

TRANSFORMATIVE CLIMATE COMMUNITIES

Evaluation Plan:

**A Road Map for Assessing Progress and
Results of the Round 1 Place-based Initiatives**

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**By: UCLA Luskin Center for Innovation and
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Acknowledgements and Disclaimer

AUTHORSHIP

J.R. DeShazo, principal investigator
Bill Eisenstein, co-principal investigator
Colleen Callahan, deputy director
Jason Karpman, project manager, site manager, and researcher
Zoe Elizabeth, site manager and researcher
Kelly Trumbull, site manager and researcher
Lolly Lim, researcher
Emma Mehlig French, researcher

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DISCLAIMER

The authors appreciate the contributions of the aforementioned agencies and individuals. This document, however, does not necessarily reflect their views. Any errors are those of the authors. To continue to be responsive to stakeholder feedback, evolving program implementation details and lessons learned, details of this plan may be updated over time.

FOR MORE INFORMATION

UCLA Luskin Center for Innovation: www.innovation.luskin.ucla.edu
UC Berkeley Center for Resource Efficient Communities: www.crec.berkeley.edu/

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1. Introduction

The bold aim of the Transformative Climate Communities (TCC) program is apparent in its name. The program aims to leverage Greenhouse Gas Reduction Fund dollars (i.e. California Climate Investments) to transform communities that have historically experienced underinvestment. These communities face poverty and pollution, along with a need for more reliable transportation, affordable housing and access to fresh food. The first round of the TCC program will bring a wide variety of new projects and services to three sites, located in Fresno, Ontario and the Watts neighborhood of Los Angeles. No such program has ever been initiated.

The Strategic Growth Council (SGC), which administers the TCC program, contracted with the University of California, Los Angeles and University of California, Berkeley (UCLA-UCB evaluation team) to draft an evaluation plan for assessing TCC progress and outcomes at the neighborhood-level. The UCLA-UCB evaluation team created this plan as a guide for evaluating the first three TCC sites specifically as well as future TCC sites generally. This document could serve as the foundation of future evaluation plans for other TCC grant rounds. In addition, details of this plan may be updated in response to stakeholder feedback, evolving program implementation details, and lessons learned.

The goals for implementing this plan are to track, assess and communicate local TCC progress and outcomes to stakeholders while helping to improve the design and implementation of current and future TCC supported projects. These activities are expected to provide a number of benefits to external stakeholders, as described in **Section 1.1**.

This document describes an approach and general timeline for TCC site evaluation, the foundation of which is the prioritized tracking and assessing of key indicators that could change over time due to TCC investments. The indicators contained in this evaluation plan are the result of a planning process that took into account the TCC program framework; goals defined by the grantees; the logical chain of interim outcomes that will occur from funded activities; budgetary constraints for primary data collection; and availability of secondary data sources at appropriate geographic and temporal scales. The framework that was used to develop the list of indicators, including definitions of indicator terminology, is summarized in **Section 1.2**.

The evaluation will comprise four phases: 1) baseline data collection, 2) process evaluation, 3) outcome evaluation, and 4) impact evaluation. While these phases are conceptually distinct, they will temporally overlap because some projects may finalize implementation while others are still in the process of launching. The activities that will occur during each of these evaluation phases are described in **Section 2**.

The evaluator will employ both quantitative and qualitative analysis to assess progress and results. The methods described in this document leverage cost effective secondary data and

utilize targeted primary data collection. In addition and in collaboration with the grantees, the evaluation team will utilize co-benefit methodologies developed by the California Air Resources Board (CARB) in an effort to ensure consistency in benefit reporting across California Climate Investments and to build organizational capacity among the grantees. See **Section 3** for an overview of methods and data types.

1.1. Value of Evaluation

The TCC program is both new and ambitious. It takes a uniquely place-based, community-driven and comprehensive approach. The program goals are reduced greenhouse gas (GHG) emissions along with an array of local economic, environmental and public health co-benefits in targeted disadvantaged communities. The approach seeks to empower those communities and could provide lessons and spillover benefits to other California communities.

Evaluation is both a process and an end result to meet internal and external program needs. To address the needs of internal and external stakeholders, the evaluation team has developed an evaluation plan to accomplish the following:

- Support successful implementation: Clarify and specify the often-unidentified intermediate steps between activities and intended impacts, which will help ensure that all appropriate details are in place for successful implementation. Also, the evaluator will identify which processes are working well and which could be improved.
- Provide evidence of success: Document and assess, both quantitatively and qualitatively, project progress and outcomes in order to show a return on investment. Assess whether/to what the extent transformative, program-wide benefits were realized.
- Serve as a model for future evaluation efforts: Highlight lessons learned that could be applied to evaluating other TCC program rounds and other California Climate Investment programs.

1.2. Evaluation Framework and Definitions

The performance indicators identified in this plan were borne out of SGC's framework for the TCC program, as described in the [2017 Program Guidelines](#). The framework consists of five interrelated elements—objectives, goals, strategies, project types, and indicators. Program objectives reflect the TCC program provisions outlined in AB 2722. These objectives include:

1. Reductions in greenhouse gas emissions (GHG),
2. Improvements in public health and environmental benefits, and
3. Expanded economic opportunity and shared prosperity.

Each TCC proposal must define goals for each of the three program objectives that align with community needs identified through a community engagement process. The non-GHG related goals identified by the three grantees are summarized in **Table 1.1**.

Table 1.1. Goals Defined by Round 1 TCC Grantees

TCC Program Objective: Public Health and Environmental Benefits	TCC Program Objective: Economic Opportunity and Shared Prosperity
Fresno's Defined Goals:	
Reduce Emissions from Local Sources of Air Pollution	Improve Access to Training Opportunities and Career Pathways for Low-Income Residents
Improve Public Health and Other Environmental Benefits	Creation of High Quality Jobs for Low-Income Residents
Address the Improvement of Public Health Outcomes through Improving Access to Care	Business Development
Ontario's Defined Goals:	
Breathe healthy air, eat healthy food, and be free from chronic disease	Improve access to training opportunities and career pathways for low-income residents
Feel safe and comfortable walking and biking to transit and other neighborhood destinations	Create high quality jobs for low-income residents
Live in a home that is safe and affordable	Increase educational attainment that leads to sustainable employment and job growth within the TCC project area.
Watts' Defined Goals:	
Reduce local sources of air pollution	Access to Training
Improve public health outcomes and address health disparities	High quality jobs and careers
Prevent displacement and its impact on physical and mental health	Support and expand local businesses and organizations
Address and mitigate non GHG sources and exposure to pollution	Help youth identify and prepare for careers in GHG reduction fields
Create safe and secure public space	Empower and educate residents to advocate for greater equity and provision of municipal services

After identifying site-specific project goals, applicants then identified a combination of strategies known to reduce greenhouse gas emissions and promote public health, environmental and economic benefits. A list of potential strategies was provided for applicants to choose from in the TCC program guidelines. The strategies proposed by the three awarded grantees are summarized in **Table 1.2**.

Table 1.2. Strategies Proposed by Round 1 TCC Grantees

Proposed Strategies	Fresno	Ontario	Watts
Equitable housing and neighborhood development	X	X	X
Transit access and mobility	X	X	X
Decarbonized energy and energy efficiency		X	X
Water efficiency			
Materials management		X	X
Urban greening and green infrastructure	X	X	X
Land conservation and restoration			
Health and wellbeing	X	X	X
Workforce development and education		X	X
High-quality job creation and local economic development	X		X

Within these strategies, applicants then had to develop project types that achieve their identified goals. These project types include a mix of California Climate Investment eligible project types and unique project types that are funded through leveraged funds. Each project type may achieve multiple goals and employ multiple strategies. **Table 1.3** summarizes the mix of project types adopted by each grantee.

Table 1.3 Project Types Proposed by Round 1 TCC Grantees

Proposed Project Types	Fresno	Ontario	Watts
Affordable Housing and Sustainable Communities (AHSC)	X	X	X
Low Carbon Transportation (LCT)	X		X
Low Carbon Transit Operations (LCTOP)		X	X
Active Transportation Program (ATP)	X	X	X
Low Income Weatherization Program (LIWP)	X	X	X
Urban and Community Forestry (UCF)	X	X	X
Urban Greening (UG)	X		X
Organics Program (OP)		X	
Food Waste Prevention and Rescue Program (FWPRP)			X
Leveraged Project: TCC Connector	X		
Leveraged Project: Chinatown Business Improvement District	X		
Leveraged Project: Southwest Offsite Improvements	X		
Leveraged Project: Small Business Support Program		X	
Leveraged Project: Healthy Ontario Initiative		X	

In addition to the project types listed above, applicants also had to develop transformative plans that addressed three high-priority issues central to the TCC program:

1. **Displacement avoidance;**
2. **Community engagement;** and
3. **Workforce development.**

These three transformative plans collectively document the actions that grantees will take to prevent the economic displacement of existing households and small businesses within the project area, develop multi-stakeholder partnerships that will oversee TCC implementation, and improve access to training opportunities and career pathways for low-income residents of the project area.

