forestry	Default (99.92%)
						University of Nevada, Reno	$224,647	$224,647	Scientific research and development services	0%
						Indirect Costs (20%)	$33,653	$33,653	Management and consulting services	100%
2014-2015	Sierra Foothill Conservancy	Bean Meadow Restoration Project	$493,543	$552,329	$493,543	Personnel Services	$136,322	$136,322	Museums, historical sites, zoos and parks	100%
						Operating Expenses: Subcontractors				
						American Rivers	$8,431	$8,431	Scientific research and development services	0%
						Plumas Corporation	$74,068	$74,068	Management and consulting services	100%
						Point Blue	$6,083	$6,083	Scientific research and development services	100%
						Stillwater Sciences	$148,720	$148,720	Scientific research and development services	100%
						Operating Expenses: Materials & Supplies				
						Forage Lab Analysis	$8,000	$8,000	Architectural, engineering, and related services	Default (95.66%)
						Peizometers	$4,800	$4,800	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Riparian Pasture Fencing	$48,000	$48,000	Retail Stores - Building material and garden supply	Default (94.6%)
						Gates	$4,000	$4,000	Retail Stores - Building material and garden supply	Default (94.6%)
						Printing	$5,000	$5,000	Printing	Default (51.7%)
						Operating Expenses: Travel				
						Per Diem	$2,250	$2,250	Food services and drinking places	Default (99.54%)
						Mileage	$5,162	$5,162	Mileage Basket	Default (4 to 100%)
						Indirect Charge (20%)	$42,707	$42,707	Museums, historical sites, zoos and parks	100%
2014-2015	South Yuba River Citizens League	Yuba Headwaters Meadow Restoration	$567,480	$920,666	$568,480	Personnel Services	$140,534	$140,534	Environmental and other technical consulting services	100%
						Subcontractors:				
						U.S. Forest Service (DAYS for NEPA and Project Lead)	$65,799	$65,799	Support Activities for Agriculture and Forestry	100%

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Appendix 23.2. Mountain Meadow Ecosystems Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds	Total Proposal Cost	Budget State Funds	Line Item Expenses	Line Item Cost	State Funds	IMPLAN Industry	Local Purchase Rate
						Stillwater Sciences (GHG Emissions protocol - training and sample design)	$106,940	$106,940	Scientific research and development services	100%
						Contractor (Restoration Implementation for 2 meadows)	$190,000	$190,000	Environmental and other technical consulting services	Default (100%)
						Laboratory Fees (Carbon sampling for three meadows)	$5,000	$5,000	Architectural, engineering, and related services	Default (95.66%)
						Plumas Corporation	$2,100	$2,100	Management and consulting services	100%
						Operating Expenses: Other				
						Mileage	$5,000	$5,000	Mileage Basket	Default (4 to 100%)
						Permits	$5,000	$5,000	Employment and payroll only (state government, non-education)	100%
						Operating Expenses: Equipment	$-			
						Solinist pressure transducers	$12,000	$12,000	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Operating Expenses: Supplies				
						Grainger Well Points	$2,000	$2,000	Retail Stores - Building material and garden supply	Default (94.6%)
						Well pipe and caps	$500	$500	Retail Stores - Building material and garden supply	Default (94.6%)
						Soil Moisture Meter	$800	$800	Retail Stores - Building material and garden supply	Default (94.6%)
						Mud Auger	$300	$300	Retail Stores - Building material and garden supply	Default (94.6%)
						36" Soil Samplers	$200	$200	Retail Stores - Building material and garden supply	Default (94.6%)
						Soil Core Sampler	$500	$500	Retail Stores - Building material and garden supply	Default (94.6%)
						Calibration Chemicals for YSI meter	$300	$300	Retail Stores - Building material and garden supply	Default (94.6%)
						Scale	$400	$400	Retail Stores - Building material and garden supply	Default (94.6%)
						Indirect Charge (20%)	$31,107	$31,107	Environmental and other technical consulting services	100%
2014-2015	Truckee River Watershed Council	Truckee Meadows Restoration Project	$1,495,551	$1,645,551	$1,495,552	Personnel Services	$116,156	$116,156	Environmental and other technical consulting services	100%
						Operating Expenses				
						Permits	$10,000	$10,000	Employment and payroll only (state government, non-education)	100%
						Mileage	$392	$392	Mileage Basket	Default (4 to 100%)
						Subcontractors:				
						CEQA review and document preparation	$50,000	$50,000	Environmental and other technical consulting services	100%
						Pre-Construction GHG Baseline Sampling	$61,000	$61,000	Environmental and other technical consulting services	Default (100%)
						Groundwater Sampling	$9,000	$9,000	Environmental and other technical consulting services	Default (100%)
						Wetland Delineation	$10,000	$10,000	Environmental and other technical consulting services	Default (100%)
						Wildlife Survey	$5,000	$5,000	Environmental and other technical consulting services	Default (100%)
						Botanical	$5,000	$5,000	Environmental and other technical consulting services	Default (100%)
						Cultural Resources	$15,000	$15,000	Museums, historical sites, zoos and parks	Default (99.91%)
						Construction Supervision - Engineer	$25,000	$25,000	Architectural, engineering, and related services	Default (95.66%)

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Appendix 23.2. Mountain Meadow Ecosystems Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds	Total Proposal Cost	Budget State Funds	Line Item Expenses	Line Item Cost	State Funds	IMPLAN Industry	Local Purchase Rate
						Construction Supervision - Archaeologist	$25,000	$25,000	Landscape and horticultural services	Default(99.87%)
						Construction Site 1	$200,000	$200,000	Construction of other new nonresidential structures	Default(99.91%)
						Construction Site 2	$470,000	$470,000	Construction of other new nonresidential structures	Default(99.91%)
						Construction Site 3	$107,694	$107,694	Construction of other new nonresidential structures	Default(99.91%)
						Construction Site 4	$175,000	$175,000	Construction of other new nonresidential structures	Default(99.91%)
						Construction Site 5	$120,000	$120,000	Construction of other new nonresidential structures	Default(99.91%)
						Post-Monitoring GHG	$61,000	$61,000	Environmental and other technical consulting services	Default (100%)
						Post-Monitoring Groundwater	$5,000	$5,000	Environmental and other technical consulting services	Default (100%)
						Overhead Costs (20%)	$25,310	$25,310	Environmental and other technical consulting services	100%
2014-2015	California Trout Inc.	Developing a Protocol for Net Carbon Sequestration from Restoration of Eastern Sierra Meadows	$921,766	$1,334,646	$921,766	Personnel services	$265,259	$265,259	Civic, social, professional, and similar organizations	100%
						Operating Expenses				
						GHG Measuring Supplies	$600	$600	Retail Stores - Building material and garden supply	Default (94.6%)
						Travel ($90 unit cost, assuming car rental)	$5,000	$5,000	Automotive equipment rental and leasing	Default (88.82%)
						Mileage	$3,386	$3,386	Mileage Basket	Default (4 to 100%)
						Field Equipment (monitoring devices, in-stream temperature gauges, GPS devices)				
						Monitoring devices, in-stream temperature gauges, groundwater monitoring wells, GPS Devices	$15,000	$15,000	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Subcontractors:				
						Stillwater Sciences	$250,000	$250,000	Scientific research and development services	100%
						Plumas Corporation	$80,000	$80,000	Management and consulting services	100%
						Field Crew	$28,000	$28,000	Environmental and other technical consulting services	Default (100%)
						Todd Sloat Consultants	$10,000	$10,000	Management and consulting services	100%
						Training Seminar	$8,000	$8,000	Management and consulting services	Default (71.95%)
						Conferences	$30,000	$30,000	Management and consulting services	Default (71.95%)
						Design	$5,280	$5,280	Special Design Services	Default (99.37%)
						UC Merced	$57,745	$57,745	Scientific research and development services	100%
						UN Reno	$5,000	$5,000	Scientific research and development services	0%
						UC Davis	$6,000	$6,000	Scientific research and development services	100%
						SCS Global Services	$50,000	$50,000	Environmental and other technical consulting services	100%
						Rock and Delivery	$42,874	$42,874	Stone Mining and Quarrying	Default (26.62%)
						Carbon Sampling	$13,000	$13,000	Environmental and other technical consulting services	100%
						Overhead (17%)	$46,622	$46,622	Environmental and other technical consulting services	100%
2014-2015	Truckee River Watershed Council	Middle Martis Creek Wetlands Restoration	$594,176	$1,566,065	$594,177	Personnel Services	$20,330	$20,330	Environmental and other technical consulting services	100%
						Operating Expenses: Other				
						Lodging	$540	$540	Hotels and motels	Default (17.13%)

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Appendix 23.2. Mountain Meadow Ecosystems Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds	Total Proposal Cost	Budget State Funds	Line Item Expenses	Line Item Cost	State Funds	IMPLAN Industry	Local Purchase Rate
						Per Diem	$276	$276	Food services and drinking places	Default (99.54%)
						Mileage	$280	$280	Mileage Basket	Default (4 to 100%)
						Subcontractors				
						Engineer	$25,000	$25,000	Architectural, engineering, and related services	Default (95.66%)
						Storm Water Pollution Prevention Plan Compliance and Monitoring	$3,000	$3,000	Environmental and other technical consulting services	100%
						Construction Cost	$400,000	$400,000	Construction of other new nonresidential structures	Default(99.91%)
						Hydrologic Monitoring	$36,000	$36,000	Environmental and other technical consulting services	Default (100%)
						Vegetation Monitoring	$10,000	$10,000	Environmental and other technical consulting services	Default (100%)
						Avian Monitoring	$3,000	$3,000	Environmental and other technical consulting services	Default (100%)
						GHG Flux Measurements	$84,354	$84,354	Environmental and other technical consulting services	Default (100%)
						Soil Carbon and Biomass Measurements	$7,112	$7,112	Environmental and other technical consulting services	Default (100%)
						Overhead costs	$4,285	$4,285	Environmental and other technical consulting services	100%
2014-2015	Regents of the University of California, Santa Barbara	A Demonstration of the Carbon Sequestration and Biodiversity Benefits of Beaver and Beaver Dam Analogue Restoration Techniques	$539,672	$758,456	$539,672	Personnel Services	$318,544	$318,544	Scientific research and development services	100%
						Operating Expenses: Subcontractors	$-			
						The Nature Conservancy	$105,500	$105,500	Scientific research and development services	100%
						Operating Expenses: Electronic and Purchased Equipment				
						PP Systems EGM-4	$7,000	$7,000	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Operating Expenses:				
						Miscellaneous field gear	$983	$983	Retail Stores - Building material and garden supply	Default (94.6%)
						Soil Carbon Analysis	$4,000	$4,000	Architectural, engineering, and related services	Default (95.66%)
						CO2 chamber, fittings	$450	$450	Other general purpose machinery manufacturing	Default (3.59%)
						Exetainer gas sample vials	$1,000	$1,000	Other general purpose machinery manufacturing	0%
						HOBO Photosynthetic Light (PAR) Smart sensor	$200	$200	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						12 piezometers + supplies for field installation	$3,800	$3,800	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Water stage loggers	$2,500	$2,500	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						iButton temperature loggers	$2,500	$2,500	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Publication costs	$4,000	$4,000	Periodical publishers	Default (72.02%)
						Travel and Per Diem	$18,000	$18,000	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)
						Indirect Charge Rate	$71,195	$71,195	Scientific research and development services	100%

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Appendix 23.2. Mountain Meadow Ecosystems Restoration Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Project Name	Total Grant Funds	Total Proposal Cost	Budget State Funds	Line Item Expenses	Line Item Cost	State Funds	IMPLAN Industry	Local Purchase Rate
2014-2015	Yosemite National Park	Restoration of the Carbon Storing Ecosystem in Tuolumne Meadows, Yosemite National Park, California	$587,996	$1,135,196	$587,996	Personnel Services	$48,500	$48,500	Museums, historical sites, zoos and parks	100%
						Subcontractors:	$-	$537,071	Scientific research and development services	0%
						Colorado State University	$537,071	$2,425	Museums, historical sites, zoos and parks	100%
						Indirect Expenses	$2,425			
			$5,879,750	**$8,612,157**	**$5,880,752**		**$5,880,752**	**$5,880,752**		

Summary of Industry-Level Investments for the Mountain Meadow Ecosystems Restoration Program

Total State Funds	Industry	Weighted Local Purchase Rates	Percent of Total State Funds
$68,200	Architectural, engineering, and related services	Default (95.66%)	1.16%
$5,000	Automotive equipment rental and leasing	Default (88.82%)	0.09%
$265,259	Civic, social, professional, and similar organizations	100%	4.51%
$1,472,694	Construction of other new nonresidential structures	Default(99.91%)	25.04%
$15,000	Employment and payroll only (state government, non-education)	100%	0.26%
$3,216	Food services and drinking places	Default (99.54%)	0.05%
$1,014,810	Environmental and other technical consulting services	100%	17.26%
$11,000	Greenhouse, nursery, and floriculture production	Default (73.1%)	0.19%
$1,260	Hotels and motels	Default (17.13%)	0.02%
$169,000	Landscape and horticultural services	Default(99.87%)	2.87%
$386,147	Management and consulting services	97.2%	6.57%
$18,526	Mileage Basket	Default (4 to 100%)	0.32%
$244,954	Museums, historical sites, zoos and parks	100%	4.17%
$1,450	Other general purpose machinery manufacturing	Default (3.59%)	0.02%
$4,000	Periodical publishers	Default (72.02%)	0.07%
$5,000	Printing	Default (51.7%)	0.09%
$60,117	Retail stores – Building material and garden supply	Default (94.6%)	1.02%
$1,845,876	Scientific research and development services	58%	31.39%
$5,280	Special design services	Default (99.37%)	0.09%
$75,799	Support activities for agriculture and forestry	100%	1.29%
$42,874	Stone mining and quarrying	Default (26.62%)	0.73%
$490	U.S. Postal Service	Default (90.3%)	0.01%
$65,800	Watch, clock, and other measuring and controlling device manufacturing	Default (4.7%)	1.12%
$99,000	Truck transportation	Default(90.95%)	1.68%
$5,880,752			**100.00%**

24. Forest Health Program

24.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Forest Health Program. See **Table A24.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A24.1. Indirect Jobs Supported by the Forest Health Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Support activities for agriculture and forestry	4.6	34.8%
Wholesale trade	1.5	11.7%
Architectural, engineering, and related services	0.9	6.5%
Greenhouse, nursery, and floriculture production	0.7	5.2%
Accounting, tax preparation, bookkeeping, and payroll services	0.4	2.9%
Truck transportation	0.4	2.9%
Legal services	0.3	2.2%
Real estate	0.3	2.1%
Employment services	0.3	2.1%
Services to buildings	0.3	2.1%
Subtotal of Top 10 Industries	**9.5**	**72.5%**
Total of All Industries	**13.1**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A24.2** for a summary of the induced jobs supported by the Forest Health Program, as reported in FTE job-years.