Lastly, applicants had to identify performance indicators associated with each project type and transformative plan. The evaluator worked with the awarded grantees to refine their original indicator tracking plans to ensure that they aligned with their project goals. To do so, the evaluator developed project-specific and plan-specific logic models in collaboration with the grantees. Logic models are a helpful evaluation tool that illustrate all of the interim steps that must occur for a project or plan to realize its intended goals. These steps are defined as follows:

- **Inputs:** The investment dollars and leveraged funds that support the TCC program.
- **Activities:** The work of the TCC grantees and co-applicants.
- **Outputs:** The products and services that the TCC projects produce and deliver.
- **Short-term Outcomes:** Changes in stakeholder's knowledge, attitude, and skills.
- **Intermediate Outcomes:** Changes in stakeholder's behaviors, practices, or decisions.
- **Impacts:** Changes in environment or human condition that align with the objectives and goals of the TCC Program.

The latter four steps described above were treated as performance indicators that could be quantified and tracked for the purposes of program evaluation. [Appendix 1.1](#) visualizes how SGC's TCC program framework and the evaluator's logical modeling framework overlap.

After developing an expanded list of performance indicators, the evaluator developed a draft evaluation plan that identified a suite of methods for tracking each indicator. This draft evaluation plan was vetted with a technical advisory committee (see [Appendix 1.2](#) for committee members) and interested stakeholders who joined an informational webinar held on September 26, 2018 (see [Appendix 1.3](#) for a list of organizations that attended the webinar). The feedback provided by the technical advisory committee and webinar attendants was incorporated into the final list of indicators, where feasible.

It is important to note that accurately tracking many of the health and environmental impacts of interest to Round 1 grantees and external stakeholders is not currently feasible. Much of the secondary data on relevant health and environmental impacts are aggregated at a geographic

scale too coarse for measuring neighborhood level change, which requires data at the census-tract scale or smaller. While primary data could be collected on health impacts through community surveys, this would require additional investment in incentives for survey respondents, translation services, and staffing. Similarly, tracking local air quality would require additional investment in strategically placed air monitoring equipment and additional staffing for analyzing the collected data. However, to assess progress toward grantee's environmental and public health goals, the evaluator will track interim indicators for which the literature links to longer term health and environmental impacts. These include urban greening measures (e.g., tree count, vegetation cover, etc.), accessibility measures (e.g., reduced travel times to health service providers, fresh food retailers, and recreation centers), and other social determinants of health (e.g., housing stability, employment, etc.).

The full list of indicators is provided in in the Appendix. Program-wide indicators that will be tracked across all three sites are provided in **Appendix 2**. Site-specific indicators that are unique to Fresno, Watts, and Ontario are still under development, but are available upon request. In each case, program indicators are organized by project and plan.

1.3. Complementary Objectives Achieved by TCC Program

TCC activities will achieve multiple objectives that complement the three formal objectives outlined in the TCC framework. Based on feedback that was received during the development and review of the draft evaluation plan, three additional objectives were highlighted as particularly important: (1) accessibility and mobility; (2) social equity; and (3) resiliency to the impacts of climate change.

Accessibility and Mobility

Accessibility and mobility are distinct objectives, but are discussed together in the evaluation plan because they are so interconnected. In the context of planning and transportation literature, accessibility can be understood as the ease by which potential destinations can be reached, as well as the spatial distribution and quality of those destinations (e.g., number, variety, attractiveness, etc.).¹ In contrast, mobility can be understood as the potential for movement, or the ability to get from one place from another.² Improvements in mobility generally enhance accessibility by making it easier to reach destinations, but it is still possible to have good mobility with poor accessibility, and vice versa. For example, sprawling neighborhoods with ample road space may have good mobility, but poor accessibility if there are few destinations of interest. In contrast, dense neighborhoods with severe congestion may have good accessibility, but poor mobility if long travel times reduce the total number of trips that can be made.

¹ Handy, S.L., and Niemeier, D.A. (1997). Measuring Accessibility: An Exploration of Issues and Alternatives. *Environment and Planning A*, 29, 1175–1194. <https://doi.org/10.1068/a291175>

² Handy, S. L. (2002). *Accessibility -vs Mobility- Enhancing Strategies for Addressing Automobile Dependence in the US*. Paper presented for the European Conference of Ministers of Transport, Paris. Accessed on November 26, 2018: http://www.des.ucdavis.edu/faculty/handy/ECMT_report.pdf

TCC activities enhance accessibility and mobility by expanding public transit service, improving bicycle and pedestrian pathways, piloting carshare and vanpool programs, and altering land use patterns that support greater density and diversity. These investments reduce the barriers that exist for project area residents to access critical goods and services, such as fresh food, medical treatment, and job opportunities, thereby further supporting the economic and health objectives of the TCC program. These investments also have the potential to augment the number of trips that TCC residents are able to complete in a day, allowing residents to spend more time exercising, exploring new job opportunities, or decompressing with family and friends, further reinforcing the transformative objectives of the TCC program.

There is a wide variety of metrics for analyzing accessibility and mobility, but there is no clear standard for holistic analysis. For example, metrics such as distance, travel time, and cost easily lend themselves to a quantitative analysis of accessibility, but these metrics do not capture the more qualitative dimensions of accessibility, particularly those that relate to the attractiveness of a particular destination (e.g., safety, cleanliness, thermal comfort, etc.). Likewise, mobility can be measured by actual movement, such as number of trips or number of miles traveled, but actual movement and potential movement are not interchangeable. For example, a person could choose to drive less for environmental reasons, but that wouldn't necessarily mean a decline in their ability to move, and thus a decline in mobility. Also, increases in actual movement can decrease the potential for movement, such as when streets are congested and less total trips can be made during the same period.

[Appendix 2.12](#) summarizes the indicators that will be tracked across all three sites to assess mobility and accessibility enhancement (MAE). The MAE indicator tracking plan is unique in that it is not connected to any single project type or transformative plan, as there are no isolated TCC funded activities that occur in the explicit name of this objective. Thus, the mobility and MAE indicator tracking plan is meant to complement the other indicator tracking plans included in **Appendix 2**. While the indicators within the MAE indicator tracking plan could easily be distributed amongst the other indicator tracking plans, the evaluator has consolidated them in the MAE plan to avoid unnecessary repetition.

Social Equity

Social equity can be understood as the fair distribution of resources and opportunities in society that takes into account historically unjust patterns of investment and resource accumulation.³ As a multidimensional aim, social equity also includes empowerment of citizens to participate meaningfully in decision-making processes.⁴ While social equity and sustainable development

³ Pascual, U., Phelps, J., Garmendia, E., Brown, K., Corbera, E., Martin, A., ... Muradian, R. (2014). Social Equity Matters in Payments for Ecosystem Services. *BioScience*, 64(11), 1027–1036. <https://doi.org/10.1093/biosci/biu146>

⁴ Lele, S., & Jayaraman, T. (2011). *Equity in the Context of Sustainable Development: Note for UN-GSP* (p. 13). India: Ashoka Trust for Research in Ecology and the Environment.

have historically been discussed as separate goals, the planning paradigm is shifting to view them as linked, where one aim cannot be achieved fully without the other.

TCC activities seek to further social equity by empowering community members in meaningful engagement with local government to improve environmental sustainability, community-based economic opportunities, housing stability, and other community-defined goals at the local level. The requirement for all TCC members to develop and implement a Displacement Avoidance Plan (DAP) in the first year of the program is a prime example of the ways in which the initiative is intentionally trying to maximize benefits for local residents while mitigating the potential unintended negative consequences that can come from major investments such as TCC.

Many of the indicators tracked within the evaluation plan can be used to evaluate social equity, particularly those that were identified as final impacts. These include, income, employment, housing costs, housing crowding, and housing stability, among others. Improvements in these indicators however, do not necessarily correspond to improved social equity. If, for example, employment slightly increases within the TCC sites, but a much greater increase is observed regionally, then the economic gap between TCC sites and neighboring communities has not been fully addressed. Thus, to properly assess improvements in social equity, impact indicators in TCC communities will be compared to those same indicators at the county and state level.

Resiliency

The need for communities to prepare for the impacts of climate change is growing ever more clear. Literature on climate resilience has expanded significantly in recent years, and one widely used definition of resilience is “the capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience.”⁵

Resiliency not only refers to physical characteristics, but also social and economic characteristics, as communities’ capacity to respond to and recover from anticipated climate change impacts is intimately tied to households’ financial security; their access to safe and affordable housing; and their ability to access critical services and resources such as health care and healthy foods. In this way, efforts to build climate resilience and efforts to build social equity are intimately connected; the latter is a constitutive part of accomplishing the former. As noted in the Safeguarding California Plan, the State’s integrated climate change adaptation plan, “...strategies such as alleviating poverty, improving living conditions, increasing access to opportunity, and reducing health and social inequities will result in more climate-resilient communities.”⁶

TCC activities enhance resiliency by increasing access to economic opportunities and reducing inequities related to environmental pollution, public health, and mobility that make communities

⁵ Rodin, Judith (2014). Natural Disaster Resilience Competition Summit.

⁶ California Natural Resources Agency (2018). *Safeguarding California Plan: 2018 Update*. (p. 93).

vulnerable to the impacts of climate change. Currently, there is no list that comprehensively details outcomes and metrics for evaluating initiatives that build resilience to climate change. However, the Safeguarding California Plan provides some conceptual metrics.⁷ Several of these metrics will be tracked as part of the TCC evaluation, including: the number of low-income housing units receiving weatherization and energy efficiency upgrades, the number of public transit stops added, impervious surface reduction, and water use reduction, among others.

⁷ California Natural Resources Agency (2018). *Safeguarding California Plan: 2018 Update*. (p. 246).

2. Overview of Evaluation Phases

The sites selected for TCC investments are disadvantaged communities and therefore have disproportionate levels of pollution, chronic disease, and poverty. The goal of evaluation is to measure those conditions before and after the implementation of a treatment protocol, and to see if that treatment had a meaningful impact on improving baseline conditions. Since transformation happens over time, conditions should be measured at multiple points in time. The four phases below describe each of the evaluation phases included in this plan: baseline, process, outcome and impact. These phases, while conceptually distinct, will temporally overlap because TCC projects are not all on the same timeline. The AHSC projects, for example, will likely not be ready for occupancy until after the other projects have been completed.

2.1. Baseline Evaluation

The first step in evaluation is to establish baseline data for selected indicators at each of the three TCC sites and their respective control sites (see **Section 3.1** for more information about the control sites). Baseline data will reflect the year prior to program implementation (i.e., 2018). For many of the indicators that will be tracked vis-a-vis secondary data sources, baseline data may not be available until several years after implementation kickoff because there is a multi-year lag for data to be collected, processed, and publicly posted. For example, there is a two year lag for American Community Survey (ACS) data to be reported after being collected, such that 2018 data will not be available until 2020. After collecting baseline data, the evaluator will assess the same set of indicators annually throughout the grantees' implementation period, thereby documenting trends in how indicators change over time.

2.2. Process Evaluation

Process evaluation has two primary objectives. The first is to collect early data on implementation milestones which can be used to understand program progress, as well as to communicate these initial results to external stakeholders, as appropriate. Many of the data points and indicators that will be examined for this component of the process evaluation will be derived from grantee tracking and reporting efforts, as the associated data should generally be available at their disposal from program documentation (e.g., number of trees planted). The evaluator will develop streamlined reporting templates to assist the grantees in collecting and reporting on their inputs and outputs in a consistent manner across the three TCC sites. The evaluator will then assist SGC in packaging the data collected from grantees to comply with the reporting requirements set for by the California Air Resources Board (CARB).

In addition to the outputs that grantees will self-report, the evaluator will track a number of key outputs using secondary sources. This will allow the evaluator to document the spillover effects (i.e., indirect effects) that occur from the TCC investments within the treatment sites (i.e., TCC sites). Using control sites to exclude the effects of external forces, the evaluator will be able to infer how TCC investments affected outputs such as the number of trees planted, solar systems installed and housing units built, above and beyond those that TCC investments directly financed. Outputs are likely to be the most measurable changes that occur pre and post project implementation, and are critical for communicating how TCC investments have transformed community strengths and assets.

The second component of process evaluation is collecting more qualitative data about implementation processes through ongoing communication with grantees (and/or co-applicants, as necessary), SGC staff, TCC residents, and other TCC stakeholders. These communications will allow the evaluator to understand which components of the program implementation are going well and where improvements can be made. This information will be reported to SGC in an annual memo to complement the annual report of program outcomes, and can be used to prompt course corrections throughout Round 1 of the TCC program, if necessary, and to inform future rounds of the program.

This process evaluation will be conducted through a variety of means, including surveys, focus groups, and interviews (see **Appendix 5** for the various instruments that will be used to support both the process and outcome evaluation). The evaluator will facilitate focus groups and interviews, but may rely on the grantee to help disseminate user surveys during community engagement and workforce training meetings. In addition to the formal instruments that have been developed, the evaluator will develop a schedule (in consultation with the grantees) to have informal phone conversations with project leads about the hurdles they are facing in implementing their projects.

2.3. Outcome Evaluation

Outcome evaluation assesses the extent to which TCC projects have demonstrated success in reaching short-term and intermediate outcomes. During outcome evaluation, the evaluator will track short-term and intermediate outcomes using primary and secondary data (see **Section 3** for more information on the different data sources that will be used during outcome evaluation). Outcome evaluation is important for monitoring whether the TCC program is on track to achieve its intended impacts, per the logic modeling process described in **Section 1.2**.

2.4. Impact Evaluation

Impact evaluation traditionally measures the causal relationship between program activities and long-term impacts, thereby answering whether the program achieved its stated goals. Given the ambitious nature of the TCC program, impacts will likely not be realized for several years after

program implementation. In some cases, it could take a generation for the effects to show up in the data. Thus, at the end of the relatively short five-year evaluation period, changes in the impact indicators may be too small to be distinguishable from statistical noise (i.e., when the margins of error for pre- and post-treatment measurements overlap), thereby making it difficult to draw any statistically valid conclusions about indicator changes at the selected sites. However, the evaluator will still assess impact indicators annually for the sake of maintaining a complete time series, which will be helpful for developing trend lines over the long run that show the directionality of impact indicators.

Beyond the five-year evaluation period, the evaluator anticipates an additional evaluation period that would occur at least two years later. During this later period, it is more likely that discernible changes in impact indicators may begin to appear in secondary data. However, the evaluator's ability to conclude whether these changes are unequivocally the result of the TCC program will be limited. Establishing causal links between program interventions and outcomes is one of the major challenges in program evaluation and requires that a number of experimental design principles be in place, which are well articulated in the *Handbook for Practical Program Evaluation (2010)*.⁸ For example, in experimental research, selection bias should be avoided, so that observed outcomes are not influenced by preexisting characteristics instead of the intervention. In the case of the TCC program, Round 1 grantees were selected based on a competitive grant process that partly awarded applicants based on the strengths of the coalitions that were in place, which could be the explanatory variable behind observed outcomes, rather than the TCC funded interventions.

Given the challenges of proving causality in the context of the TCC program, the evaluator could conduct a form of impact evaluation that analyzes observed impacts in the context of a broader body of academic literature. There is a wealth of peer-reviewed literature that documents links between many of the same inputs, activities, short-term outcomes, intermediate outcomes, and impacts that will be tracked for the TCC sites. Relationships observed in the literature for each of these variables could then be compared to relationships observed at the TCC sites and control sites. This will allow the evaluator to draw some reasonable conclusions about the effect of TCC investments on desired impacts within the context of a larger body of research. This form of impact evaluation may occur during the aforementioned additional evaluation phase.

⁸ Wholey, J. S., Hatry, H. P., & Newcomer, K. E. (2010). *Handbook of practical program evaluation*. San Francisco: Jossey-Bass. Accessed on November 16, 2018: <http://www.blancopeck.net/HandbookProgramEvaluation.pdf>

3. Methods and Data Types

This section provides an overview of the methods and types of data that will be used to evaluate the TCC Program, including secondary data, primary data, and estimated data.

3.1. Methods for Evaluation

Before and After Comparison

The goal of evaluation is to measure baseline conditions in a set of treatment sites before and after the implementation of a treatment protocol, and to see if that treatment had a meaningful impact on improving baseline conditions. In the case of this evaluation, the treatment of interest is a suite of public investments that reduce greenhouse gases while providing a number of environment, health, and economic co-benefits. The first round of these investments will be located in Fresno, Ontario, and Watts. Since transformation happens over time, key metrics will be measured at multiple points in time, as summarized in **Section 2**.