Table A24.2. Induced Jobs Supported by the Forest Health Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	2.7	4.7%
Real estate	2.6	4.7%
Limited-service restaurants	2.4	4.3%
Hospitals	2.3	4.0%
Individual and family services	2.0	3.6%
Wholesale trade	1.9	3.4%
Offices of physicians	1.8	3.2%
Retail – Food and beverage stores	1.5	2.6%
Retail – General merchandise stores	1.5	2.6%
Other financial investment activities	1.5	2.6%
Subtotal of Top 10 Industries	**20.1**	**35.8%**
Total of All Industries	**56.1**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 24.2. Forest Health Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	Line Item Cost	State Funds	Matching Funds	IMPLAN Industry	Local Purchase Rate
2014-2015	CFIP	Schaezlein	Schaezlein	$49,996	Mini - Management Plan	$1,576	$1,576	$-	Support activities for agriculture and forestry	Default (99.9%)
					RPF Supervision	$12,420	$12,420	$-	Support activities for agriculture and forestry	Default (99.9%)
					Trees and Planting	$8,100	$8,100	$-	Forestry, forest products, and timber tract production	Default (47.1%)
					FollowUp Herbicide	$27,900	$27,900	$-	Support activities for agriculture and forestry	Default (99.9%)
2014-2015	Demonstration State Forest Research	Soper-Wheeler Company	Returning Redwoods: Testing Cultivar and Seedlings for Survival and Growth in Grassy Degraded Forestland	$167,735	Fencing	$37,040	$37,040	$-	Construction of other new nonresidential structures	Default (99.9%)
					Site Preparation	$5,800	$5,800	$-	Support activities for agriculture and forestry	Default (99.9%)
					Site Layout	$12,345	$12,345	$-	Support activities for agriculture and forestry	Default (99.9%)
					Planting	$28,350	$28,350	$-	Support activities for agriculture and forestry	Default (99.9%)
					Lab and Nursery Cost	$8,000	$3,500	$4,500	Forestry, forest products, and timber tract production	Default (47.1%)
					Vegetation Management	$32,400	$32,400	$-	Support activities for agriculture and forestry	Default (99.9%)
					Measurements	$33,300	$33,300	$-	Scientific research and development services	Default (97.8%)
					Analysis and Reporting	$12,000	$10,500	$1,500	Scientific research and development services	Default (97.8%)
					Indirect Costs (12%)	$20,848	$-	$20,848	Scientific research and development services	Default (97.8%)
2014-2015	Forest Pest Control	The Regents of the University of California	Redwood Valley Sudden Oak Death Biomass Removal Project	$527,396	Salaries and Wages	$103,732	$103,732	$-	Support activities for agriculture and forestry	Default (99.9%)
					Employee Benefits	$56,320	$56,320	$-	Support activities for agriculture and forestry	Default (99.9%)
					Contractual:					
					Mechanical thinning & biomass	$228,882	$228,882	$-	Support activities for agriculture and forestry	Default (99.9%)
					Hand-falling & biomass	$37,116	$37,116	$-	Support activities for agriculture and forestry	Default (99.9%)
					Hand-falling (lop & scatter)	$22,500	$22,500	$-	Support activities for agriculture and forestry	Default (99.9%)
					Planting	$6,000	$6,000	$-	Support activities for agriculture and forestry	Default (99.9%)
					Travel (Mileage)	$6,840	$6,840	$-	Mileage Basket	Default (4-100%)
					Supplies					
					Cleaning equipment & sanitizers		$1,000		Retail Stores - Building material and garden supply	Default (94.61%)
					Sampling and culturing supplies		$3,500		Retail Stores - Building material and garden supply	Default (94.61%)
					Equipment					
					Other	$5,000	$5,000	$-	Support activities for agriculture and forestry	Default (99.9%)
					Indirect Costs (12%)	$56,507	$56,507	$-	Support activities for agriculture and forestry	Default (99.9%)
2014-2015	Fuels Reduction	Pit Resource Conservation District	Black Mountain Forest & Watershed Restoration	$864,780	Salaries and Wages	$150,359	$-	$150,359	Support activities for agriculture and forestry	Default (99.9%)
					Employee Benefits	$-	$-	$-	Support activities for agriculture and forestry	Default (99.9%)
					Contractual:					
					Biomass Treatments	$788,400	$788,400	$-	Support activities for agriculture and forestry	Default (99.9%)
					PRCD Project Director	$35,200	$35,200	$-	Support activities for agriculture and forestry	Default (99.9%)
					Travel	$-	$-			
					Mileage			$3,680	Mileage Basket	Default (4-100%)
					Gov Vehicles Utilization			$10,000	Employment and payroll only (local government, non-education)	100%
					Supplies (Boundary Flagging)	$151		$151	Retail Stores - Building material and garden supply	Default (94.61%)
					Equipment					
					Other	$-	$-	$-	Support activities for agriculture and forestry	Default (99.9%)
					Indirect Costs (12%)	$41,180	$41,180	$-	Support activities for agriculture and forestry	Default (99.9%)

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Appendix 24.2. Forest Health Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Awarded Grant Funds	Line Item Expenses	Line Item Cost	State Funds	Matching Funds	IMPLAN Industry	Local Purchase Rate
2015-2016	Watershed Rehabilitation and Restoration Project	Georgetown Divide Resource Conservation District	King Fire Watershed Rehabilitation and Restoration Project	$1,893,957	Administration	$132,137	$132,137		Employment and payroll only (local government, non-education)	100%
					Project Planning					
					Mapping and Stratification	$5,000	$5,000		Employment and payroll only (local government, non-education)	100%
					Environmental Inventory and Field Work	$10,000	$10,000		Employment and payroll only (local government, non-education)	100%
					Management Plans and Reforestation Prescriptions	$33,320	$33,320		Employment and payroll only (local government, non-education)	100%
					GHG Verification	$10,000	$5,000	$5,000	Employment and payroll only (local government, non-education)	100%
					CEQA	$15,000	$15,000		Employment and payroll only (local government, non-education)	100%
					Project Implementation					
					Consulting Forester	$99,000	$99,000	$-	Support activities for agriculture and forestry	Default (99.9%)
					Site Prep / Slash Disposal	$1,293,000	$1,293,000	$-	Support activities for agriculture and forestry	Default (99.9%)
					Seedling Procurement and Planting	$292,500	$292,500		Forestry, forest products, and timber tract production	Default (47.1%)
					Monitoring & Reporting					
					Implementation Monitoring	$3,000	$3,000		Employment and payroll only (local government, non-education)	100%
					Stocking Surveys	$3,000	$3,000		Employment and payroll only (local government, non-education)	100%
					Education and Outreach	$3,000	$3,000		Employment and payroll only (local government, non-education)	100%
				$3,503,864			**$3,499,364**	**$196,039**		

Summary of Industry-Level Investments for the Forest Health Program

Total State Funds	Total Matching Funds	Industry	Weighted Local Purchase Rates	Percent of Total State Funds (Excluding State Admin Costs)	Percent of Total State Funds (Including State Admin Costs)	Percent of Total Matching Funds
$37,040	$-	Construction of other new nonresidential structures	Default (99.9%)	1.1%	0.98%	0.00%
$209,457	$15,000	Employment and payroll only (local government, non-education)	100%	6.0%	5.54%	7.65%
$304,100	$4,500	Forestry, forest products, and timber tract production	Default (47.1%)	8.7%	8.04%	2.30%
$6,840	$3,680	Mileage Basket	Default (4-100%)	0.2%	0.18%	1.88%
$4,500	$151	Retail Stores - Building material and garden supply	Default (94.61%)	0.1%	0.12%	0.08%
$2,893,627	$150,359	Support activities for agriculture and forestry	Default (99.9%)	82.7%	76.53%	76.70%
$43,800	$22,348	Scientific research and development services	Default (97.8%)	1.3%	1.16%	11.40%
$3,499,364	**$196,039**			**100.00%**	**92.55%**	**100.00%**

25. Forest Legacy Program

25.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Forest Legacy Program. See **Table A25.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A25.1. Indirect Jobs Supported by the Forest Legacy Program

California Climate Investment		
N/A	N/A	N/A
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A25.2** and **Table A25.2.2** for a summary of the induced jobs supported by the Forest Legacy Program, as reported in FTE job-years.

Table A25.2.1. Induced Jobs Supported by California Climate Investment Funding for the Forest Legacy Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.9	4.9%
Real estate	0.8	4.6%
Limited-service restaurants	0.8	4.4%
Hospitals	0.8	4.2%
Individual and family services	0.7	3.9%
Wholesale trade	0.7	3.8%
Offices of physicians	0.5	3.0%
Retail – Food and beverage stores	0.5	2.9%
Retail – General merchandise stores	0.5	2.9%
Other financial investment activities	0.5	2.7%
Subtotal of Top 10 Industries	**6.6**	**37.4%**
Total of All Industries	**17.8**	**100%**

Table A25.2.2. Induced Jobs Supported by Induced Co-investment for the Forest Legacy Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	3.1	4.7%
Real estate	3.0	4.5%
Limited-service restaurants	2.9	4.4%
Hospitals	2.6	4.0%
Individual and family services	2.4	3.6%
Wholesale trade	2.3	3.5%
Offices of physicians	2.1	3.1%
Retail – Food and beverage stores	1.8	2.7%
Other financial investment activities	1.7	2.6%
Retail – General merchandise stores	1.7	2.6%
Subtotal of Top 10 Industries	**23.7**	**35.6%**
Total of All Industries	**66.6**	**100%**

26. Urban and Community Forestry Program

26.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Urban and Community Forestry Program. See **Table A26.1** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A26.1. Indirect Jobs Supported by the Urban and Community Forestry Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Support activities for agriculture and forestry	9.2	35.7%
Real estate	1.2	4.6%
Employment services	1.2	4.6%
Wholesale trade	1.0	3.7%
Architectural, engineering, and related services	0.9	3.7%
Management consulting services	0.6	2.2%
Services to buildings	0.5	2.1%
Other educational services	0.5	2.1%
Grant making, giving, and social advocacy organizations	0.5	1.9%
Accounting, tax preparation, bookkeeping, and payroll services	0.5	1.8%
Subtotal of Top 10 Industries	**16.1**	**62.5%**
Total of All Industries	**25.8**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A26.2** for a summary of the induced jobs supported by the Urban and Community Forestry Program, as reported in FTE job-years.

Table A26.2. Induced Jobs Supported by the Urban and Community Forestry Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.9	4.8%
Real estate	1.8	4.7%
Limited-service restaurants	1.7	4.4%
Hospitals	1.6	4.1%
Individual and family services	1.4	3.6%
Wholesale trade	1.3	3.5%
Offices of physicians	1.3	3.2%
Retail – Food and beverage stores	1.0	2.6%
Retail – General merchandise stores	1.0	2.6%
Other financial investment activities	1.0	2.5%
Subtotal of Top 10 Industries	**14.0**	**36.2%**
Total of All Industries	**38.9**	**100%**
Induced Co-investment		
N/A	N/A	N/A

Appendix 26.2. Urban and Community Forestry Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Green Innovations	California ReLeaf	Planting with Purpose	$649,965	$236,000	$885,965	Salaries and Wages	$130,950		$100,950	$30,000	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$27,765		$19,765	$8,000	Civic, social, professional, and similar organizations	100%
							Contractual						
							Sub-Grantee Labor and Contract Labor: Project Management/Education/Tree Planting/Tree Establishment/Concrete Cuts	$295,000		$195,000	$100,000	Civic, social, professional, and similar organizations	100%
							GHG Emissions Tracking	$30,000		$25,000	$5,000	Environmental and other technical consulting services	Default (100%)
							Translation Services	$20,000		$18,000	$2,000	All other miscellaneous professional, scientific, and technical services	Default (99.38%)
							Communications Consultants	$17,000		$15,000	$2,000	Management and consulting services	Default (72%)
							Travel (Air Travel, Car Rental, Hotel)	$23,500		$16,500	$7,000	Civic, social, professional, and similar organizations	100%
							Trees and Tree Supplies						
							Trees and plants	$120,000		$100,000	$20,000	Forestry, forest products, and timber tract production	Default (47.1%)
							Tree and plant supplies (stakes, ties, seed, soil, etc.)	$45,000		$40,000	$5,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Communication Supplies	$2,000		$-	$2,000	Retail Stores - Miscellaneous	Default (99.96%)
							Equipment						
							Equipment (shovels, pruners, etc.)	$43,000		$40,000	$3,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Tablets for Inventory	$4,000		$2,000	$2,000	Retail Stores - Electronics and appliances	Default (99.96%)
							Recognition Signage	$5,000		$5,000	$-	Printing	Default (51.69%)
							Other						
							Sub-Grantee Admin Costs	$45,000		$40,000	$5,000	Landscape and horticultural services	Default(99.87%)
							Environmental Education Materials and Outreach	$20,000		$20,000	$-	Printing	Default (51.69%)
							Indirect Costs (Programmatic Overhead)	$57,750		$12,750	$45,000	Civic, social, professional, and similar organizations	100%
2014-2015	Green Innovations	Sacramento Tree Foundation	NeighborWoods in South Sacramento	$1,000,000	$388,890	$1,388,890	Salaries and Wages	$380,987	$195,000	$196,987	$184,000	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$89,860	$50,050	$50,560	$39,300	Civic, social, professional, and similar organizations	100%
							Contractual						
							Soil Born Farms - Procurement and care and project management to support 1000 fruit trees	$468,363	$330,000	$333,363	$135,000	Forestry, forest products, and timber tract production	100%
							Sacramento Regional Conservation Corp	$318,210	$315,000	$318,210	$-	Landscape and horticultural services	100%
							Marketing and Branding Consultant	$10,102	$10,000	$10,102	$-	Management and consulting services	100%
							Idealist Consulting for SalesForce software support	$4,546	$4,500	$4,546	$-	Management and consulting services	0%
							Travel (mileage)	$10,107	$10,005	$10,107	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$30,076	$7,500	$7,576	$22,500	Forestry, forest products, and timber tract production	Default (47.1%)
							Stakes	$3,128	$780	$788	$2,340	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$742	$185	$187	$555	Retail Stores - Building material and garden supply	Default (94.6%)
							Labels	$261	$65	$66	$195	Retail Stores - Building material and garden supply	Default (94.6%)
							Other Planting Materials	$889	$880	$889	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Watering Buckets	$5,051	$5,000	$5,051	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Multi Lingual Educational Materials	$10,051	$5,000	$5,051	$5,000	Printing	Default (51.69%)
							Planting Event Supplies and Materials	$15,153	$15,000	$15,153	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Equipment						
							Computer	$1,010	$1,000	$1,010	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							IPAD	$505	$500	$505	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Planting Tools	$2,525	$2,500	$2,525	$-	Retail Stores - Building material and garden supply	Default (94.6%)