The Importance of With and Without Comparisons / Control Sites

Attributing any improvements in baseline conditions to the TCC Program requires conducting a with or without comparison. This comparison communicates whether improvements at the three awarded sites were uniquely associated with the suite of TCC investments, or whether these sites would have likely realized these same benefits without any intervention. For example, an increase in housing affordability across the three sites may be the result of market conditions or other statewide policies and programs that incentivize affordable housing development. Moreover, it is important to recognize that climate change itself—the primary impetus behind this program and other California Climate Investments—could confound many of the outcomes that should be tracked for this evaluation. For example, a hypothetical decline in trees could be due to tree mortality from heat stress and prolonged drought, rather than unsuccessful tree planting efforts. Without controlling for external factors, the evaluator could widely over- or under-estimate the effect of the TCC Program.

To conduct a with or without comparison, the evaluator has selected a set of comparable control sites that did not receive TCC investment. These control sites are individual census tracts that are similar to their respective TCC sites along a number of dimensions, including socioeconomic demographics, climate, and pollution burden (as demonstrated by their CalEnviroScreen scores). See [Appendix 3.2](#) for a summary of the methods used to identify appropriate control sites and [Appendix 3.3](#) for maps and profiles of the final control sites.

Where applicable, the indicators that are measured for the awarded sites will also be measured for the control sites. Collecting before and after data for the control sites will help control for external forces such as broader economic trends that could also explain the changes in environmental, health, and economic conditions observed in the three awarded sites.

While it would be ideal to measure all indicators in both the awarded and control sites, a number of indicators do not easily lend themselves to measurement in the control sites. For, example, there is no regularly updated secondary data source on vehicle miles traveled (VMT) at the census tract scale. Thus, there is no way to accurately identify how much VMT has declined in the treatment sites relative to the control sites. Without such data, the evaluator will be unable to draw any conclusions as to whether TCC investments had an *observable* impact on VMT independent of external forces such as gas prices or other costs related to vehicle ownership.

[Appendix 3.1](#) provides a list of all of the indicators that can be measured in both treatment and control sites. For many of the indicators not on this list, the evaluator will use established methodologies to *estimate* the net benefit of TCC investments (See **Section 3.4**).

Methodological Limitations

Even with the use of control sites, the evaluator will be limited in making valid inferences about the causality of TCC investments in affecting outcomes and impacts within TCC sites. As mentioned in **Section 2**, establishing causal links between program requires a number of experimental design principles be in place.⁹ In the case of the TCC program, selection bias within the treatment group is one of the foremost challenges to making claims about causality. Nevertheless, comparing outcomes in TCC sites to control sites will help the evaluator make reasonable claims about whether changes in the TCC communities are likely due to TCC investments or external factors.

Introduction to Data Types

There are three types of data relevant to TCC site evaluation; each type has particular strengths and challenges associated with its use for TCC site evaluation, as detailed below:

- **Secondary data** (analyzing data collected and maintained by a third-party): Secondary data is cost effective, and thus will be used whenever possible for TCC site evaluation. However, secondary data has geographic and temporal limitations for many indicators.
- **Observed/primary data** (conducting surveys, focus groups, informational interviews): Highest quality data at relevant local scale, but most time intensive and expensive to collect if done correctly. Thus, the contractor will use primary data collection instruments in a targeted and limited way, with primary focus on the three plans (Community Engagement, Displacement Avoidance, and Workforce Development.)

⁹ These principles are well documented by in the *Handbook of Practical Program Evaluation* (2010). For more information, visit: <http://www.blancopeck.net/HandbookProgramEvaluation.pdf>

- **Estimated data** (using calculator tools/methodologies provided by CARB or another credible source): Lower data precision and accuracy, but lower costs and higher feasibility for some impact indicators. The contractor will use estimated data to meet certain reporting requirements and when other data sources are not available.

The following sections describe each of these three types of data in more detail.

3.2. Secondary Data

The TCC program evaluation will primarily rely upon secondary data to analyze final program impacts. Utilizing publicly available secondary data can reduce evaluation costs compared to collecting primary data. In addition, secondary datasets are usually collected for the entire state of California, which allows the evaluator to compare data points from secondary data sources in both the treatment sites and the control sites. Another benefit of using secondary data is that it allows the evaluator to assess any local spillover effects (i.e., indirect effects) that occur from the TCC investments within the treatment sites. Because secondary data captures what occurs in actuality, it allows evaluators to measure both the direct and indirect effects of TCC investments. Measuring spillover effects requires comparison to a control site, so that evaluators can discern between indirect effects from the TCC investments and broader trends that are occurring regardless of those investments. For example, if there is an increase in solar PV panels within a TCC site (above and beyond the LIWP projects), then there is evidence to suggest that TCC investments induced additional solar PV installations (a homeowner is more likely to install solar if they see their neighbor doing so). Alternatively, if the same increase in solar panels is observed at a control site, then this increase is likely part of a larger trend.

The number of usable data sources at the appropriate geographic scale is limited because of the neighborhood scale of the TCC projects. **Table 3.1** below details the secondary data sources and/or databases that are proposed for the evaluation. Additional information on these data sources—including the frequency at which databases are updated, the geographic scale to which the data corresponds, and any limitations of the data—is provided in [Appendix 4.1](#).

Table 3.1 Secondary Data Sources

Data Source/ Database	Relevant Indicator(s)
Alternative Fuels Data Center	<ul style="list-style-type: none"> - Number and location of charging stations installed - Number of EV charging outlets installed by level of service
California Air Resources Board (CARB) Online Fleet Database	<ul style="list-style-type: none"> - New private EV purchases
California Housing Partnership Corporation (CHPC) Preservation Database	<ul style="list-style-type: none"> - Number of affordable housing units (created through low-income housing tax credits, HUD subsidies, and/or USDA subsidies)

Google Earth aerial imagery	<ul style="list-style-type: none"> - Trees planted - Number of solar PV systems installed
Local Housing Data	<ul style="list-style-type: none"> - Number of affordable housing units (created by local agencies, such as public housing authorities, and/or local funding mechanisms, such as density bonus agreements)
Quarterly Fuel and Energy Report (QFER) Database	<ul style="list-style-type: none"> - Renewable energy generation (kWh) from biomass
Statewide Integrated Traffic Records System (SWITRS)	<ul style="list-style-type: none"> - Number of Pedestrian injuries and fatalities - Number of Bicycle injuries and fatalities
Tax assessor's parcel data	<ul style="list-style-type: none"> - Number of housing units - Net density (dwelling units per acre)
US Census - American Community Survey (ACS)	<ul style="list-style-type: none"> - Employment rate - Housing costs for renters - Housing costs for homeowners - Housing crowding - Housing stability - Median income - Mode shift for journey to work - Poverty rate - Vacant housing units for rent - Vacant housing units for sale

3.3. Primary Data

Primary data will allow the evaluator to collect information about transformative change when it may not be visible from secondary sources. Much of the changes associated with the TCC Program over the first five years will likely be too small to show up in most standard secondary data sources. Thus, in the absence of cost effective secondary data, primary data may provide some of the most useful data collected during the entire evaluation process.

The evaluation plan includes three types of primary data collection instruments: user surveys, focus groups, and in-depth interviews. See **Appendix 5** for the questions contained in each survey instrument, focus group script, and interview script.¹⁰ This section of the evaluation plan outlines the following for each of the instrument types:

1. **Purpose:** the benefits of the method
2. **Scope:** which instruments will be used for which plan/project types
3. **Limitations:** key limitations of the method

¹⁰ The user survey for the Affordable Housing and Sustainable Communities (AHSC) projects will be developed closer to the completion of the AHSC projects, so that questions can reflect important topics that emerge during the next five years of TCC program implementation.

To ensure minimal risk to participants, primary data (including data collected via interviews, focus groups and user surveys) will be stored on a password protected computer. All names and identifying characteristics will be removed from all reports or presentations, unless participants provide pre-approval. Participants will be informed of the voluntary nature of their participation, as well as their ability to withdraw from the study at any point in time.

Primary data will only be collected at the TCC sites. The evaluation team will not be able collect primary data at the control sites due to resource limitations. Thus, the information gathered through primary data collection will support process evaluation and, to some extent, outcome evaluation, but will not be used to draw any conclusions about the *net* benefits of the TCC program after controlling for external factors.

3.3.1. User Surveys

Purpose

User surveys will support both process and outcome evaluation. For the process evaluation, surveys will ask questions related to the experiences of TCC site participants, including their involvement and perceptions of obstacles and successes of program implementation in their community. For the outcome evaluation, surveys will ask participants about change in their attitudes, skills, behavior, or conditions following a given intervention.