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Signage	$5,051	$5,000	$5,051	$-	Printing	Default (51.69%)
							Other (Contingency $9762.27 - Applied proportionally above)	$-	$9,762	$-	$-		
							Indirect Costs	$32,273	$32,273	$32,273	$-	Civic, social, professional, and similar organizations	100%
2014-2015	Green Innovations	City of Farmersville	Farmersville Urban Forest Restoration and Park Development	$270,000	$30,000	$300,000	Salaries and Wages	$26,000		$-	$26,000	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$4,000		$-	$4,000	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Design, Engineering, Permitting	$30,000		$30,000		Architectural, engineering, and related services	100%
							Construction	$140,101		$140,101	$-	Landscape and horticultural services	100%
							Tree Establishment	$3,919		$3,919	$-	Landscape and horticultural services	100%
							Construction Management	$33,010		$33,010	$-	Landscape and horticultural services	100%
							Project Management	$44,470		$44,470	$-	Architectural, engineering, and related services	100%
							Grant Administration	$8,500		$8,500	$-	Management and consulting services	100%
							Other Direct: Outreach Materials and Workshops (Announcements/Flyers/ Direct Mail/PSAs/Signage	$10,000		$10,000	$-	Printing	Default (51.69%)
2014-2015	Green Innovations	Amigos de los Rios	Mulhall Family Center Green Infrastructure Project	$750,000	$110,918	$860,918	Salaries and Wages	$85,174	$77,431	$85,174	$-	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$35,300	$32,091	$35,300	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							Civil Engineering Costs	$22,440	$20,400	$22,440	$-	Architectural, engineering, and related services	100%
							GHG Emission Tracking	$16,500	$15,000	$16,500	$-	Scientific research and development services	100%
							Certified Arborist	$3,300	$3,000	$3,300	$-	Environmental and other technical consulting services	100%
							Professional Landscape Irrigation Design & As Builts	$21,685	$19,713	$21,685	$-	Architectural, engineering, and related services	100%
							Professional Prevailing Wage Consultant	$1,500	$-	$-	$1,500	Architectural, engineering, and related services	100%
							Asphalt Demo & Removal	$40,269	$36,608	$40,269	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Concrete Demo & Removal	$22,928	$20,844	$22,928	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Install Permeable Paving & Infiltration Measures	$103,178	$93,798	$103,178	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Cool Paving (Treat Asphalt Paving with Light Colored Emulsion)	$28,222	$25,656	$28,222	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Swales (Grading, Boulders, Gravel)	$69,300	$63,000	$69,300	$-	Landscape and horticultural services	100%
							Trails (Decomposing Granite)	$132,000	$120,000	$132,000	$-	Landscape and horticultural services	100%
							Irrigation Installation	$36,500	$15,000	$16,500	$20,000	Landscape and horticultural services	100%
							Cool Roof Installation	$4,689	$4,263	$4,689	$-	Landscape and horticultural services	100%
							Community Planter Boxes (Purchase & Assemble)	$16,500	$15,000	$16,500	$-	Landscape and horticultural services	100%
							Tree Planting	$49,857	$32,500	$35,750	$14,107	Landscape and horticultural services	100%
							Shrub Planting	$29,750	$-	$-	$29,750	Landscape and horticultural services	100%
							Watering Contract Labor	$12,461	$4,000	$4,400	$8,061	Landscape and horticultural services	100%
							EMCSD Jurisdiction Establishment & Care	$3,000	$-	$-	$3,000	Landscape and horticultural services	100%
							Munhall Green Infrastructure Center Wellness Organization Partners	$3,000	$-	$-	$3,000	Printing	Default (51.69%)
							Travel (mileage)	$1,265	$1,150	$1,265	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Tree Nursery Stock	$37,620	$16,200	$17,820	$19,800	Forestry, forest products, and timber tract production	100%
							Stakes	$7,524	$6,840	$7,524	$-	Retail Stores - Building material and garden supply	100%

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Ties	$1,683	$1,530	$1,683	$-	Retail Stores - Building material and garden supply	100%
							Shrub Nursery Stock	$16,088	$14,625	$16,088	$-	Forestry, forest products, and timber tract production	100%
							Mulch	$22,880	$20,800	$22,880	$-	Retail Stores - Building material and garden supply	100%
							Planting Tablets	$341	$310	$341	$-	Retail Stores - Building material and garden supply	100%
							Tree Planting Tool Supplies	$2,000			$2,000	Retail Stores - Building material and garden supply	100%
							Light Colored Emulsion for Asphalt (Cool Paving and Roof)	$16,455	$14,959	$16,455	$-	Retail Stores - Building material and garden supply	100%
							Education & Outreach Flyers	$5,330	$300	$330	$5,000	Printing	Default (51.69%)
							Equipment						
							Compost Bin	$1,320	$1,200	$1,320	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Worm Bin	$275	$250	$275	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch Area	$550	$500	$550	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Water Trailer	$3,850	$3,500	$3,850	$-	Truck trailer manufacturing	Default (21.57%)
							Other						
							Signage (Metal Sign Frames w/ Polycarbonate Cover)	$4,185	$1,350	$1,485	$2,700	Printing	Default (51.69%)
							Educational Component	$2,000	$-	$-	$2,000	Civic, social, professional, and similar organizations	Default(100%)
							Indirect Costs (Contingency $68,181 - Applied Proportionately Above)	$-	$68,182		$-		
2014-2015	Green Innovations	Tree San Diego	San Diego Tree Advantage	$750,000	$553,605	$1,303,605	Contractual						
							GHG Analysis and Reporting	$8,400		$8,400	$-	Civic, social, professional, and similar organizations	100%
							Oversight/Audit/Quality Assurance	$10,800		$10,800	$-	Civic, social, professional, and similar organizations	100%
							Direct Project Management and Volunteer Management	$562,500		$112,500	$450,000	Civic, social, professional, and similar organizations	100%
							Securing Plant Sites	$17,000		$12,000	$5,000	Civic, social, professional, and similar organizations	100%
							Tree Ambassador Jobs	$8,000		$8,000	$-	Landscape and horticultural services	100%
							Education Development and Delivery	$44,000		$20,000	$24,000	Civic, social, professional, and similar organizations	100%
							IT System for Monitoring	$24,000		$24,000	$-	Management and consulting services	Default (72%)
							Tree Purchase, Delivery, Planting	$214,605		$180,000	$34,605	Landscape and horticultural services	100%
							Understory Plant Purchase, Delivery, Planting	$10,800		$10,800	$-	Landscape and horticultural services	100%
							Tree Monitoring and Maintenance	$144,000		$144,000	$-	Landscape and horticultural services	100%
							Tree Watering	$116,800		$76,800	$40,000	Landscape and horticultural services	100%
							Language Translation	$4,800		$4,800	$-	All other miscellaneous professional, scientific, and technical services	Default (99.38%)
							San Diego Tree Map Server	$6,000		$6,000	$-	Environmental and other technical consulting services	100%
							One San Diego Outreach	$7,500		$7,500	$-	Civic, social, professional, and similar organizations	100%
							San Diego Tree Map on Site Training	$1,200		$1,200	$-	Environmental and other technical consulting services	100%
							Travel						
							Local Mileage	$4,200		$4,200	$-	Mileage Basket	Default (4-100%)
							Travel to Collect and Disseminate Information Regarding Best Practices with DACs	$4,000		$4,000	$-	Civic, social, professional, and similar organizations	100%
							Trees and Tree Supplies						
							Water for Trees	$18,900		$18,900	$-	Water, sewage and other treatment and delivery systems	100%
							Education and Training Materials	$10,000		$10,000	$-	Printing	Default (51.69%)
							Shovels, Buckets, Gloves	$1,168		$1,168	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Signs to Meet CALFIRE Requirements	$750		$750	$-	Printing	Default (51.69%)
							Tablets with 3 Years of Service	$6,000		$6,000	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Equipment						
							ArcGIS	$10,000		$10,000	$-	Software Publishers	Default (99.83%)
							Indirect Costs (Project Administration)	$68,182		$68,182		Civic, social, professional, and similar organizations	100%

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Green Innovations	Koreatown Youth and Community Center	Green Streets through Community Engagement	$329,725	$137,666	$467,391	Salaries and Wages	$217,165	$184,768	$203,245	$13,920	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$54,438	$47,902	$52,692	$1,746	Civic, social, professional, and similar organizations	100%
							Trees and Tree Supplies						
							Trees	$18,150	$16,500	$18,150	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$4,356	$3,960	$4,356	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$726	$660	$726	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Tree Guards	$726	$660	$726	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Tree Labor Match	$110,000	$-	$-	$110,000	Landscape and horticultural services	100%
							Tree Match	$12,000	$-	$-	$12,000	Forestry, forest products, and timber tract production	100%
							Equipment						
							Planting Supplies / Tools	$1,100	$1,000	$1,100	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Presentation Equipment	$3,850	$3,500	$3,850	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Other						
							Training and Outreach Materials	$880	$800	$880	$-	Printing	Default (51.69%)
							Incentives	$44,000	$40,000	$44,000	$-	Landscape and horticultural services	100%
							Indirect Costs (Contingency $29,975 - Distributed Proportionately Above)		$29,975				
2014-2015	Green Innovations	California Urban Forests Council	California Initiative to Reduce Carbon and Limit Emissions (CIRCLE)	$750,000	$300,000	$1,050,000	Salaries and Wages	$98,047		$98,047	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							WCA Per Tree Costs	$907,500		$607,500	$300,000	Landscape and horticultural services	100%
							WCISA Marketing	$25,000		$25,000	$-	Environmental and other technical consulting services	100%
							Travel						
							Flights	$900		$900		Transport by air	Default(69.02%)
							Hotel Rooms	$345		$345		Hotels and motels, including casino hotels	Default(17.13%)
							Car Rentals	$450		$450		Automotive equipment rental and leasing	Default (88.82%)
							Food	$305		$305		Retail Stores - Food and beverage	Default (99.99%)
							Trees and Tree Supplies						
							Office Supplies (Paper, Ink, Postage) and Event Supplies (Tools, Printing)	$1,500		$1,500	$-	Retail Stores - Miscellaneous	Default (99.96%)
							Indirect Costs (Overhead - Rent, Phone, Utilities)	$15,953		$15,953		Civic, social, professional, and similar organizations	100%
2014-2015	Green Innovations	Los Angeles Conservation Corps	San Pedro Urban Forest Ecosystem Restoration Project	$1,481,999	$848,125	$2,330,124	Salaries and Wages	$201,256	$182,960	$201,256	$-	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$37,501	$34,092	$37,501	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							CEQA Compliance	$25,000	$-	$-	$25,000	Civic, social, professional, and similar organizations	100%
							Consulting Arborist	$55,000	$50,000	$55,000	$-	Environmental and other technical consulting services	100%
							Engineering & Design	$201,500	$65,000	$71,500	$130,000	Architectural, engineering, and related services	100%
							Bioswales	$158,400	$144,000	$158,400	$-	Landscape and horticultural services	100%
							Rain Gardens	$275,000	$250,000	$275,000	$-	Landscape and horticultural services	100%
							Concrete Removal	$165,000	$150,000	$165,000	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Sidewalk Repair	$82,500	$75,000	$82,500	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Turf Replacement	$140,625	$-	$-	$140,625	Landscape and horticultural services	100%
							Mulch	$242,000	$-	$-	$242,000	Landscape and horticultural services	100%
							Irrigation Installation						
							POC	$88,000	$80,000	$88,000	$-	Landscape and horticultural services	100%
							Controller	$33,000	$30,000	$33,000	$-	Landscape and horticultural services	100%
							RCVs	$19,250	$17,500	$19,250	$-	Landscape and horticultural services	100%
							Tree Bubbler Sets	$231,000	$210,000	$231,000	$-	Landscape and horticultural services	100%

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							City Plant Match Trees						
							15 gal. Street Trees	$253,000	$-	$-	$253,000	Forestry, forest products, and timber tract production	100%
							15 gal. Open Space Trees	$23,000	$-	$-	$23,000	Forestry, forest products, and timber tract production	100%
							5 gal. "Front Yard" Adoption Trees	$27,000	$-	$-	$27,000	Forestry, forest products, and timber tract production	100%
							Land Life Boxes & Seedlings Open Space Trees	$7,500	$-	$-	$7,500	Forestry, forest products, and timber tract production	100%
							Travel (Mileage)	$7,392	$6,720	$7,392	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$44,000	$40,000	$44,000	$-	Forestry, forest products, and timber tract production	100%
							Stakes, Ties, & Arbor Guards	$13,200	$12,000	$13,200	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Indirect Costs (Contingency $134,727 - Distributed Proportionately Above)		$134,727				
2014-2015	Green Trees for the Golden State	California ReLeaf	California ReLeaf 2015 Social Equity Tree Planting Grant Program	$749,500	$271,000	$1,020,500	Salaries and Wages	$153,772	$109,250	$111,467	$42,305	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$32,604	$25,345	$25,859	$6,744	Civic, social, professional, and similar organizations	100%
							Contractual						
							Sub-Grantee Labor and Contract Labor: Project Management/Education/Tree Planting/Tree Establishment/Concrete Cuts	$394,078	$230,000	$234,667	$159,412	Civic, social, professional, and similar organizations	100%
							GHG Emission Tracking	$31,638	$25,000	$25,507	$6,131	Environmental and other technical consulting services	Default (100%)
							Translation Services	$22,858	$20,000	$20,406	$2,452	All other miscellaneous professional, scientific, and technical services	Default (99.38%)
							Communications Consultants	$17,757	$15,000	$15,304	$2,452	Management and consulting services	Default (72%)
							Travel (Air Travel, Car Rental, Hotel)	$24,496	$18,000	$18,365	$6,131	Civic, social, professional, and similar organizations	100%
							Trees and Tree Supplies						
							Trees	$167,365	$140,000	$142,841	$24,525	Forestry, forest products, and timber tract production	100%
							Stakes, Ties, Mulch	$36,740	$30,000	$30,609	$6,131	Retail Stores - Building material and garden supply	Default (94.6%)
							Communications Supplies	$2,452	$-	$-	$2,452	Retail Stores - Miscellaneous	Default (99.96%)
							Equipment						
							Shovels, Pruners, etc.	$44,490	$40,000	$40,812	$3,679	Retail Stores - Building material and garden supply	Default (94.6%)
							Tablets for Inventory	$6,534	$4,000	$4,081	$2,452	Retail Stores - Electronics and appliances	Default (99.96%)
							Recognition Signage	$8,162	$8,000	$8,162	$-	Printing	Default (51.69%)
							Other						
							Sub-Grantee Admin Costs	$57,146	$50,000	$51,015	$6,131	Civic, social, professional, and similar organizations	100%
							Environmental Education Materials and Outreach	$20,406	$20,000	$20,406	$-	Printing	Default (51.69%)
							Indirect Costs (Contingency $64,905 State Funds and $50,000 Matching Funds - Distributed Proportionately Above)	$-	$14,905				
2014-2015	Green Trees for the Golden State	Canopy	Healthy Trees, Healthy Kids! 2.0	$329,711	$146,083	$475,794	Salaries and Wages	$226,112	$80,822	$88,904	$137,208	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$26,165	$23,786	$26,165	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							Site Preparation and Asphalt Removal	$64,625	$58,750	$64,625	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							GHG Emission Tracking	$4,950	$4,500	$4,950	$-	Environmental and other technical consulting services	Default (100%)
							Tree Circus	$3,300	$3,000	$3,300	$-	Civic, social, professional, and similar organizations	100%
							Certified Arborist	$7,000	$-	$-	$7,000	Environmental and other technical consulting services	100%
							Travel (mileage)	$1,386	$1,260	$1,386	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$41,250	$37,500	$41,250	$-	Forestry, forest products, and timber tract production	100%
							Tree Materials	$5,500	$5,000	$5,500	$-	Retail Stores - Building material and garden supply	Default (94.6%)