Scope

To ensure survey results are based on a reliable sample, user surveys will only be distributed for TCC activities that have a well-defined, reachable user base, and are common across all three TCC sites (i.e., workforce training, communement engagement workshops, and affordable housing projects). This will allow the evaluator to distribute a survey to the entire population of individuals engaged by a particular intervention.

Surveys will be distributed based on the implementation timeline for each project. For example, the workforce development surveys will be distributed to training program participants at the end of the training program, whereas the AHSC survey will be distributed approximately three months after residents move in. See **Table 3.2** for a summary of the various user surveys that will be distributed, their timing, target audience, and the relevant indicators that will be tracked for the purposes of outcome evaluation.

Table 3.2 User Surveys by Project/Plan Type^{11,12}

Project/Plan Type	Relevant Indicators	Timing of Survey Data Collection	Target Population¹³	Total Number of Surveys
Workforce Development Plan (WDP)	<ul style="list-style-type: none"> - Number of job training graduates placed in related job - Number of job training graduates that secured a wage/salary increase - Number of job training graduates that secured additional employment benefits 	<ul style="list-style-type: none"> - First workforce development training - Final workforce development training 	WDP training program participants	2 per site
Community Engagement Plan (CEP)	<ul style="list-style-type: none"> - Stakeholders feel that they can affect decisions - Stakeholders feel that community engagement is meaningful - Stakeholders feel more positively about TCC projects in their community - Stakeholders feel more positively about their community - Stakeholders believe that the TCC program will positively affect their community 	<ul style="list-style-type: none"> - First community engagement meeting - Final community engagement meeting 	Participants of community engagement process	2 per site
Affordable Housing and Sustainable Communities (AHSC)	<ul style="list-style-type: none"> - VMT reduction* - Increased walking* - Increased biking* - Reduced housing costs* - Reduced energy costs* - Reduced transportation costs* - Increased household assets* 	<ul style="list-style-type: none"> - Three months after AHSC residents move-in to their unit 	AHSC building residents	1 per site

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

Limitations

The user surveys will seek to survey all users/recipients of a specific TCC intervention rather than a representative sample of the entire project area population. As such, the use surveys will not provide a basis for drawing conclusions about the impact of the TCC investments on the TCC communities at large. Instead, they will provide documentation of milestones associated with project rollout, and to a limited extent, the effect of TCC project investments on individuals that were *directly* served by the program.

¹¹ This table is based on currently funded project types, should any of the grantees discontinue a particular project, a user survey will not be distributed to the proposed users of that project.

¹² The distribution of these surveys is contingent on the completion of project activities within the evaluator's contract period.

¹³ Surveys may be translated from English into additional languages per the needs of the grantees.

3.3.2. Focus Groups

Purpose

Focus groups are an effective way to gather information about widely held conceptions, beliefs and priorities from a target population. Unlike individual user surveys and in-depth interviews, focus groups provide opportunities to generate ideas and capture a shared understanding of a particular topic or issue.¹⁴ Focus groups, however, are time intensive to facilitate and require small groups (ideally between 6 and 8 participants) to allow for productive conversations.¹⁵ Given the limited sample sizes of the focus groups, the information gathered from focus groups will primarily be used to support process evaluation rather than outcome evaluation. However, the qualitative data gathered from focus groups will certainly help to interpret findings from the outcome evaluation.

The evaluation team plans to conduct focus groups in order to better understand community perceptions of displacement and the role of TCC in addressing this challenge through the creation and implementation of local Displacement Avoidance Plans (DAPs). Understanding the communities' perceptions and experiences regarding the risk of displacement, both residential and commercial, as well as the presumed role of the DAPs in mitigating this risk is critical to making sure these plans are effective in the long-term. For example, if the focus group participants in a particular community all mention lack of employment opportunities as a serious contributor to involuntary residential displacement, the grantees might consider expanding the planned workforce development initiatives to address this concern.

There is no single quantitative indicator for measuring whether displacement is occurring in TCC communities. Quantitative measures, such as housing stability and housing crowding, can help capture the potential symptoms of displacement, but hearing from key community stakeholders is critical for assessing whether displacement is the root cause behind neighborhood change. While the focus groups will not allow the evaluator to extrapolate statistically significant findings from the information gathered, they will certainly help facilitate meaningful interpretation of secondary data.

Moreover, the DAP focus groups will help gather data beyond the boundaries of the indicators that were developed during the logic modeling process. Focus groups offer the opportunity for more open-ended responses and follow-up questions compared to user surveys, allowing the research team to discover and investigate issues of importance to the community that might not otherwise have been captured. This open-endedness is particularly important for unpacking the topic of displacement, which can have varied definitions across communities.

¹⁴ For more information see Breen, R. L. (2006). A Practical Guide to Focus-Group Research. *Journal of Geography in Higher Education*, 30(3), 463–475.

¹⁵ For more information see Krueger, R. (2002). *Designing and Conducting Focus Group Interviews*. University of Minnesota.

Scope

There will be three focus groups comprised of key community representatives that have been involved in the creation and/or implementation of the DAP at each site. The three groups include: community organization representatives, local business owners, and local public officials. These target sub-populations were selected in order to collect a diverse range of perspectives on residential and commercial displacement in TCC communities. Each group will be fairly homogenous to ensure that the participants are comfortable speaking in front of one another.

The focus groups will be held at the beginning of year two at which point the DAPs, and other TCC initiatives, will have been partially implemented. This timing will allow the evaluators to collect useful information about community perceptions early on regarding both the issue of displacement and the effectiveness of the DAPs thus far. It will also allow time for meaningful adjustments to be made to ongoing programs if necessary. The timing and target audience of the DAP focus group is summarized in **Table 3.3**.

Table 3.3. Focus Groups by Project/Plan Type¹⁶

Project/Plan Type	Timing/Frequency of Focus Group	Target Population^{17,18}	Total Number of Focus Groups
Displacement Avoidance Plan (DAP)	- Year two	- Representatives of community based organizations (especially housing organizations) - Local business owners - Local public officials	3 per site

Limitations

As with the user surveys, the data gathered from focus groups will reflect the perspectives of a limited and specific set of individuals, and therefore will not be used to make statistically valid inferences about the entire population of the TCC project areas. However, the insights gained through face-to-face conversations with focus group participants hold a different, but just as important significance. There are aspects of community transformation that can be only understood through stories and discussion with individuals on the frontline of gentrification, globalization, and other economic pressures that disenfranchise marginalized communities. Gathering these stories and insights will be a key goal of the focus groups.

¹⁶ The implementation of these focus groups is contingent on the completion of project activities within the evaluator's contract period.

¹⁷ Final list of participants to be developed in collaboration with TCC grantees. All focus group participants will have been involved to some degree in the development or implementation of their community's DAP.

¹⁸ To control for primary data collection costs, focus groups will be conducted in English.

3.3.3. Interviews

Purpose

Along with both the user surveys and focus groups, the evaluation team will use interviews to gather insights on how TCC program roll out is affecting individuals and organizations and to identify key areas of concern and success. The key advantage of interviews over the user surveys and focus groups is the ability to ask more in-depth questions that reveal the underlying motivations for an individual's behaviors and choices. Interviews, however, are time-intensive to schedule and conduct, so the evaluator will only be able to conduct a limited number of interviews (between 6-12 per project type or plan). Given the limited sample sizes of interviews, the information gathered from interviews will primarily be used to support process evaluation rather than outcome evaluation. However, as with the focus groups, the qualitative data gathered from interviews will help to interpret findings from the outcome evaluation.

Scope

The evaluator will conduct interviews for the three transformative plans and the Affordable Housing and Sustainable Communities (AHSC) projects. The three transformative plans are the foundation of the TCC program, and are not required components of any other California Climate Investment. Given their centrality to the program, these plans were prioritized for evaluation through in-depth interviews with affected stakeholders. AHSC projects are also prioritized because they are essentially a microcosm of the TCC program, combining housing, transportation, and urban green investments into a single location.

Interviews about the Workforce Development Plan (WDP) and the AHSC projects will be conducted six months after participants complete their job training or move into their housing unit. This will allow the participants time to find a new job or get settled in their new housing, and to gain some informed perspective about their new situation.

Interviews about the Displacement Avoidance Plan (DAP) will occur six months after the DAP focus group. This will allow the evaluator to gain more in-depth information from DAP focus group participants, and to follow-up on recommendations from DAP focus group participants for additional stakeholders to interview.

Lastly, interviews about the Community Engagement Plan (CEP) will occur six to twelve months after implementation kickoff. The timing was chosen so that participants can reflect on their own role in, and opinions about, CEP activities before they begin to forget relevant details and impressions. This timing will also support the process evaluation, allowing for potential course corrections in community engagement efforts, if needed.