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Weed Cloth	$363	$330	$363	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$1,875	$-	$-	$1,875	Retail Stores - Building material and garden supply	Default (94.6%)
							Signage	$4,224	$3,840	$4,224	$-	Printing	Default (51.69%)
							Educational Materials	$5,720	$5,200	$5,720	$-	Printing	Default (51.69%)
							Tools	$3,300	$3,000	$3,300	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Follow-on Tree Care (3 years)	$80,025	$72,750	$80,025	$-	Civic, social, professional, and similar organizations	100%
							Indirect Costs (Contingency $29,973.75 - Applied Proportionately Above)		$29,974				
2014-2015	Green Trees for the Golden State	City of Richmond	Ten Thousand Trees 2.0	$497,266	$162,818	$660,084	Salaries and Wages	$104,497	$54,522	$59,975	$44,522	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$28,619	$13,628	$14,991	$13,628	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Groundwork Richmond	$144,900	$109,000	$119,900	$25,000	Civic, social, professional, and similar organizations	100%
							Richmond Trees	$76,000	$60,000	$66,000	$10,000	Civic, social, professional, and similar organizations	100%
							Pogo Park	$91,800	$68,000	$74,800	$17,000	Civic, social, professional, and similar organizations	100%
							The Watershed Project	$53,700	$42,000	$46,200	$7,500	Civic, social, professional, and similar organizations	100%
							Backhoe Operator	$6,600	$6,000	$6,600	$-	Landscape and horticultural services	100%
							Soils Testing	$16,500	$15,000	$16,500	$-	Environmental and other technical consulting services	100%
							Vallier and Associates Landscaping	$10,500	$5,000	$5,500	$5,000	Architectural, engineering, and related services	100%
							SBCA Arborist	$10,500	$5,000	$5,500	$5,000	Environmental and other technical consulting services	100%
							Concrete Cutting	$10,500	$5,000	$5,500	$5,000	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Travel (mileage)	$3,696	$3,360	$3,696	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$48,000	$30,000	$33,000	$15,000	Forestry, forest products, and timber tract production	100%
							Stakes	$5,400	$4,000	$4,400	$1,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$536	$335	$369	$168	Retail Stores - Building material and garden supply	Default (94.6%)
							Dri-Water Gel Packs	$5,500	$5,000	$5,500	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Tools (Shovels, Hoes, etc.)	$2,584	$1,440	$1,584	$1,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$10,250	$7,500	$8,250	$2,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Tablets for Inventory	$1,403	$1,275	$1,403	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Equipment						
							Truck Rental	$7,500	$5,000	$5,500	$2,000	Automotive equipment rental and leasing	Default (88.82%)
							Water Truck	$11,450	$4,500	$4,950	$6,500	Automotive equipment rental and leasing	Default (88.82%)
							Other						
							Graphic Design	$5,250	$2,500	$2,750	$2,500	Specialized design services	100%
							PR Materials (Brochures)	$4,400	$4,000	$4,400	$-	Printing	Default (51.69%)
							Indirect Costs (Contingency $45,206 - Distributed Proportionately Above)		$45,206				
2014-2015	Green Trees for the Golden State	City of Modesto	Modesto Tree Replanting Activity	$326,940	$102,956	$429,896	Salaries and Wages	$118,948		$96,500	$22,448	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$16,011		$5,440	$10,571	Employment and payroll only (local government, non-education)	100%
							Trees and Tree Supplies						
							Trees	$225,000		$225,000	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$30,000		$-	$30,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$2,500		$-	$2,500	Retail Stores - Building material and garden supply	Default (94.6%)
							Compost	$8,000		$-	$8,000	Retail Stores - Building material and garden supply	Default (94.6%)

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Appendix 26.2. Urban and Community Forestry Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Equipment						
							Tractor and Auger	$8,000		$-	$8,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Field computer and tablets	$4,000		$-	$4,000	Retail Stores - Electronics and appliances	Default (99.96%)
							Water Truck (Ford 650)	$17,437		$-	$17,437	Light truck and utility vehicle manufacturing	0%
2014-2015	Green Trees for the Golden State	Sacramento Regional Conservation Corps	Green Trees for Yuba County	$291,107	$97,139	$388,246	Salaries and Wages	$214,772	$137,198	$150,619	$64,153	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$74,122	$41,547	$45,611	$28,511	Civic, social, professional, and similar organizations	100%
							Contractual						
							Certified Arborist	$10,991	$10,012	$10,991	$-	Environmental and other technical consulting services	100%
							Travel (Mileage)	$3,836	$3,494	$3,836	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$37,732	$34,370	$37,732	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$5,390	$4,910	$5,390	$-	Retail Stores - Building material and garden supply	100%
							Ties	$431	$393	$431	$-	Retail Stores - Building material and garden supply	100%
							Irrigation Materials	$23,021	$20,970	$23,021	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							I-Pad for Inventory	$1,098	$1,000	$1,098	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Signage	$703	$640	$703	$-	Printing	Default (51.69%)
							Uniforms & Safety Gear	$4,786	$4,360	$4,786	$-	Retail Stores - Clothing and clothing accessories	Default (100%)
							Hand Tools	$549	$500	$549	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Water	$4,000	$-	$-	$4,000	Water, sewage and other treatment and delivery systems	100%
							Irrigation Materials Match	$475	$-	$-	$475	Retail Stores - Building material and garden supply	Default (94.6%)
							Equipment						
							Augur	$2,189	$1,994	$2,189	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Trencher	$4,150	$3,780	$4,150	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Indirect Costs (Contingency $25,939 - Distributed Proportionately Above)		$25,939				
2014-2015	Green Trees for a Golden State	Tree Davis	West Sacramento Trees for Tomorrow	$537,094	$138,649	$675,743	Salaries and Wages	$446,704	$280,050	$308,055	$138,649	Civic, social, professional, and similar organizations	100%
							Contractual						
							Truck Rental	$3,515	$3,195	$3,515	$-	Automotive equipment rental and leasing	Default (88.82%)
							Urban Forest Manager - West Sacramento	$61,875	$56,250	$61,875	$-	Employment and payroll only (local government, non-education)	100%
							Post Project Period Maintenance	$44,000	$40,000	$44,000	$-	Landscape and horticultural services	100%
							Trees and Tree Supplies						
							Trees (15 gallon)	$53,504	$48,640	$53,504	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$30,223	$27,475	$30,223	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Arborgard Trunk Protectors	$2,122	$1,929	$2,122	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Treegator Junior	$18,505	$16,823	$18,505	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Direct Mail Postcard - Resident Recruitment	$2,626	$2,387	$2,626	$-	Printing	Default (51.69%)
							Direct Mail Postcard - Tree Care Follow-up	$657	$597	$657	$-	Printing	Default (51.69%)
							Program Flyers with Tree Benefits	$1,053	$957	$1,053	$-	Printing	Default (51.69%)
							Display Ad - Full Page, News-Ledger	$2,391	$2,174	$2,391	$-	Printing	Default (51.69%)
							Project Sign	$550	$500	$550	$-	Printing	Default (51.69%)
							Capitol Public Radio Yearly Campaign	$6,369	$5,790	$6,369	$-	Advertising and related services	Default (98.28%)
							T-shirts for Volunteer Leaders	$1,650	$1,500	$1,650	$-	Retail Stores - Clothing and clothing accessories	Default (100%)
							Indirect Costs (Contingency $48,827 - Distributed Proportionately Above)		$48,827				

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Green Trees for the Golden State	Urban ReLeaf	Trees for Oakland Flatlands	$749,953	$276,250	$1,026,203	Salaries and Wages	$270,100	$141,000	$155,100	$115,000	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$100,800	$48,000	$52,800	$48,000	Civic, social, professional, and similar organizations	100%
							Contractual						
							GIS Manager	$11,000	$10,000	$11,000		Management and consulting services	Default (72%)
							GHG Emission Tracking	$11,000	$10,000	$11,000		Environmental and other technical consulting services	Default (100%)
							Website Management	$22,000	$20,000	$22,000		Management and consulting services	Default (72%)
							Communications Manager	$30,800	$28,000	$30,800		Management and consulting services	Default (72%)
							Master Gardeners	$44,000	$40,000	$44,000		Environmental and other technical consulting services	Default (100%)
							Concrete Cutting	$218,000	$100,000	$110,000	$108,000	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Travel (Admission/Airfare/Car Rental/Gas)						
							City Presentations	$1,375	$1,250	$1,375		Civic, social, professional, and similar organizations	100%
							State Presentations	$1,650	$1,500	$1,650		Civic, social, professional, and similar organizations	100%
							National Conferences	$2,200	$2,000	$2,200		Civic, social, professional, and similar organizations	100%
							Local Municipalities	$5,800	$500	$550	$5,250	Civic, social, professional, and similar organizations	100%
							Trees and Tree Supplies						
							Trees	$55,000	$50,000	$55,000		Forestry, forest products, and timber tract production	100%
							Stakes	$6,600	$6,000	$6,600		Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$4,400	$4,000	$4,400		Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$5,500	$5,000	$5,500		Retail Stores - Building material and garden supply	Default (94.6%)
							Plants	$55,000	$50,000	$55,000		Forestry, forest products, and timber tract production	100%
							Soil	$5,500	$5,000	$5,500		Retail Stores - Building material and garden supply	Default (94.6%)
							Soil Amendment	$5,500	$5,000	$5,500		Retail Stores - Building material and garden supply	Default (94.6%)
							Labels with Logos	$2,200	$2,000	$2,200		Printing	Default (51.69%)
							Monitoring Tools (Software)	$5,500	$5,000	$5,500		Software Publishers	Default (99.83%)
							Management Tools (Software)	$7,700	$7,000	$7,700		Software Publishers	Default (99.83%)
							Office Supplies	$5,500	$5,000	$5,500		Retail Stores - Miscellaneous	Default (99.96%)
							Equipment						
							Saws	$990	$900	$990		Retail Stores - Building material and garden supply	Default (94.6%)
							Pruner Kits	$688	$625	$688		Retail Stores - Building material and garden supply	Default (94.6%)
							Safety Kits	$2,750	$2,500	$2,750		Retail Stores - Building material and garden supply	Default (94.6%)
							Aquaponics Demo Kit	$55,000	$50,000	$55,000		Retail Stores - Building material and garden supply	Default (94.6%)
							Greenhouses	$11,000	$10,000	$11,000		Retail Stores - Building material and garden supply	Default (94.6%)
							Photo and Video Equipment	$5,500	$5,000	$5,500		Retail Stores - Electronics and appliances	Default (99.96%)
							Safety Kits	$2,750	$2,500	$2,750		Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Insurance (Liability)	$5,500	$5,000	$5,500		Insurance agencies, brokerages, and related activities	Default (50.79%)
							Truck Lease	$26,400	$24,000	$26,400		Automotive equipment rental and leasing	Default (88.82%)
							Tree Maintenance	$33,000	$30,000	$33,000		Landscape and horticultural services	100%
							Garden Box Maintenance	$5,500	$5,000	$5,500		Landscape and horticultural services	100%
							Indirect Costs (Contingency $68,177.50 - Distributed Proportionately Above)		$68,178				
2014-2015	Green Trees for the Golden State	Los Angeles Conservation Corps	Advancing Communities via Forestry and Training	$675,000	$219,250	$894,250	Salaries and Wages	$409,706	$275,460	$303,006	$106,700	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$108,099	$76,072	$83,679	$24,420	Civic, social, professional, and similar organizations	100%
							Contractual						
							Arboriculture Training	$48,400	$44,000	$48,400	$-	Environmental and other technical consulting services	Default (100%)
							GHG Emission Tracking	$8,800	$8,000	$8,800	$-	Environmental and other technical consulting services	Default (100%)
							Travel						
							Tree Planting & Water Trucks (Lease, Fuel, Maintenance, Insurance)	$140,800	$84,000	$92,400	$48,400	Civic, social, professional, and similar organizations	100%

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Trees and Tree Supplies						
							Trees	$119,625	$87,000	$95,700	$23,925	Forestry, forest products, and timber tract production	100%
							Ties	$24,750	$18,000	$19,800	$4,950	Retail Stores - Building material and garden supply	Default (94.6%)
							Stakes	$1,856	$1,350	$1,485	$371	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$10,780	$3,800	$4,180	$6,600	Retail Stores - Building material and garden supply	Default (94.6%)
							Concrete Saw Blades	$1,320	$1,200	$1,320	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Hand Tools (Shovels, Stake Pounders, etc.)	$5,330	$4,845	$5,330	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Office Supplies	$5,390	$3,369	$3,706	$1,684	Retail Stores - Miscellaneous	Default (99.96%)
							Crew Safety Equipment	$4,840	$2,400	$2,640	$2,200	Retail Stores - Building material and garden supply	Default (94.6%)
							Tablets for Inventory	$935	$850	$935	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Equipment						
							Concrete Saw	$3,179	$2,890	$3,179	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							CalFire Planting Banners	$440	$400	$440	$-	Printing	Default (51.69%)
							Indirect Costs (Contingency $61,364 - Distributed Proportionately Above)		$61,364				
2014-2015	Green Trees for the Golden State	Oakland Parks and Recreation Foundation: Fiscal Agent for Keep Oakland Beautiful	Trees for the Oakland Flats	$310,088	$203,413	$513,500	Salaries and Wages	$290,661	$128,460	$141,306	$149,355	Civic, social, professional, and similar organizations	100%
							Contractual						
							GHG Emission Tracking	$2,640	$2,400	$2,640	$-	Environmental and other technical consulting services	Default (100%)
							Concrete Cutting and Disposal	$65,625	$31,250	$34,375	$31,250	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Travel						
							Mileage to/from Nurseries	$2,536	$1,208	$1,328	$1,208	Mileage Basket	Default (4-100%)
							Mileage within each District	$3,558	$3,234	$3,558	$-	Mileage Basket	Default (4-100%)
							Mileage within each District	$3,131	$2,846	$3,131	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$82,500	$75,000	$82,500	$-	Forestry, forest products, and timber tract production	100%
							Stakes, Soil, Mulch, etc.	$33,000	$30,000	$33,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Signage and Educational Materials	$8,250	$7,500	$8,250	$-	Printing	Default (51.69%)
							Other						
							Equipment Yard Rental	$21,600	$-	$-	$21,600	Commercial and industrial machinery and equipment rental and leasing	100%
							Indirect Costs (Contingency $28,189.81- Distributed Proportionately Above)		$28,190				
2014-2015	Green Trees for the Golden State	Incredible Edible Community Garden	Neighborhood Grow - A Community-Based Grants Program for San Bernardino County	$615,200	$93,201	$708,401	Salaries and Wages	$38,151		$-	$38,151	Civic, social, professional, and similar organizations	100%
							Contractual						
							Site Prep: Irrigation and Sod Removal	$15,000		$5,000	$10,000	Landscape and horticultural services	100%
							Tree Park Care and Maintenance	$24,500		$12,000	$12,500	Landscape and horticultural services	100%
							Grant Administration	$50,000		$50,000	$-	Civic, social, professional, and similar organizations	100%
							Logistics Coordinator	$30,000		$30,000	$-	Civic, social, professional, and similar organizations	100%
							Public Awareness Program	$53,000		$50,000	$3,000	Other educational services	Default (99.98%)
							GHG Consultant	$15,000		$-	$15,000	Environmental and other technical consulting services	Default (100%)
							Travel						
							Mileage	$30,600		$30,600		Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$87,300		$72,750	$14,550	Forestry, forest products, and timber tract production	100%
							Organic Soil in Bags	$7,250		$7,250	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Gopher Baskets	$10,000		$10,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Stakes	$300		$300	$-	Retail Stores - Building material and garden supply	Default (94.6%)