Table 3.4. Interviews by Project/Plan Type^{19,20}

Project/Plan Type	Timing/Frequency of Interviews	Target Population²¹	Total Number of Interviews
Workforce Development Plan (WDP)	Approximately six months after completion of training	WDP training program participants	6 to 12 per site
Community Engagement Plan (CEP)	Approximately six to twelve months after implementation kickoff	Participants of community engagement process	6 to 12 per site
Displacement Avoidance Plan (DAP)	Approximately six months after DAP focus group	Representatives of community organizations, particularly housing and tenant organizations	6 to 12 per site
Affordable Housing and Sustainable Communities (AHSC)	Approximately six after AHSC residents move-in	AHSC building residents	6 to 12 per site

Limitations

To stay within budgetary limits, evaluators will only be able to interview 6 to 12 representatives per project type per site. As a result, there are many stories and perspectives that will inevitably be left out. Thus, while the interviewed subjects will provide valuable information about individual experiences, they will reflect the perspectives of a limited and specific set of individuals, and will not be used to draw any conclusions about the opinions or experiences of the entire population of the TCC project area.

3.4. Estimated Data

When collecting primary or secondary data is not feasible for an indicator, the evaluator will estimate the TCC program’s effect on that indicator. For many of these indicators, the California Air Resources Board (CARB) has developed tools or methodologies for estimating the net benefits of TCC program activities. For indicators that lack a tool or methodology developed by CARB, the evaluator will rely upon a tool or methodology commonly used by public agencies (e.g., iTree). Some indicators, however, lack an established tool or methodology altogether. For

¹⁹ The implementation of these interviews is contingent on the completion of project activities within the evaluator’s contract period.

²⁰ This table is based on currently funded project types, should any of the grantees discontinue a particular project, interviews will not be conducted with the proposed users of that project.

²¹ To control for primary data collection costs, interviews will be conducted in English.

those that are relatively straightforward to estimate (e.g., water cost savings), the evaluator will develop an original methodology. **Table 3.5** lists the tools and methodologies that the evaluator will use to estimate the benefits of TCC activities.

It is important to note that many of these tools can only be used to estimate a change for a particular indicator, and cannot provide before and after data. Additionally, many of these tools have built-in assumptions that may not be accurate at a local TCC site level and do not automatically adjust as external factors change in the real world (e.g., extreme weather events, economic shocks, population shifts, etc.). Thus, estimates from these tools and methodologies should be understood as the benefits that one would expect from TCC activities after holding all else equal, rather than the actual benefits that will likely be observed in the community.

Table 3.5. Tools and Methodologies for Estimating the Benefits of TCC Activities

Estimator Tool / Methodologies	Relevant Indicator(s)
ArcGIS network analysis ²²	<ul style="list-style-type: none"> -Access to grocery stores that sell, healthy, fresh food -Access to educational services -Access to preventative or critical health care services -Access to recreational facilities -Access to workforce development related services -Access to walking / biking pathways
CARB's Energy and Fuel Cost Savings Co-benefit Assessment Methodology	<ul style="list-style-type: none"> -Reduced energy costs
CARB's GHG Quantification Methodologies	<ul style="list-style-type: none"> -GHG Emission Reductions (MTCO₂E) -Diesel PM Reductions (lbs) -NO_x Reductions (lbs) -PM 2.5 Reductions (lbs) -Reactive Organic Gases Reductions (lbs) -Fossil fuel based energy use reductions (kWh and therms) -Fossil fuel based transportation fuel use reductions (gallons) -Renewable energy generation (kWh) from solar -Vehicle miles traveled (VMT) reductions
CARB's Travel Cost Savings Co-benefit Assessment Methodology	<ul style="list-style-type: none"> -Reduced transportation costs
CARB's Water-Energy Efficiency Grant Program calculator	<ul style="list-style-type: none"> -Fossil fuel based energy use reduction (kWh) -Fossil fuel based energy use reduction (therms) -Water use reduction

²² Overview of the network analysis methodology can be found in [Appendix 4.2](#).

iTree Canopy	-Vegetation cover (trees, shrubs, grass, and other herbaceous plants)
iTree Planting	-Stormwater captured
iTree Streets	-Reduced energy consumption
UCLA / UCB Methodology (TBD) ²³	<ul style="list-style-type: none"> -Installed solar photovoltaic capacity for: <ul style="list-style-type: none"> ● Control sites and spillover effects within the TCC sites (based on PV systems identified from Google Earth) -Fossil fuel based transportation fuel use reductions (gallons) for: <ul style="list-style-type: none"> ● The Affordable Housing and Sustainable Communities Program (AHSC) ● Advanced Transportation Program (ATP) ● Low Carbon Transit Operations Program (LCTOP) ● Urban Greening Program (UG) -Fossil fuel based energy use (kWh) for <ul style="list-style-type: none"> ● Low Carbon Transportation (LCT) -Reduced energy costs for: <ul style="list-style-type: none"> ● Urban Community Forestry (UCF) ● Urban Greening (UG) -Reduced water costs for: <ul style="list-style-type: none"> ● Low-Income Weatherization Program (LIWP)

²³ UCLA and UCB will develop methodologies for analyzing indicators that can not be estimated from CARB's existing suite of methodologies. The final methodologies will be provided as an appendix to the annual reports that the evaluator will develop during outcome evaluation.

Appendices

Appendix 1. Background Materials

- 1.1. [TCC Evaluation Framework](#)
- 1.2. [Technical Advisory Committee](#)
- 1.3. [Webinar Attendees](#)

Appendix 2. Indicators by Project Type and Transformative Plan

- 2.1. [Affordable Housing and Sustainable Communities \(AHSC\)](#)
- 2.2. [Low Carbon Transportation \(LCT\)](#)
- 2.3. [Low Carbon Transit Operations Program \(LCTOP\)](#)
- 2.4. [Active Transportation Program \(ATP\)](#)
- 2.5. [Low-Income Weatherization Program \(LIWP\)](#)
- 2.6. [Urban and Community Forestry \(UCF\)](#)
- 2.7. [Urban Greening \(UG\)](#)
- 2.8. [Food Waste Prevention and Rescue Program / Organics Program \(FWPRP/OP\)](#)
- 2.9. [Displacement Avoidance Plan \(DAP\)](#)
- 2.10. [Community Engagement Plan \(CEP\)](#)
- 2.11. [Workforce Development Plan \(WDP\)](#)
- 2.12. [Mobility and Accessibility Enhancement \(MAE\)](#)

Appendix 3. Detailed Overview of Control Sites

- 3.1. [Controllable Indicators](#)
- 3.2. [Methods for selecting control sites](#)
- 3.3. [Maps and profiles of the control sites](#)