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Lodge Poles	$9,500		$9,500	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$2,100		$2,100	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Roofing Nails for Ties	$425		$425	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$34,925		$34,925	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Weed Mat and Staples	$9,000		$9,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Irrigation Supplies	$28,750		$28,750	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Dumpsters for Sod Removal	$3,000		$3,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Organic Fertilizer	$13,000		$13,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							I-Pads/Tablets for GHG Tracking	$2,500		$2,500	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Portable Water Tanks	$5,000		$5,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							2-Person Augurs	$2,500		$2,500	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							1-Person Auger	$1,750		$1,750	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Equipment Allowance	$15,000		$15,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Educational Materials & Signage	$7,500		$7,500	$-	Printing	Default (51.69%)
							Food for Workshops and Tree Planting Events	$27,750		$27,750	$-	Retail Stores - Food and beverage	Default (99.99%)
							Equipment						
							Concrete Cutters	$2,000		$2,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Storage Container	$2,000		$2,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Intern Stipend (Teach Workshop)	$3,000		$3,000	$-	Civic, social, professional, and similar organizations	100%
							Intern Stipend (Project Management)	$30,000		$30,000	$-	Civic, social, professional, and similar organizations	100%
							Intern Stipend (Park Maintenance)	$36,000		$36,000	$-	Landscape and horticultural services	100%
							Intern Stipend (Track and Monitor GHG Emissions)	$9,600		$9,600	$-	Environmental and other technical consulting services	Default (100%)
							Graduate Student Stipend (Park Maintenance, GHG Monitoring)	$63,000		$63,000	$-	Landscape and horticultural services	100%
							Logistics Coordinator Stipend (For OJT)	$9,000		$9,000	$-	Civic, social, professional, and similar organizations	100%
							Indirect Costs (Various Office and Program Expenses)	$30,000		$30,000		Civic, social, professional, and similar organizations	100%
2014-2015	Green Trees for the Golden State	City of Los Angeles	South LA Carbon into Canopy: Vermont Corridor	$750,000	$257,400	$1,007,400	Salaries and Wages	$85,000		$85,000	$-	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$15,000		$15,000	$-	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Labor - Tree Planting	$257,400		$-	$257,400	Landscape and horticultural services	100%
							Concrete Cutting	$300,000		$300,000	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Labor - 3 Years Watering	$309,375		$309,375	$-	Landscape and horticultural services	100%
							Other						
							Outreach Materials - Banners	$10,156		$10,156	$-	Printing	100%
							Outreach Materials - Mailers	$10,156		$10,156	$-	Printing	100%
							Additional Concrete Cuts if Needed	$10,156		$10,156	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							City Permits	$10,156		$10,156	$-	Employment and payroll only (local government, non-education)	100%

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Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Green Trees for the Golden State	City of Parlier	Green Trees for Parlier	$197,100	$-	$197,100	Salaries and Wages	$12,700		$12,700	$-	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$4,545		$4,545	$-	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Parlier Unified School District - Community Education	$-					
							Staff Time	$15,000		$15,000		Employment and payroll only (local government, education)	100%
							Community Events	$10,000		$10,000		Employment and payroll only (local government, education)	100%
							Supplies	$5,000		$5,000	$-	Retail Stores - Miscellaneous	Default (99.96%)
							GHG Emission Tracking	$12,000		$12,000	$-	Environmental and other technical consulting services	100%
							Certified Arborist	$5,000		$5,000	$-	Environmental and other technical consulting services	100%
							Youth Centers of America - Adopt a Tree Event	$14,304		$14,304	$-	Landscape and horticultural services	Default(99.87%)
							Communities That Care - Organizing Community Events	$14,304		$14,304	$-	Landscape and horticultural services	Default(99.87%)
							Travel						
							Mileage	$1,120		$1,120	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$28,250		$28,250	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$4,520		$4,520	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$757		$757	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$3,000		$3,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Piping and Watering System Prep	$40,000		$40,000	$-	Landscape and horticultural services	100%
							Planting Tools for Volunteers	$5,000		$5,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Tablets for Inventory	$2,100		$2,100	$-	Retail Stores - Electronics and appliances	Default (99.96%)
							Other						
							Signage	$3,000		$3,000	$-	Printing	Default (51.69%)
							Brochures	$10,000		$10,000	$-	Printing	Default (51.69%)
							T-shirts for Volunteers	$5,000		$5,000	$-	Retail Stores - Clothing and clothing accessories	Default (100%)
							Transportation Costs of Trees	$1,500		$1,500	$-	Automotive equipment rental and leasing	Default (88.82%)
2014-2015	Green Trees for the Golden State	Hollywood Beautification Team	Tree Planting in Disadvantaged San Fernando Valley Communities	$750,000	$257,500	$1,007,500	Salaries and Wages	$485,333	$436,800	$485,333	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							Concrete Cuts	$240,000	$216,000	$240,000	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Tree Planting Labor	$173,735	$-	$-	$173,735	Landscape and horticultural services	100%
							Trees and Tree Supplies						
							Trees, Stakes, and Ties	$83,765	$-	$-	$83,765	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Outreach, Materials, Mailers	$22,222	$20,000	$22,222	$-	Printing	Default (51.69%)
							Signage and Web Recognition	$2,444	$2,200	$2,444	$-	Printing	Default (51.69%)
							Indirect Costs (Contingency $83,500 - Distributed Proportionately Above)		$75,000				

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Appendix 26.2. Urban and Community Forestry Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Green Trees for the Golden State	Our City Forest	Trees for All	$749,984	$592,158	$1,342,141	Salaries and Wages	$624,570	$338,700	$372,570	$252,000	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$93,913	$50,233	$55,256	$38,658	Civic, social, professional, and similar organizations	100%
							Contractual						
							Cement Cutting	$17,600	$16,000	$17,600	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Augering	$9,900	$9,000	$9,900	$-	Landscape and horticultural services	100%
							Signage Installation	$275	$250	$275	$-	Landscape and horticultural services	100%
							Travel	$-					
							Mileage (Personal Vehicles of Staff, Volunteers)	$286	$260	$286	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Trees	$118,250	$82,500	$90,750	$27,500	Forestry, forest products, and timber tract production	100%
							Stake Systems	$34,400	$24,000	$26,400	$8,000	Retail Stores - Building material and garden supply	100%
							Mulch	$6,000	$-	$-	$6,000	Retail Stores - Building material and garden supply	Default (94.6%)
							Planting Tools	$750	$-	$-	$750	Retail Stores - Building material and garden supply	Default (94.6%)
							Maintenance Tools	$500	$-	$-	$500	Retail Stores - Building material and garden supply	Default (94.6%)
							Fuel	$2,310	$2,100	$2,310	$-	Retail Stores - Gasoline stations	Default(84.87%)
							Equipment						
							Vehicles (OCF-Owned at DOT Rental Rates)	$22,012	$20,011	$22,012	$-	Automotive equipment rental and leasing	Default (88.82%)
							Other						
							Maintenance Manager	$102,375	$48,750	$53,625	$48,750	Civic, social, professional, and similar organizations	100%
							Maintenance Interns	$189,000	$90,000	$99,000	$90,000	Civic, social, professional, and similar organizations	100%
							Maintenance Volunteers	$120,000	$-	$-	$120,000	Landscape and horticultural services	100%
							Indirect Costs (Contingency $68,180.35 - Distributed Proportionately Above)		$68,180				
2014-2015	Management Activities for GHG Reduction	City of San Diego	City of San Diego Tree Inventory, Canopy Assessment for Tree Planting	$750,000	$250,000	$1,000,000	Salaries and Wages	$210,000	$-	$-	$210,000	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Tree Inventory Consultant	$436,772	$420,000	$436,772	$-	Architectural, engineering, and related services	100%
							Lidar Analysis Consultant	$83,195	$80,000	$83,195	$-	Scientific research and development services	0%
							Trees and Tree Supplies						
							Trees, Stakes, Ties, Mulch	$115,121	$110,700	$115,121	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							City Permits	$20,799	$20,000	$20,799	$-	Employment and payroll only (local government, non-education)	100%
							Concrete Cutting	$93,594	$90,000	$93,594	$-	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%
							Staff Oversight	$40,000		$-	$40,000	Employment and payroll only (local government, non-education)	100%
							Signage	$520	$500	$520	$-	Printing	Default (51.69%)
							Indirect Costs (Contingency $28,800 - Applied Proportionally Above)	$-	$28,800	$-			
2014-2015	Management Activities for GHG Reduction	City of National City	National City Urban Forest Management Planning	$250,285	$26,400	$276,685	Salaries and Wages	$21,956	$-	$-	$21,956	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$4,444	$-	$-	$4,444	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Tree Mapping and Assessment	$30,286	$28,000	$30,286	$-	Employment and payroll only (local government, non-education)	100%
							Tree Data Assessments	$6,922	$6,400	$6,922	$-	Employment and payroll only (local government, non-education)	100%
							Tree Evaluations	$6,922	$6,400	$6,922	$-	Environmental and other technical consulting services	100%

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Appendix 26.2. Urban and Community Forestry Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
							Tree Management Software	$21,633	$20,000	$21,633	$-	Employment and payroll only (local government, non-education)	100%
							Department & Community Meetings	$37,587	$34,750	$37,587	$-	Employment and payroll only (local government, non-education)	100%
							UFMP Draft 1	$50,496	$46,685	$50,496	$-	Employment and payroll only (local government, non-education)	100%
							UFMP Draft 2	$9,778	$9,040	$9,778	$-	Employment and payroll only (local government, non-education)	100%
							Presentation to City Council	$5,841	$5,400	$5,841	$-	Employment and payroll only (local government, non-education)	100%
							GHG Emission Tracking	$5,538	$5,120	$5,538	$-	Environmental and other technical consulting services	100%
							Tree Policy and Ordinance Development	$12,655	$11,700	$12,655	$-	Employment and payroll only (local government, non-education)	100%
							Web-based Forest Management System & Website Update	$15,576	$14,400	$15,576	$-	Employment and payroll only (local government, non-education)	100%
							Travel (mileage)	$1,082	$1,000	$1,082	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Miscellaneous Field and Office Supplies	$10,816	$10,000	$10,816	$-	Retail Stores - Miscellaneous	Default (99.96%)
							Equipment						
							Field Equipment	$8,112	$7,500	$8,112	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other	$27,041	$25,000	$27,041	$-	Employment and payroll only (local government, non-education)	100%
							Indirect Costs (Contingency $25,090 - Applied Proportionately Above)		$18,890				
2014-2015	Management Activities for GHG Reduction	City of Colton	Colton Urban Forestry Management Plan and Tree Inventory	$173,310	$37,284	$210,594	Salaries and Wages	$33,301		$-	$33,301	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$2,483		$-	$2,483	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Tree Inventory	$60,000		$60,000	$-	Landscape and horticultural services	100%
							Management Plan	$75,000		$75,000	$-	Landscape and horticultural services	100%
							Tree Planting and Maintenance Project	$12,210		$12,210	$-	Landscape and horticultural services	100%
							Maintenance and Pruning	$11,100		$11,100	$-	Landscape and horticultural services	100%
							Other						
							Media Outreach	$15,000		$15,000	$-	Printing	Default (51.69%)
							Community Workshop Location Fees	$1,500		$-	$1,500	Employment and payroll only (local government, non-education)	100%
2014-2015	Urban Forest Management Plan	City of Salinas	Salinas Forest Management Plan	$172,200	$29,862	$202,062	Salaries and Wages	$13,176	$-	$-	$13,176	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$7,830	$-	$-	$7,830	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Urban Forest Master Plan	$143,688	$130,625	$143,688	$-	Management and consulting services	100%
							Trees and Tree Supplies						
							Trees	$26,400	$24,000	$26,400	$-	Forestry, forest products, and timber tract production	100%
							Stakes and Ties	$2,112	$1,920	$2,112	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Volunteer Labor	$8,856	$-	$-	$8,856	Employment services	Default (98.94%)
							Indirect Costs (Contingency $15654.50 - Applied Proportionately Above)	$-	$15,655				

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Appendix 26.2. Urban and Community Forestry Program Detailed Summary of Modeling Inputs

Grant Cycle	Subprogram	Applicant	Project Name	Total Grant Funds	Total Match Funding	Total Project Cost	Line Item Expenses	Line Item Cost	Pre-Contingency for State Funds	State Funds	Co-investment	IMPLAN Industry	Local Purchase Rate
2014-2015	Management Activities for GHG Reduction	City of Atwater	Atwater Urban Forest Management Plan for GHG Reduction	$150,000	$107,757	$257,757	Salaries and Wages	$15,371		$-	$15,371	Employment and payroll only (local government, non-education)	100%
							Employee Benefits	$1,182		$-	$1,182	Employment and payroll only (local government, non-education)	100%
							Contractual						
							Urban Forest Master Plan	$96,500		$96,500	$-	Employment and payroll only (local government, non-education)	100%
							Canopy Study	$13,500		$13,500	$-	Employment and payroll only (local government, non-education)	100%
							Tree Planting (includes Trees, Stakes, Ties, Labor)	$40,000		$40,000	$-	Civic, social, professional, and similar organizations	100%
							3 Years Tree Care	$79,704		$-	$79,704	Civic, social, professional, and similar organizations	100%
							Other						
							Facility Rental	$6,500		$-	$6,500	Real estate establishments	100%
							Public Relations Materials	$5,000		$-	$5,000	Printing	Default (51.69%)
2014-2015	Management Activities for GHG Reduction	City of Patterson	City of Patterson "Management Activities for GHG Reduction" Project	$150,400	$16,000	$166,400	Salaries and Wages	$16,000		$-	$16,000	Employment and payroll only (local government, non-education)	100%
							Contractual						
							UFMP Development	$96,000		$96,000	$-	Management and consulting services	100%
							Trees and Tree Supplies						
							Trees	$50,000		$50,000	$-	Forestry, forest products, and timber tract production	100%
							Stakes	$2,000		$2,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Ties	$400		$400	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Mulch	$2,000		$2,000	$-	Retail Stores - Building material and garden supply	Default (94.6%)
2014-2015	Urban Wood and Biomass Utilization	Sacramento Tree Foundation	Urban Wood Rescue	$498,303	$475,269	$973,572	Salaries and Wages	$229,000	$180,000	$198,000	$31,000	Civic, social, professional, and similar organizations	100%
							Employee Benefits	$41,580	$37,800	$41,580	$-	Civic, social, professional, and similar organizations	100%
							Contractual						
							Milling and Yard Operations	$184,800	$168,000	$184,800	$-	Landscape and horticultural services	100%
							Log Procurement	$420,000		$-	$420,000	Employment and payroll only (local government, non-education)	100%
							Mill and Storage Yard	$21,000		$-	$21,000	Real estate establishments	100%
							Travel (mileage)	$1,265	$1,150	$1,265	$-	Mileage Basket	Default (4-100%)
							Trees and Tree Supplies						
							Wood Sealer	$1,155	$1,050	$1,155	$-	Retail Stores - Building material and garden supply	100%
							Blades	$1,386	$1,260	$1,386	$-	Retail Stores - Building material and garden supply	100%
							Equipment						
							Sawmill Electric Stationary Kit	$43,665	$39,695	$43,665	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Lube Mizer	$1,898	$1,725	$1,898	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Adjustable Leg Kit	$1,099	$999	$1,099	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Cant Hook 48" Logrite Aluminum	$109	$99	$109	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Laser	$1,458	$1,325	$1,458	$-	Retail Stores - Building material and garden supply	Default (94.6%)
							Other						
							Blade Sharpening	$2,310	$2,100	$2,310	$-	Retail Stores - Building material and garden supply	100%
							Signage	$880	$800	$880	$-	Printing	Default (51.69%)
							Education and Marketing	$16,500	$15,000	$16,500	$-	Printing	Default (51.69%)
							Conference Fees	$2,200	$2,000	$2,200	$-	Civic, social, professional, and similar organizations	100%
							Inventory Volunteers (Inventory and log volume calculations, paid per hour)	$3,269	$-	$-	$3,269	Employment services	Default (98.94%)
							Indirect Costs (Contingency $45,300 - Applied Proportionately Above)	$-	$45,300				
				$15,655,130	**$6,365,592**	**$22,020,721**		**$22,020,721**	**$10,872,215**	**$15,655,130**	**$6,365,592**		

Summary of Industry-Level Investments for the Urban and Community Forestry Program