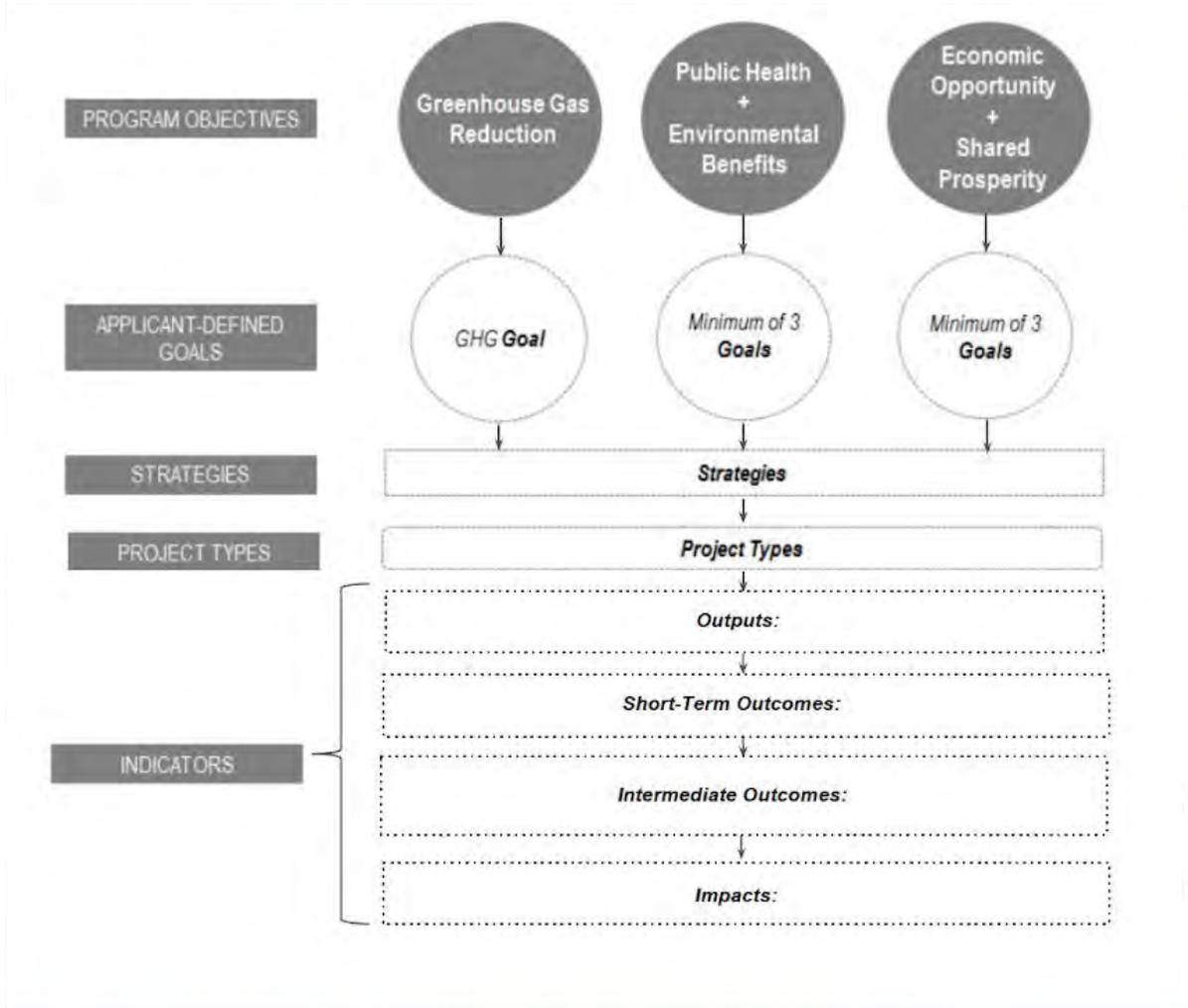
Appendix 4. Detailed Documentation of Methods and Data Sources

- 4.1. [Overview of secondary data sources](#)
- 4.2. [Overview of accessibility network analysis methodology](#)

Appendix 5. Primary Data Collection Instruments

- 5.1. [DAP Focus Group Script](#)
- 5.2. [DAP Interview Script](#)
- 5.3. [WDP User Survey - First Meeting](#)
- 5.4. [WDP User Survey - Last Meeting](#)
- 5.5. [WDP Interview Script](#)
- 5.6. [CEP User Survey](#)
- 5.7. [CEP Interview Script](#)

Appendix 1.1 - TCC Evaluation Framework



Appendix 1.2 - Technical Advisory Committee

Organization	Member
California Air Resources Board	Jessica Bede
California Business, Consumer Services and Housing Agency	Catherine Ohaegbu
California Department of Conservation	Sophie Young
California Department of Food and Agriculture	Amrith Gunasekera
California Department of Public Health	Meredith Milet
California Department of Transportation	Brain Bulaya
California Governor's Office of Business and Economic Development	Jesse Torres
California Governor's Office of Planning and Research	Elizabeth Baca
California Natural Resources Agency	Joseph Wraithwall

Appendix 1.3 - Webinar Attendees (September 26, 2018)

Organizations Represented
Ask Illya
Breathe California Sacramento Region
California Air Resources Board
California Department of Housing and Community Development
California Department of Public Health
California Environmental Justice Alliance
California Governor's Office of Business and Economic Development
California League of Conservation Voters
California Natural Resources Agency
City of Fresno Department of Public Works
City of Fresno Transportation Department
City of Los Angeles
City of Ontario
City of Pico Rivera
Climate Resolve
Franklin Boulevard Business District
Fresno Council of Governments
Grid Alternatives
Leadership Counsel for Justice and Accountability
Los Angeles Trade Technical College
Ontario Gov

Physicians for Social Responsibility - Los Angeles
Prevention Institute
REAP Change Consultants
Resources Legacy Fund
Riverside Transit Agency
Sierra Business Council
Southern California Edison
Strategic Growth Council
The Greenlining Institute
Unknown Affiliation (12)
U.S. Green Building Council Central California
Willdan

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for AHSC (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for AHSC (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Housing units*	Number of new housing units	Yes	Evaluator	County tax assessor parcel data	Annually			
	Number of new housing units (by number of bedrooms)	No	Grantee	Project documentation (e.g., occupancy permits)	Continuously, as relevant	X	X	
Affordable housing units*	Number of new affordable housing units ¹	Yes	Evaluator	California Housing Partnership Corporation (CHPC) Preservation Database; Local housing authority data	Annually			
	Number of new affordable housing units (by number of bedrooms) ¹	No	Grantee	Project documentation (e.g., occupancy permits)	Continuously, as relevant	X	X	
Trees planted*	Number of trees planted	Yes	Evaluator	Aerial images (Google Earth)	Pre and post			

¹ For a definition of affordable, see **Appendix A** of the [FY 2017-18 AHSC Program Guidelines](#).

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

			Grantee	Project documentation ² (e.g., landscaping invoices)	Continuously, as relevant	X		
Net density*	Number of dwelling units / acre	Yes	Evaluator	County tax assessor parcel data	Annually			
			Grantee	Project documentation (e.g., design plans)	Continuously, as relevant	X		
Free transit passes issued	Number of free transit passes Issued	No	Grantee	Project documentation (e.g., procurement records)	Continuously, as relevant			
Installed solar photovoltaic capacity	Estimated kW of new solar PV capacity	Yes	Evaluator	UCLA / UCB Methodology (TBD)	Pre and Post			
	Actual kW of new solar PV capacity	No	Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Energy efficiency measures beyond Title 24	Number of energy efficiency measures installed by measure type	No	Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Passenger VMT reduction (miles)*	Estimated passenger VMT reduction	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
	Actual passenger VMT*	No	Evaluator	AHSC user survey	3 months following move-in			

² Including locations of trees (X,Y coordinates) and whether the tree shades a building or not (yes/no).

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

Renewable energy generation (Kwh)*	Estimated renewable energy generation (Kwh) from solar	Yes	Evaluator	CARB's LIWP GHG Quantification Methodology ³	When work plan is finalized, as needed ▲	X	X	
Fossil fuel based energy use reduction (kWh)*	Estimated fossil fuel based energy use reductions (kWh)	No	Evaluator	CARB's LIWP GHG Quantification Methodology for Large Multi-Family	When work plan is finalized, as needed ▲	X	X	
Fossil fuel based energy use reduction (therms)*	Estimated fossil fuel based energy use reductions (therms)	No	Evaluator	CARB's LIWP GHG Quantification Methodology for Large Multi-Family	When work plan is finalized, as needed ▲	X	X	
Fossil fuel based transportation fuel use reductions (gallons)*	Estimated fossil fuel based transportation fuel use reductions (gallons)	No	Evaluator	UCLA / UCB Methodology (TBD)	When work plan is finalized, as needed ▲	X	X	
Housing unit occupancy rate	% of housing units occupied	No	Grantee	Project documentation (e.g., rental agreements)	Continuously, as relevant			X
Income-restricted housing unit occupancy rate	% of income restricted housing units occupied	No	Grantee	Project documentation (e.g., rental agreements)	Continuously, as relevant			X
Increased transit ridership	Average number of unlinked trips per day by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually		X	

³ Calculated using the National Renewable Energy Laboratory's (NREL) PVWatts calculator.