Total State Funds	Total Matching Funds	Industry	Weighted Local Purchase Rates	Percent of Total State Funds	Percent of Total Matching Funds
$43,206	$4,452	All other miscellaneous professional, scientific, and technical services	Default (99.38%)	0.3%	0.1%
$6,369	$-	Advertising and related services	Default (98.28%)	0.0%	0.0%
$632,367	$136,500	Architectural, engineering, and related services	100%	4.0%	2.1%
$64,327	$8,500	Automotive equipment rental and leasing	Default (88.82%)	0.4%	0.1%
$5,381,917	$2,659,099	Civic, social, professional, and similar organizations	100%	34.4%	41.8%
$-	$21,600	Commercial and industrial machinery and equipment rental and leasing	100%	0.0%	0.3%
$714,795	$908,413	Employment and payroll only (local government, non-education)	100%	4.6%	14.3%
$25,000	$-	Employment and payroll only (local government, education)	100%	0.2%	0.0%
$-	$12,125	Employment services	Default (98.94%)	0.0%	0.2%
$332,849	$38,131	Environmental and other technical consulting services	Default (100%)	2.1%	0.6%
$28,055	$-	Retail Stores - Food and beverage	Default (99.99%)	0.2%	0.0%
$1,626,674	$625,300	Forestry, forest products, and timber tract production	97%	10.4%	9.8%
$345	$-	Hotels and motels, including casino hotels	Default(17.13%)	0.0%	0.0%
$5,500	$-	Insurance agencies, brokerages, and related activities	Default (50.79%)	0.0%	0.0%
$3,626,497	$1,520,783	Landscape and horticultural services	100%	23.2%	23.9%
$-	$17,437	Light truck and utility vehicle manufacturing	0%	0.0%	0.3%
$1,317,947	$144,250	Maintenance and Repair construction of highways, streets, bridges, and tunnels	100%	8.4%	2.3%
$380,940	$4,452	Management and consulting services	90%	2.4%	0.1%
$74,251	$1,208	Mileage Basket	Default (4-100%)	0.5%	0.0%
$50,000	$3,000	Other educational services	Default (99.98%)	0.3%	0.0%
$218,707	$20,700	Printing	56%	1.4%	0.3%
$-	$27,500	Real estate establishments	100%	0.0%	0.4%
$904,841	$191,053	Retail Stores - Building material and garden supply	95.1%	5.8%	3.0%
$11,437	$-	Retail Stores - Clothing and clothing accessories	Default (100%)	0.1%	0.0%
$30,982	$8,452	Retail Stores - Electronics and appliances	Default (99.96%)	0.2%	0.1%
$2,310	$-	Retail Stores - Gasoline stations	Default(84.87%)	0.0%	0.0%
$26,522	$6,137	Retail Stores - Miscellaneous	Default (99.96%)	0.2%	0.1%
$99,695	$-	Scientific research and development services	16.6%	0.6%	0.0%
$23,200	$-	Software Publishers	Default (99.83%)	0.1%	0.0%
$2,750	$2,500	Specialized design services	100%	0.0%	0.0%
$900	$-	Transport by air	Default(69.02%)	0.0%	0.0%
$18,900	$4,000	Water, sewage and other treatment and delivery systems	100%	0.1%	0.1%
$3,850	$-	Truck trailer manufacturing	Default (21.57%)	0.0%	0.0%
$15,655,130	**$6,365,592**			**100.0%**	**100.0%**

27. Organics Grant Program

27.1 Program Overview

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Organics Grant Program. See **Table A27.1.1** and **Table A27.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A27.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Organics Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1.2	16.7%
Truck transportation	0.5	6.3%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.4	5.1%
Management of companies and enterprises	0.4	5.1%
Employment services	0.4	4.9%
Machine shops	0.3	3.9%
Architectural, engineering, and related services	0.3	3.8%
Real Estate	0.3	3.7%
Accounting, tax preparation, bookkeeping, and payroll services	0.2	2.5%
Services to buildings	0.2	2.4%
Subtotal of Top 10 Industries	**4.1**	**54.3%**
Total of All Industries	**7.5**	**100%**

Table A27.1.2. Indirect Jobs Supported by Induced Co-investment for the Organics Grant Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	5.1	15.2%
Truck transportation	2.1	6.2%
Employment service	1.8	5.4%
Architectural, engineering, and related services	1.7	5.1%
Real estate	1.4	4.1%
Accounting, tax preparation, bookkeeping, and payroll services	1.0	3.1%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.9	2.8%
Waste management and remediation services	0.9	2.6%
Lighting fixture manufacturing	0.8	2.3%
Management of companies and enterprises	0.8	2.3%
Subtotal of Top 10 Industries	**16.5**	**49.2%**
Total of All Industries	**33.4**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A27.2.1** and **Table A27.2.2** for a summary of the induced jobs supported by the Organics Grant Program, as reported in FTE job-years.

Table A27.2.1. Induced Jobs Supported by California Climate Investment Funding for the Organics Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.5	4.9%
Limited-service restaurants	0.5	4.9%
Real estate	0.5	4.9%
Hospitals	0.5	4.2%
Individual and family services	0.4	3.9%
Wholesale trade	0.4	3.4%
Offices of physicians	0.4	3.2%
Retail – Food and beverage stores	0.3	3.1%
All other food and drinking places	0.3	2.8%
Other financial investment activities	0.3	2.6%
Subtotal of Top 10 Industries	**4.2**	**38.0%**
Total of All Industries	**11.2**	**100%**

Table A27.2.2. Induced Jobs Supported by Induced Co-investment for the Organics Grant Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	2.7	4.7%
Real estate	2.7	4.7%
Limited-service restaurants	2.5	4.3%
Hospitals	2.4	4.1%
Individual and family services	2.1	3.6%
Wholesale trade	2.0	3.5%
Offices of physicians	1.8	3.1%
Other financial investment activities	1.6	2.7%
Retail – Food and beverage stores	1.5	2.7%
Retail – General merchandise stores	1.5	2.5%
Subtotal of Top 10 Industries	**20.8**	**35.9%**
Total of All Industries	**57.9**	**100%**

Appendix 27.2. Organics Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Total Project Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
FY 2014–2015	Mid Valley Disposal	$3,000,000	$3,658,801	$6,658,801	Admin					
					Final Permitting	$75,000	$-	$75,000	Waste management and remediation services	100%
					Site Work Construction	$58,054	$-	$58,054	Waste management and remediation services	100%
					Progress Reports	$8,000	$-	$8,000	Waste management and remediation services	100%
					Operating expenses: Construction					
					Facility Design	$56,876	$-	$56,876	Architectural, engineering, and related services	Default (95.66%)
					Sitework Construction	$2,090,111	$150,000	$1,940,111	Construction of new manufacturing structures	Default (100%)
					GORE system Install: 16 Complete Bunkers and 12 Covers	$1,890,000	$1,678,500	$211,500	All other industrial machinery manufacturing	Default (22.57%)
					GORE system Install: Concrete Paving for Bunkers	$677,897	$561,500	$116,397	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					GORE system Install: Power Winding Maching PMW-11	$100,000	$-	$100,000	All other industrial machinery manufacturing	Default (22.57%)
					Start-up & Operation: Miscellaneous Equipment	$1,497,863	$610,000	$887,863	All other industrial machinery manufacturing	Default (22.57%)
					Operating expenses: Material					
					Printed Materials	$35,000	$-	$35,000	Printing	Default (51.69%)
					Personnel Services					
					Start-Up & Operation	$115,000	$-	$115,000	Waste management and remediation services	100%
					Education & Outreach	$55,000	$-	$55,000	Waste management and remediation services	100%
FY 2014–2015	Burrtec Waste Industries, Inc.	$2,595,080	$3,592,645	$6,187,725	Admin					
					Pre-Application Site Plan	$2,700	$-	$2,700	Architectural, engineering, and related services	Default (95.66%)
					Civil Engineering	$25,000	$-	$25,000	Architectural, engineering, and related services	Default (95.66%)
					Structural Engineering	$10,000	$-	$10,000	Architectural, engineering, and related services	Default (95.66%)
					Electrical Engineering	$10,000	$-	$10,000	Architectural, engineering, and related services	Default (95.66%)
					Receiving Building Architectural	$12,000	$-	$12,000	Architectural, engineering, and related services	Default (95.66%)
					Geotechnical Report	$5,000	$-	$5,000	Environmental and other technical consulting services	Default (100%)
					City CUP Fee	$4,100	$-	$4,100	Employment and payroll only (local government, non-education)	100%
					Final Design Plan Check Fee	$8,000	$-	$8,000	Architectural, engineering, and related services	Default (95.66%)
					Negative Declaration	$21,000	$-	$21,000	Environmental and other technical consulting services	Default (100%)
					Cultural Resources Report	$2,000	$-	$2,000	Environmental and other technical consulting services	Default (100%)
					Traffic Impact Analysis	$8,200	$-	$8,200	Environmental and other technical consulting services	Default (100%)
					Air Quality & GHG Analysis	$5,700	$-	$5,700	Environmental and other technical consulting services	Default (100%)
					Biological Resource Report	$2,500	$-	$2,500	Environmental and other technical consulting services	Default (100%)
					Operating expenses: Construction					
					Grading and Drainage	$300,000	$-	$300,000	Construction of new manufacturing structures	Default (100%)
					Civil Engineering Staking	$12,500	$12,500	$-	Architectural, engineering, and related services	Default (95.66%)
					Cleaning Contractors	$1,660	$1,660	$-	Construction of new manufacturing structures	Default (100%)
					Safety Inspections	$2,750	$2,750	$-	Construction of new manufacturing structures	Default (100%)
					Excavation/Grading	$100,500	$-	$100,500	Construction of new manufacturing structures	Default (100%)
					Asphalt Paving	$4,550	$4,550	$-	Construction of new manufacturing structures	Default (100%)
					Site Concrete	$19,665	$19,665	$-	Construction of new manufacturing structures	Default (100%)

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Appendix 27.2. Organics Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Total Project Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
					Storm Drain	$36,678	$36,678	$-	Construction of new manufacturing structures	Default (100%)
					Sewer	$9,792	$9,792	$-	Construction of new manufacturing structures	Default (100%)
					Water Lines	$41,837	$41,837	$-	Construction of new manufacturing structures	Default (100%)
					Fencing	$15,445	$15,445	$-	Construction of new manufacturing structures	Default (100%)
					Landscaping	$34,588	$34,588	$-	Construction of new manufacturing structures	Default (100%)
					Rebar Reinforcing	$155,800	$155,800	$-	Construction of new manufacturing structures	Default (100%)
					Structural Concrete	$783,180	$783,180	$-	Construction of new manufacturing structures	Default (100%)
					Structural Steel	$15,535	$15,535	$-	Construction of new manufacturing structures	Default (100%)
					Caulking/Waterproofing	$22,250	$22,250	$-	Construction of new manufacturing structures	Default (100%)
					Accessories	$18,118	$18,118	$-	Construction of new manufacturing structures	Default (100%)
					Plumbing	$135,450	$135,450	$-	Construction of new manufacturing structures	Default (100%)
					Electrical	$175,000	$175,000	$-	Construction of new manufacturing structures	Default (100%)
					General Contractor Conditions/Insurance	$229,256	$229,256	$-	Construction of new manufacturing structures	Default (100%)
					Receiving / Mixing Building	$580,000	$-	$580,000	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					GORE Cover Technology	$1,275,000	$881,026	$393,974	All other industrial machinery manufacturing	Default (22.57%)
					Winding Machines for Cover Handling	$325,000	$-	$325,000	All other industrial machinery manufacturing	Default (22.57%)
					Mixer / Grinder	$676,300	$-	$676,300	All other industrial machinery manufacturing	Default (22.57%)
					Trommel Screen / Compost Cleaning	$600,000	$-	$600,000	All other industrial machinery manufacturing	Default (22.57%)
					Loader	$464,671	$-	$464,671	Material handling equipment manufacturing	Default (22.57%)
					Personnel Services					
					Grant Application	$6,000	$-	$6,000	Waste management and remediation services	100%
					Project Management	$30,000	$-	$30,000	Waste management and remediation services	100%
FY 2014–2015	Colony Energy Partners - Tulare, LLC	$2,925,920	$14,660,222	$17,586,142	Admin					
					Education Networking: California State University - Fresno	$5,480	$5,480	$-	Waste management and remediation services	100%
					Education Networking: Local Government Commission	$4,000	$4,000	$-	Waste management and remediation services	100%
					Development of interactive website	$4,000	$4,000	$-	Waste management and remediation services	100%
					Operating expenses: Construction					
					Site Improvements	$1,918,662	$-	$1,918,662	Construction of new manufacturing structures	Default (100%)
					Pipeline Grid Interconnection	$2,158,000	$110,000	$2,048,000	Construction of new manufacturing structures	Default (100%)
					Concrete Construction	$3,556,500	$-	$3,556,500	Construction of new manufacturing structures	Default (100%)
					Architectural	$149,700	$-	$149,700	Architectural, engineering, and related services	Default (95.66%)
					Plant Piping	$1,175,000	$-	$1,175,000	Construction of new manufacturing structures	Default (100%)
					Site Piping Systems	$857,400	$-	$857,400	Construction of new manufacturing structures	Default (100%)
					Electrical and Instrumentation	$1,815,200	$-	$1,815,200	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					Biogas Upgrading / Conditioning System	$3,070,489	$1,700,000	$1,370,489	All other industrial machinery manufacturing	0%
					CHP Cogeneration Modules	$2,659,271	$890,000	$1,769,271	All other industrial machinery manufacturing	0%
					Commercial Refrigerators	$10,500	$10,500	$-	Other commercial service industry machinery manufacturing	Default (42.78%)

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Appendix 27.2. Organics Grant Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Total Project Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
					Commercial Freezers	$13,500	$13,500	$-	Other commercial service industry machinery manufacturing	Default (42.78%)
					Commercial Ranges, Ovens, Exhaust Hoods	$16,500	$16,500	$-	Other commercial service industry machinery manufacturing	Default (42.78%)
					Commercial Cargo Van and Operational Costs	$35,420	$35,420	$-	Light truck and utility vehicle manufacturing	Default (2.41%)
					Personnel Services					
					Project Manager	$75,960	$75,960	$-	Waste management and remediation services	100%
					Driver	$56,560	$56,560	$-	Waste management and remediation services	100%
					Education and Network Results Advisor	$4,000	$4,000	$-	Waste management and remediation services	100%
FY 2014–2015	CR&R Incorporated	$3,000,000	$6,968,285	$9,968,285	Admin					
					Freight/Taxes/Building Permits	$500,000	$-	$500,000	Waste management and remediation services	100%
					General Conditions and Site Supervision	$491,959	$-	$491,959	Waste management and remediation services	100%
					Operating expenses: Construction					
					Main and Post Digester Construction	$2,956,454	$-	$2,956,454	Construction of new manufacturing structures	Default (100%)
					Piping of all Eisenmann and Greenlane Equipment	$385,418	$-	$385,418	Construction of new manufacturing structures	Default (100%)
					Installation of Eisenmann Digester Equipment	$198,113	$-	$198,113	Construction of new manufacturing structures	Default (100%)
					Permitting	$100,000	$-	$100,000	Employment and payroll only (local government, non-education)	100%
					Engineering	$375,000	$-	$375,000	Architectural, engineering, and related services	Default (95.66%)
					Installation of Greenlane Biogas Upgrading Equipment	$112,110	$-	$112,110	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					Anaerobic Digester	$3,828,424	3,000,000	$828,424	All other industrial machinery manufacturing	0%
					Infeed Shuttle Conveyor - Extension	$192,500	$-	$192,500	All other industrial machinery manufacturing	0%
					Digestate Removal Conveyor - Extension	$68,000	$-	$68,000	All other industrial machinery manufacturing	0%
					CNG Fueling Station Expansion	$760,307	$-	$760,307	Construction of other new nonresidential structures	Default (99.91%)
FY 2014–2015	Recology East Bay	$3,000,000	$2,007,180	$5,007,180	Admin					
					Project Administration	$150,000	$-	$150,000	Waste management and remediation services	100%
					Operating expenses: Construction					
					Engineering/Design	$120,000	$-	$120,000	Architectural, engineering, and related services	Default (95.66%)
					Organics Extrusion Press	$160,000	$-	$160,000	Construction of new manufacturing structures	Default (100%)
					Receiving Tent	$180,000	$-	$180,000	Construction of new manufacturing structures	Default (100%)
					Organics Polishing System	$100,000	$-	$100,000	Construction of new manufacturing structures	Default (100%)
					Training	$25,000	$-	$25,000	Waste management and remediation services	100%
					Testing, Commissioning, Integration, Validation	$180,000	$-	$180,000	Waste management and remediation services	100%
					System Documentation	$5,000	$-	$5,000	Waste management and remediation services	100%
					Operating expenses: Equipment					
					RSF Equipment	$3,270,180	3,000,000	$270,180	All other industrial machinery manufacturing	0%
					REBO Equipment	$717,000	$-	$717,000	All other industrial machinery manufacturing	Default (22.57%)
					Piping	$100,000	$-	$100,000	Fabricated pipe and pipe fitting manufacturing	Default (32.73%)
		$14,521,000	**$30,887,133**	**45,408,133**		**$45,408,133**	**$14,521,000**	**$30,887,133**		

Summary of Industry-Level Investments for the Organics Grant Program

Total Grant Funds	Total Matching Funds	Summary of Industries	Weighted State Funds Local Purchase Rates	Weighted Match Funds Local Purchase Rates	Percent of Total State Funds	Percent of Total Matching Funds
$11,759,526	$8,410,501	All other industrial machinery manufacturing	6.1%	10.5%	81.0%	27.2%
$12,500	$769,276	Architectural, engineering, and related services	Default (95.66%)	Default (95.66%)	0.1%	2.5%
$2,523,054	$18,499,865	Construction of new manufacturing structures	Default (100%)	Default (100%)	17.4%	59.9%
$-	$760,307	Construction of other new nonresidential structures	Default (99.91%)	Default (99.91%)	0.0%	2.5%
$-	$104,100	Employment and payroll only (local government, non-education)	100%	100%	0.0%	0.3%
$-	$44,400	Environmental and other technical consulting services	Default (100%)	Default (100%)	0.0%	0.1%
$35,420	$-	Light truck and utility vehicle manufacturing	Default (2.41%)	Default (2.41%)	0.2%	0.0%
$-	$464,671	Material handling equipment manufacturing	Default (22.57%)	Default (22.57%)	0.0%	1.5%
$40,500	$-	Other Commercial Service Industry Machinery Manufacturing	Default (42.78%)	Default (42.78%)	0.3%	0.0%
$-	$35,000	Printing	Default (51.69%)	Default (51.69%)	0.0%	0.1%
$-	$100,000	Fabricated pipe and pipe fitting manufacturing	Default (32.73%)	Default (32.73%)	0.0%	0.3%
$150,000	$1,699,013	Waste management and remediation services	100%	100%	1.0%	5.5%
$14,521,000	**$30,887,133**				**100.0%**	**100.0%**

28. Recycled Fiber, Plastic, and Glass Grant Program

28.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Recycled Fiber, Plastic, and Glass Grant Program. See **Table A28.1.1** and **Table A28.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A28.1.1. Indirect Jobs Supported by California Climate Investment Funding for the Recycled Fiber, Plastic, and Glass Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	0.3	25.4%
Machine shops	0.1	8.7%
Architectural, engineering, and related services	0.1	8.4%
Accounting, tax preparation, bookkeeping, and payroll services	0.1	8.4%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.1	8.4%
Management of companies and enterprises	0.1	8.3%
Truck transportation	0.1	8.3%
Real estate	0.1	8.1%
Employment services	0.1	8.0%
Services to buildings	0.1	8.0%
Total of All Industries	**1.1**	**100%**

Table A28.1.2. Indirect Jobs Supported by Induced Co-investment for the Recycled Fiber, Plastic, and Glass Grant Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	1.0	11.7%
Employment services	0.5	6.6%
Waste management and remediation services	0.5	5.8%
Management of companies and enterprises	0.5	5.7%
Marketing research and all other miscellaneous professional, scientific, and technical services	0.4	4.6%
Machine shops	0.3	3.6%
Accounting, tax preparation, bookkeeping, and payroll services	0.3	3.5%
Truck transportation	0.3	3.4%
Real estate	0.3	3.3%
Business support services	0.3	3.3%
Subtotal of Top 10 Industries	**4.2**	**51.5%**
Total of All Industries	**8.2**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A28.2.1** and **Table A28.2.2** for a summary of the induced jobs supported by the Recycled Fiber, Plastic, and Glass Grant Program, as reported in FTE job-years.

Table A28.2.1. Induced Jobs Supported by California Climate Investment Funding for the Recycled Fiber, Plastic, and Glass Grant Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.2	12.9%
Other financial investment activities	0.1	8.0%
Wholesale trade	0.1	7.9%
Hospitals	0.1	7.7%
Nursing and community care facilities	0.1	7.7%
Real estate	0.1	7.5%
Offices of physicians	0.1	7.4%
Individual and family services	0.1	7.1%
Retail – Food and beverage stores	0.1	7.0%
Retail – General merchandise stores	0.1	7.0%
Subtotal of Top 10 Industries	**1.0**	**80.3%**
Total of All Industries	**1.2**	**100%**

Table A28.2.2. Induced Jobs Supported by Induced Co-investment for the Recycled Fiber, Plastic, and Glass Grant Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.5	5.3%
Real estate	0.5	5.2%
Limited-service restaurants	0.4	4.4%
Hospitals	0.4	4.3%
Individual and family services	0.3	3.9%
Other financial investment activities	0.3	3.3%
Wholesale trade	0.3	3.3%
Offices of physicians	0.3	3.1%
Retail – Food and beverage stores	0.3	2.9%
Retail – General merchandise stores	0.3	2.9%
Subtotal of Top 10 Industries	**3.4**	**38.6%**
Total of All Industries	**8.8**	**100%**

Appendix 28.2. Recycled Fiber, Plastic, and Glass Grant Program

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Budget Total Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
FY 2014–2015	Command Packaging	$3,000,000	$10,550,615	$13,550,615	Admin					
					CSU Chico - GHG Emissions Analysis	$2,500	$-	$2,500	Scientific research and development services	100%
					Equipment Purchasing / Administration of Grant Process	$25,000	$-	$25,000	Waste management and remediation services	100%
					Operating expenses: Construction					
					Tower Engineering	$5,250	$-	$5,250	Architectural, engineering and related services	Default (95.66%)
					Tower Concrete Footings	$4,500	$-	$4,500	Construction of new manufacturing structures	Default (100%)
					Tower Installation	$68,500	$-	$68,500	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					Reifenhoauser Co-Extrusion Machines	$4,538,683	$2,328,683	$2,210,000	Other industrial machinery manufacturing	0%
					Silo and Material Handling	$545,000	$-	$545,000	Other industrial machinery manufacturing	Default (22.57%)
					Blown Film Mezzanine Tower and Cupola	$233,800	$150,000	$83,800	Other industrial machinery manufacturing	Default (22.57%)
					Elba Bag Making Machine	$2,037,717	$521,317	$1,516,400	Other industrial machinery manufacturing	0%
					Sales Tax for blown film	$183,395	$-	$183,395	Other industrial machinery manufacturing	Default (22.57%)
					Printing Press	$2,456,400	$-	$2,456,400	Other industrial machinery manufacturing	Default (22.57%)
					Sales Tax for printing press	$110,538	$-	$110,538	Other industrial machinery manufacturing	Default (22.57%)
					Electric Switch	$500,000	$-	$500,000	Switchgear and Switchboard Apparatus Manufacturing	Default (20.59%)
					Technofer Washing Line for AG PE Film	$1,944,832	$-	$1,944,832	Other industrial machinery manufacturing	0%
					Personnel Services					
					Maintenance Labor	$70,000	$-	$70,000	Waste management and remediation services	100%
					Plant Manager	$125,000	$-	$125,000	Waste management and remediation services	100%
					16 Hourly Employees	$606,000	$-	$606,000	Waste management and remediation services	100%
					Sourcing / Sales	$93,500	$-	$93,500	Waste management and remediation services	100%
FY 2014–2015	Peninsula Plastics Recycling, Inc.	$1,000,000	$1,105,782	$2,105,782	Operating expenses: Construction					
					Engineering	$50,000	$-	$50,000	Architectural, engineering and related services	Default (95.66%)
					Permitting	$10,000	$1,251	$8,749	Employment and payroll only (local government, non-education)	100%
					Installation - Mechanical	$46,636	$-	$46,636	Construction of new manufacturing structures	Default (100%)
					Installation - Electrical	$203,364	$203,364	$-	Construction of new manufacturing structures	Default (100%)
					Operating expenses: Equipment					
					Ballistic Separator	$200,000	$200,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					Italrec Agglomerating Line	$350,000	$300,000	$50,000	Other industrial machinery manufacturing	Default (22.57%)
					Label Washing Equipment	$150,000	$150,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					Various Conveyors	$250,000	$83,321	$166,679	Other industrial machinery manufacturing	Default (22.57%)
					Downstream Equipment	$158,240	$33,508	$124,732	Other industrial machinery manufacturing	Default (22.57%)
					Extrusion Tools	$70,359	$-	$70,359	Other industrial machinery manufacturing	Default (22.57%)
					In-line Embossing Unit	$62,184	$-	$62,184	Other industrial machinery manufacturing	Default (22.57%)
					Electrical Service Upgrades	$250,000	$28,555	$221,445	Construction of new manufacturing structures	Default (100%)

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Appendix 28.2. Recycled Fiber, Plastic, and Glass Grant Program

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Budget Total Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
					Operating expenses: Material					
					Concrete Reinforcement	$175,000	$-	$175,000	Ready-mix concrete manufacturing	Default (73.43%)
					Personnel Services					
					Engineer	$60,000	$-	$60,000	Waste management and remediation services	100%
					Mechanics	$70,000	$-	$70,000	Waste management and remediation services	100%
FY 2014–2015	Reliance Carpet Cushion	$1,000,000	$2,002,637	$3,002,637	Admin					
					Grant Management & Project Oversight	$62,500	$-	$62,500	Waste management and remediation services	100%
					Operating expenses: Construction					
					Electrical Upgrades	$40,000	$40,000	$-	Construction of new manufacturing structures	100%
					Installation of Equipment	$90,000	$90,000	$-	Construction of new manufacturing structures	100%
					Facilities & Equipment (In-House Installation)	$60,000	$-	$60,000	Waste management and remediation services	100%
					Design & Engineering Installation Support	$37,500	$27,500	$10,000	Architectural, engineering and related services	Default (95.66%)
					Operating expenses: Equipment					
					Laminator and Moisture Barrier Equipment	$-	$-	$-	Other industrial machinery manufacturing	0%
					IR Heat Sealer	$44,148	$44,148	$-	Other industrial machinery manufacturing	Default (22.57%)
					High Speed Dilo Machine	$450,000	$-	$450,000	Other industrial machinery manufacturing	Default (22.57%)
					Lags	$75,000	$60,000	$15,000	Other industrial machinery manufacturing	0%
					Cleaning Blades	$12,156	$10,656	$1,500	Other industrial machinery manufacturing	100%
					Feed Roll Wire	$16,236	$4,986	$11,250	Other industrial machinery manufacturing	100%
					Chopper Blades	$6,177	$-	$6,177	Other industrial machinery manufacturing	100%
					Frontloaders	$79,810	$10,000	$69,810	Industrial truck, trailer, and stacker manufacturing	100%
					Forklifts	$47,400	$11,000	$36,400	Industrial truck, trailer, and stacker manufacturing	100%
					Baler Machines	$90,630	$90,630	$-	Other industrial machinery manufacturing	100%
					Machine Parts	$20,000	$20,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					NIR Testers ID	$158,580	$148,580	$10,000	Other industrial machinery manufacturing	100%
					MicroPHAZIR	$-	$-	$-	Other industrial machinery manufacturing	100%
					Compact Track Loader	$-	$-	$-	Other industrial machinery manufacturing	100%
					Plastic Grinder, Conveyors, Metal Removal, Contamination Check	$15,000	$15,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					Stamp Machine & Table Router	$142,500	$142,500	$-	Other industrial machinery manufacturing	Default (22.57%)
					Molds	$525,000	$125,000	$400,000	Other industrial machinery manufacturing	Default (22.57%)
					Power Feeding Molds	$120,000	$20,000	$100,000	Other industrial machinery manufacturing	Default (22.57%)
					Air Compressor	$10,000	$10,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					Manual Mold System	$670,000	$60,000	$610,000	Other industrial machinery manufacturing	100%
					Chiller	$20,000	$20,000	$-	Other industrial machinery manufacturing	100%
					Freight for Equipment	$25,000	$25,000	$-	Other industrial machinery manufacturing	Default (22.57%)
					Cooling Manual Conveyor	$-	$-	$-	Other industrial machinery manufacturing	Default (22.57%)

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Appendix 28.2. Recycled Fiber, Plastic, and Glass Grant Program

Grant Cycle	Applicant	Total Award (GGRF)	Proposed Co-Investment	Budget Total Cost	Line Item Expenses	Line Item Cost in Budget	Requested Grant Funds in Budget	Proposed Co-investment in Budget	IMPLAN Industry	Local Purchase Rate
					Box System - Manual	$-	$-	$-	Other industrial machinery manufacturing	Default (22.57%)
					Operating expenses: Material					
					Marketing Materials	$30,000	$15,000	$15,000	Advertising and related services	0%
					Architectural Books	$10,000	$10,000	$-	Advertising and related services	0%
					Flooring Trade Show - Las Vegas	$10,000	$-	$10,000	Other support services	Default (90.06%)
					Hospitality Design Show - Las Vegas	$10,000	$-	$10,000	Other support services	Default (90.06%)
					Commercial Trade Show - Chicago	$5,000	$-	$5,000	Other support services	Default (90.06%)
					Personnel Services					
					Mechanics	$120,000	$-	$120,000	Waste management and remediation services	100%
		$5,000,000	**$13,659,034**	**$18,659,034**		**$18,659,034**	**$5,000,000**	**$13,659,034**		

Summary of Industry-Level Investments for the Recycled Fiber, Plastic, and Glass Grant Program

Total Grant Funds	Total Matching Funds	Summary of Industries	Weighted State Funds Local Purchase Rate	Weighted Match Funds Local Purchase Rate	Percent of Total State Funds	Percent of Total Matching Funds
$25,000	$15,000	Advertising and related services	0%	0.0%	0.5%	0.1%
$27,500	$65,250	Architectural, engineering and related services	Default (95.66%)	Default (95.66%)	0.6%	0.5%
$21,000	$106,210	Industrial truck, trailer, and stacker manufacturing	100%	100.0%	0.4%	0.8%
$361,919	$341,081	Construction of new manufacturing structures	100%	100.0%	7.2%	2.5%
$1,251	$8,749	Employment and payroll only (local government, non-education)	100%	100.0%	0.0%	0.1%
$4,563,330	$11,128,244	Other industrial machinery manufacturing	13.9%	18.6%	91.3%	81.5%
$-	$25,000	Other support services	Default (90.06%)	Default (90.06%)	0.0%	0.2%
$-	$175,000	Ready-mix concrete manufacturing	Default (73.43%)	Default (73.43%)	0.0%	1.3%
$-	$2,500	Scientific research and development services	100%	100.0%	0.0%	0.0%
$-	$500,000	Switchgear and Switchboard Apparatus Manufacturing	Default (20.59%)	Default (20.59%)	0.0%	3.7%
$-	$1,292,000	Waste management and remediation services	100%	100.0%	0.0%	9.5%
$5,000,000	**$13,659,034**					

29. The Greenhouse Gas Reduction Loan Program

29.1 Indirect and Induced Jobs

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by the Greenhouse Gas Reduction Loan Program. See **Table A29.1.1** and **Table A29.1.2** for a summary of the indirect jobs supported by the program, as reported in full-time equivalent (FTE) job-years.

Table A29.1.1. Indirect Jobs Supported by California Climate Investment Funding for the GHG Reduction Loan Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	0.8	10.6%
Retail – Clothing and clothing accessories stores	0.6	8.3%
Retail – Nonstore retailers	0.6	8.3%
Retail – Miscellaneous store retailers	0.4	5.9%
Management of companies and enterprises	0.3	3.9%
Truck transportation	0.3	3.9%
Real Estate	0.3	3.8%
Retail – General merchandise stores	0.3	3.5%
Retail – Health and personal care stores	0.3	3.5%
Machine shops	0.2	2.7%
Subtotal of Top 10 Industries	**3.9**	**54.5%**
Total of All Industries	**7.2**	**100%**

Table A29.1.2. Indirect Jobs Supported by Induced Co-investment for the GHG Reduction Loan Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Wholesale trade	4.5	11.7%
Management of companies and enterprises	1.8	4.7%
Machine shops	1.6	4.1%
Marketing research and all other miscellaneous professional, scientific, and technical services	1.5	3.9%
Truck transportation	1.4	3.7%
Retail – Clothing and clothing accessories stores	1.3	3.3%
Retail – Nonstore retailers	1.2	3.1%
Employment services	1.2	3.1%
Real estate	1.1	2.8%
Accounting, tax preparation, bookkeeping, and payroll services	0.9	2.2%
Subtotal of Top 10 Industries	**16.4**	**42.7%**
Total of All Industries	**38.5**	**100%**

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table A29.2.1** and **Table A29.2.2** for a summary of the induced jobs supported by the GHG Reduction Loan Program, as reported in FTE job-years.

Table A29.2.1. Induced Jobs Supported by California Climate Investment Funding for the GHG Reduction Loan Program

California Climate Investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	0.4	6.1%
Real estate	0.4	5.7%
Limited-service restaurants	0.3	4.9%
Wholesale trade	0.3	4.5%
Hospitals	0.3	4.4%
Offices of physicians	0.3	4.2%
Individual and family services	0.3	4.0%
Other financial investment activities	0.2	3.0%
Nursing and community care facilities	0.2	2.9%
Services to buildings	0.2	2.8%
Subtotal of Top 10 Industries	**2.7**	**42.4%**
Total of All Industries	**6.4**	**100%**

Table A29.2.2. Induced Jobs Supported by Induced Co-investment for the GHG Reduction Loan Program

Induced Co-investment		
Industry	**FTE Job-Years**	**Percent of Total Direct Jobs**
Full-service restaurants	1.7	4.7%
Real estate	1.7	4.7%
Limited-service restaurants	1.6	4.5%
Hospitals	1.5	4.1%
Individual and family services	1.3	3.5%
Other financial investment activities	1.2	3.4%
Wholesale trade	1.2	3.2%
Nursing and community care facilities	1.0	2.8%
Offices of physicians	1.0	2.6%
Retail – Food and beverage stores	0.9	2.6%
Subtotal of Top 10 Industries	**13.3**	**35.9%**
Total of All Industries	**36.9**	**100%**

Appendix 29.2. Greenhouse Gas Reduction Loan Program Detailed Summary of Modeling Inputs

Grant Cycle	Applicant	Total Loan Funds (GGRF)	Total Project Cost	Line Item Expenses	Line Item Cost	State Funds	Co-investment	NAICS CODE/ IMPLAN Industry	Local Purchase Rate
2011-2016	North State Rendering Co., Inc	$833,000	$11,656,157	2016 Project Costs					
				PG&E Non-Export equipment purchase	$195,000	$195,000		Other industrial machinery manufacturing	Default 22.57%
				PG&E Non-Export equipment installation	$195,000	$195,000		Maintenance and repair construction of nonresidential structures	Default 85.93%
				PG&E Net meter equipment Purchase	$200,000	$200,000		Totalizing Fluid Meter and Counting Device Manufacturing	Default 4.66%
				PG&E Capital Improvement	$85,000	$85,000		Maintenance and repair construction of nonresidential structures	Default 85.93%
				PG&E New Service Capital improvement	$108,000	$108,000		Maintenance and repair construction of nonresidential structures	Default 85.93%
				PG&E Site upgrades capital purchase	$10,000	$10,000		Other industrial machinery manufacturing	Default 22.57%
				PG&E Site upgrades capital improvements	$40,000	$40,000		Maintenance and repair construction of nonresidential structures	Default 85.93%
				Biofuel Energy - Compressed Natural Gas Equipment Purchase	$505,000	$-	$505,000	Air and gas compressor manufacturing	Default 5.98%
				Biofuel Energy - Equipment Installation	$50,000	$-	$50,000	Maintenance and repair construction of nonresidential structures	Default 85.93%
				2011-2015 Project Costs					
				Working Capital	$1,433,953		$1,433,953	Other industrial machinery manufacturing	Default 22.57%
				Equipment Purchase and installation:	$8,834,204				
				Equipment Purchase (Luskin Estimation)			$8,038,330	Other industrial machinery manufacturing	Default 22.57%
				Equipment Installation (Luskin Estimation)			$795,874	Maintenance and repair construction of nonresidential structures	Default 85.93%
2014-2015	Nursery Products	$850,000	$1,133,563	2016 Project Costs					
				Equipment - Window Turner	$300,000	$225,000	$75,000	Other industrial machinery manufacturing	Default 22.57%
				Equipment - Used Front End Loader 1	$367,000	$275,000	$92,000	Other industrial machinery manufacturing	Default 22.57%
				Equipment - Used Front End Loader 2	$367,000	$275,000	$92,000	Other industrial machinery manufacturing	Default 22.57%
				Equipment - Used Cyclone	$95,313	$75,000	$20,313	Other industrial machinery manufacturing	Default 22.57%
				CalReyccle Loan Fee	$4,250		$4,250	Employment and payroll only (state government, non-education)	100%
		$1,683,000	$12,789,720		$12,789,720	$1,683,000	$11,106,720		

Summary of Industry-Level Investments for the GHG Reduction Loan Program

Total State Funds	Total Matching Funds	Industry	Local Purchase Rate	Percent of Total State Funds	Percent of Total Matching Funds
$-	$505,000	Air and gas compressor manufacturing	Default 5.98%	0.0%	4.5%
$428,000	$845,874	Maintenance and repair construction of nonresidential structures	Default 85.93%	25.4%	7.6%
$1,055,000	$9,751,596	Other industrial machinery manufacturing	Default 22.57%	62.7%	87.8%
$200,000	0	Totalizing Fluid Meter and Counting Device Manufacturing	Default 4.66%	11.9%	0.0%
$1,683,000	**$11,102,470**			**100.0%**	**100.0%**

A1. Photo Credits

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A2. Benchmark Basket for Computer and Electronic Products Manufacturing

2012 NAICS Code	Meaning of 2012 NAICS code	Type of operation or tax status code	Meaning of Type of Operation or Tax Status Code	Year	Number of Establishments	Value of Sales, Shipments, Receipts, Revenue, or Business Done ($1,000)	IMPLAN Code	Weight %	Total	Direct	Indirect	Induced
334111	Electronic computer manufacturing	99	Total	2012	86	$2,726,941	Electronic computer manufacturing	3.83%				
334112	Computer storage device manufacturing	99	Total	2012	51	$4,328,127	Computer storage device manufacturing	6.07%				
334118	Computer terminal and other computer peripheral equipment manufacturing	99	Total	2012	148	$1,121,239	Computer terminals and other peripheral equipment manufacturing	1.57%				
334210	Telephone apparatus manufacturing	99	Total	2012	56	$1,585,529	Telephone apparatus manufacturing	2.22%				
334220	Radio and television broadcasting and wireless communications equipment manufacturing	99	Total	2012	202	$12,320,797	Broadcast and wireless communication equipment manufacturing	17.29%				
334290	Other communications equipment manufacturing	99	Total	2012	62	$397,952	Other communications equipment manufacturing	0.56%				
334310	Audio and video equipment manufacturing	99	Total	2012	129	$1,143,004	Audio and video equipment manufacturing	1.60%				
334412	Bare printed circuit board manufacturing	99	Total	2012	174	$1,376,162	Bare printed circuit board manufacturing	1.93%				
334413	Semiconductor and related device manufacturing	99	Total	2012	300	$10,397,606	Semiconductor and related device manufacturing	14.59%				
334416	Capacitor, resistor, coil, transformer, and other inductor manufacturing	99	Total	2012	85	$606,872	Capacitor, resistor, coil, transformer, and other inductor manufacturing	0.85%				
334417	Electronic connector manufacturing	99	Total	2012	64	$1,456,298	Electronic connector manufacturing	2.04%				
334418	Printed circuit assembly (electronic assembly) manufacturing	99	Total	2012	188	$4,957,255	Printed circuit assembly (electronic assembly) manufacturing	6.96%				
334419	Other electronic component manufacturing	99	Total	2012	310	$2,343,007	Other electronic component manufacturing	3.29%	2.23	0.64	0.79	0.79
334510	Electromedical and electrotherapeutic apparatus manufacturing	99	Total	2012	163	$7,289,560	Electromedical and electrotherapeutic apparatus manufacturing	10.23%				
334511	Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	99	Total	2012	117	$6,767,603	Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	9.50%				
334512	Automatic environmental control manufacturing for residential, commercial, and appliance use	99	Total	2012	36	$298,612	Automatic environmental control manufacturing	0.42%				
334513	Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables	99	Total	2012	113	$743,032	Industrial process variable instruments manufacturing	1.04%				
334514	Totalizing fluid meter and counting device manufacturing	99	Total	2012	29	$246,582	Totalizing fluid meter and counting device manufacturing	0.35%				
334515	Instrument manufacturing for measuring and testing electricity and electrical systems	99	Total	2012	217	$4,032,701	Electricity and signal testing instruments manufacturing	5.66%				
334516	Analytical laboratory instrument manufacturing	99	Total	2012	132	$3,576,694	Analytical laboratory instrument manufacturing	5.02%				
334517	Irradiation apparatus manufacturing	99	Total	2012	29	$1,926,174	Irradiation apparatus manufacturing	2.70%				
334519	Other measuring and controlling device manufacturing	99	Total	2012	155	$1,633,157	Watch, clock and other measuring and controlling device manufacturing	2.29%				

A3. Indirect and Induced Jobs Across All California Climate Investments

Indirect Impacts

Indirect jobs are those along the supply chains that provide inputs and services to the industries that are directly impacted by California Climate Investments. See **Table S2.1.1** and **Table S2.1.2** for a summary of the indirect jobs supported by the 29 programs analyzed in **Part II**, as reported in full-time equivalent (FTE) job-years.[1]

Table A3.1.1. Indirect Jobs Supported by California Climate Investment Funding[2]

Industry	FTE Job-Years	Percent of Total Direct Jobs
Wholesale trade	334	7.7%
Retail – Clothing and clothing accessories stores	229	5.3%
Retail – Nonstore retailers	212	4.9%
Employment services	211	4.9%
Architectural, engineering, and related services	201	4.6%
Real estate	165	3.8%
Truck transportation	154	3.6%
Retail – Miscellaneous store retailers	143	3.3%
Marketing research and all other miscellaneous professional, scientific, and technical services	106	2.4%
Management consulting services	102	2.4%
Subtotal of Top 10 Industries	**1,856**	**42.9%**
Total of All Industries	**4,323**	**100%**

[1] These totals isolate the indirect jobs supported by the 29 programs in **Part II** and do not include the indirect jobs supported by funding that goes to state agencies for program administration, fund administration and management, and the identification of disadvantaged communities. See **Table A3** in **Chapter 3** of **Part I** for a summary of the *total* jobs (including direct, indirect, and induced jobs) that are supported by funding that goes to state agencies for program administration, fund administration and management, and the identification of disadvantaged communities.

[2] Ibid.

Table A3.1.2. Indirect Jobs Supported by Induced Co-investment[3]

Industry	FTE Job-Years	Percent of Total Direct Jobs
Wholesale trade	1,110	8.1%
Employment services	889	6.5%
Architectural, engineering, and related services	837	6.1%
Truck transportation	559	4.1%
Real estate	512	3.7%
Marketing research and all other miscellaneous professional, scientific, and technical services	478	3.5%
Management consulting services	429	3.1%
Commercial and industrial machinery and equipment rental and leasing	337	2.5%
Full-service restaurants	330	2.4%
Accounting, tax preparation, bookkeeping, and payroll services	324	2.4%
Subtotal of Top 10 Industries	**5,805**	**42.5%**
Total of All Industries	**13,659**	**100%**

[3] Ibid.

Induced Impacts

Induced jobs provide goods and services to workers with direct and indirect jobs when they spend their income (e.g., grocery store clerks selling household products, after-school providers caring for children, doctors seeing patients, etc.). See **Table S2.2.1** and **Table S2.2.2** for a summary of the induced jobs supported by the 29 programs analyzed in **Part II**, as reported in FTE job-years.[4]

Table A3.2.1. Induced Jobs Supported by California Climate Investment Funding[5]

Industry	FTE Job-Years	Percent of Total Direct Jobs
Full-service restaurants	252	4.7%
Real estate	248	4.6%
Limited-service restaurants	232	4.3%
Hospitals	213	3.9%
Individual and family services	191	3.5%
Wholesale trade	182	3.4%
Offices of physicians	166	3.1%
Retail – Food and beverage stores	142	2.6%
Other financial investment activities	138	2.5%
Retail –General merchandise stores	135	2.5%
Subtotal of Top 10 Industries	**1,900**	**35.0%**
Total of All Industries	**5,427**	**100%**

Table A3.2.2. Induced Jobs Supported by Induced Co-investment[6]

Industry	FTE Job-Years	Percent of Total Direct Jobs
Full-service restaurants	701	4.6%
Real estate	695	4.6%
Limited-service restaurants	644	4.2%
Hospitals	594	3.9%
Individual and family services	529	3.5%
Wholesale trade	506	3.3%
Offices of physicians	462	3.1%
Retail - Food and beverage stores	394	2.6%
Other financial investment activities	383	2.5%
Retail - General merchandise stores	374	2.5%
Subtotal of Top 10 Industries	**5,282**	**34.8%**
Total of All Industries	**15,161**	**100%**

[4] These totals isolate the induced jobs supported by the 29 programs in **Part II**, and do not include the induced jobs supported by funding that goes to state agencies for program administration, fund administration and management, and the identification of disadvantaged communities. See **Table A3** in **chapter 3** of **Part I** for a summary of the *total* jobs (including direct, indirect, and induced jobs) that are supported by funding that goes to state agencies for program administration, fund administration and management, and the identification of disadvantaged communities.

[5] Ibid.

[6] Ibid.