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

	Estimated number of unlinked trips per day by each stop within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
Increased transit passenger miles traveled (PMT)	Estimated annual PMT by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
Increased walking*	Number of miles walked per week for transportation*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased biking*	Number of miles biked per week for transportation*	No	Evaluator	AHSC user survey	3 months following move-in			
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	Yes	Evaluator	American Community Survey (Table S0801)	Annually			X
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed 	X		
Diesel PM Reductions (lbs)*	Estimated Diesel PM Reductions (lbs)	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's AHSC GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Reduced housing crowding	% of households w/ more than one occupant per room	Yes	Evaluator	American Community Survey (Table B25014)	Annually			
Reduced housing costs for renters	% of households spending more than 20, 30, 40, & 50% of their income on rent	Yes	Evaluator	American Community Survey (Table B25074)	Annually			
	Actual household expenditures on housing per month (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			
Reduced energy costs	Estimated energy cost savings for AHSC residents (dollars)	No	Evaluator	CARB's Energy and Fuel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized ▲			
	Actual household expenditures on energy per month (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.1 - Affordable Housing and Sustainable Communities (AHSC) Indicator Tracking Plan

Reduced transportation costs	Estimated transportation cost savings (dollars)	No	Evaluator	CARB's Travel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized 			
	Actual household expenditures on transportation per month (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased household assets*	Total household investments after accounting for debt (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.2 - Low Carbon Transportation (LCT) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for LCT (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for LCT (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Vehicles in service*	Number of vehicles in service by service type (e.g., carshare, vanpool) and vehicle type (e.g., BEV, PHEV)	No	Grantee	Project documentation (e.g., fleet purchase and service records)	Continuously, as relevant	X	X	
Number and location of charging stations installed	See indicator	Yes	Evaluator	Alternative Fuels Data Center	Annually			
			Grantee	Project documentation (e.g., installer invoices)	Continuously, as relevant			
Number and location of EV charging outlets installed by level of service	See indicator	Yes	Evaluator	Alternative Fuels Data Center	Annually			
			Grantee	Project documentation (e.g., installer invoices)	Continuously, as relevant			
Number of users registered for carsharing and other mobility project types	See indicator	No	Grantee	Project documentation (e.g., user registration records)	Continuously, as relevant			
Number of users registered for	See indicator	No	Grantee	Project documentation	Continuously, as relevant			

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.2 - Low Carbon Transportation (LCT) Indicator Tracking Plan

vanpool service				(e.g., user registration records)				
Intermediate Outcomes - Basis for Outcome Evaluation								
Passenger VMT Reductions (miles)*	Estimated passenger VMT reduction	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Fossil fuel based transportation fuel use reductions (gallons)*	Estimated fossil fuel based transportation fuel use reductions (gallons)	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Increased electric vehicle miles traveled	Actual VMT by PEV type for TCC EV fleet	No	Grantee	Project documentation (e.g., fleet mileage reports)	Continuously, as relevant			
Increased vanpool miles traveled	Actual VMT by vanpool	No	Grantee	Project documentation (e.g., fleet mileage reports)	Continuously, as relevant			
Increased vehicle miles traveled in other shared modes	Actual VMT by mode	No	Grantee	Project documentation (e.g., fleet mileage reports)	Continuously, as relevant			
Increased transit ridership	Average number of unlinked trips per day by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
	Estimated number of unlinked trips per day by each stop within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.2 - Low Carbon Transportation (LCT) Indicator Tracking Plan

Increased transit passenger miles traveled (PMT)	Estimated annual PMT by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	Yes	Evaluator	American Community Survey (Table S0801)	Annually			
Energy usage from installed EV charging infrastructure (kWh)	Actual energy usage from installed EV charging infrastructure (kWh)	No	Grantee	Project documentation (e.g., metered data, if available)	Continuously, as relevant			
New private EV purchases	New private EV purchases	Yes	Evaluator	CARB Fleet Web Database	Annually			
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed 	X		X
NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	X
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	X
Reactive Organic Gases Reductions	Estimated Reactive Organic Gases	No	Evaluator	CARB's Car Sharing & Mobility Options GHG	When work plan is	X	X	X

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.2 - Low Carbon Transportation (LCT) Indicator Tracking Plan

(lbs)*	Reductions (lbs)			Quantification Methodology	finalized, as needed ▲			
Diesel PM Reductions (lbs)	Estimated Diesel PM Reductions (lbs)	No	Evaluator	CARB's Car Sharing & Mobility Options GHG Quantification Methodology	When work plan is finalized, as needed ▲			
Reduced transportation costs	Estimated transportation cost savings (dollars)	No	Evaluator	CARB's Travel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized ▲			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.3 - Low Carbon Transit Operations Program (LCTOP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for LCTOP (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for LCTOP (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Free transit passes issued	Number of free transit passes issued	No	Grantee	Project documentation (e.g., procurement records)	Continuously, as relevant			
Electric vehicles added to public transit fleet	Number of electric vehicles added to public transit fleet	No	Grantee	Project documentation (e.g., procurement records)	Continuously, as relevant			
Alternative fuel vehicles added to public transit fleet (by fuel type)	Number of alternative fuel vehicles added to public transit fleet (by fuel type)	No	Grantee	Project documentation (e.g., procurement records)	Continuously, as relevant			
Transit departures added	Number of additional departures times by route and by stop	Yes	Evaluator	Publicly posted service schedules	Annually			
			Grantee	Project documentation (e.g., service schedules)	Continuously, as relevant			
Transit stops added	Number of additional transit stops by route and by location	Yes	Evaluator	Publicly posted service schedules	Annually			
			Grantee	Project documentation (e.g., service schedules)	Continuously, as relevant			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.3 - Low Carbon Transit Operations Program (LCTOP) Indicator Tracking Plan

Number of solar PV systems installed by building type	See indicator	Yes	Evaluator	Aerial imagery (Google Earth) and parcel data	Pre and post			
			Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Installed solar photovoltaic capacity	Estimated kW of new solar PV capacity	Yes	Evaluator	UCLA / UCB methodology TBD	Annually			
	Actual kW of new solar PV capacity	No	Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Energy efficiency measures adopted	Number of energy efficiency measures implemented by type	No	Grantee	Project documentation (e.g., installation records)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Passenger VMT Reductions (miles)*	Estimated passenger VMT reduction	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Fossil fuel based transportation fuel use reductions (gallons)*	Estimated fossil fuel based transportation fuel use reductions (gallons)	No	Evaluator	UCLA / UCB methodology TBD	When work plan is finalized, as needed 	X	X	
Fossil fuel based energy use reductions (kWh)*	Estimated fossil fuel based energy use reductions (kWh)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Renewable energy generation (kWh)*	Estimated renewable energy generation (kWh) from solar	Yes	Evaluator	CARB's LIWP GHG Quantification Methodology ¹	When work plan is finalized, as needed 			

¹ Calculated using the National Renewable Energy Laboratory's (NREL) PVWatts calculator.

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.3 - Low Carbon Transit Operations Program (LCTOP) Indicator Tracking Plan

Increased transit ridership	Average number of unlinked trips per day by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually		X	
	Estimated number of unlinked trips per day by each stop within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
Increased transit passenger miles traveled (PMT)	Estimated annual PMT by each route within the TCC boundary area	No	Grantee	Transit agency data on passenger boardings	Annually			
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	Yes	Evaluator	American Community Survey (Table S0801)	Annually			
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed 	X		
Diesel PM Reductions (lbs)*	Estimated Diesel PM Reductions (lbs)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.3 - Low Carbon Transit Operations Program (LCTOP) Indicator Tracking Plan

PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Reactive Organic Gases Reduction (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's LCTOP GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Reduced transportation costs	Estimated transportation cost savings (dollars)	No	Evaluator	CARB's Travel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized ▲			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.4 - Active Transportation (ATP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for ATP (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for ATP (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Linear feet and location of bike lanes by class	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Linear feet and location of completed pedestrian pathways	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Number and location of American Disabilities Act (ADA) standard ramps installed	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Number and location of signalized intersections with bike detection	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Passenger VMT Reductions (miles)*	Estimated passenger VMT reduction	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Fossil fuel based	Estimated fossil fuel	No	Evaluator	UCLA / UCB methodology TBD	When work plan is finalized, as	X	X	

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.4 - Active Transportation (ATP) Indicator Tracking Plan

transportation fuel use reductions (gallons)*	based transportation fuel use reductions (gallons)				needed 			
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	Yes	Evaluator	American Community Survey (Table S0801)	Annually			
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO ₂ E)*	Estimated GHG Emission Reductions (MTCO ₂ E)	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed 	X		
Diesel PM Reductions (lbs)*	Estimated Diesel PM Reductions (lbs)	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
NO _x Reductions (lbs)*	Estimated NO _x Reductions (lbs)	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's ATP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Reduced transportation costs	Estimated transportation cost savings (dollars)	No	Evaluator	CARB's Travel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized 			

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.4 - Active Transportation (ATP) Indicator Tracking Plan

Reduced bicycle injuries and fatalities	Number of bicycle injuries and fatalities	Yes	Evaluator	Statewide Integrated Traffic Records System (SWITRS)	Annually			
Reduced pedestrian injuries and fatalities	Number of pedestrian injuries and fatalities	Yes	Evaluator	Statewide Integrated Traffic Records System (SWITRS)	Annually			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.5 - Low Income Weatherization Program (LIWP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for LIWP (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for LIWP (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Trees planted*	Number of trees planted	Yes	Evaluator	Aerial images (Google Earth)	Pre and post			
			Grantee	Project documentation ¹ (e.g. landscaping invoices)	Continuously, as relevant	X	X	
Number of solar PV systems installed by building type	See indicator	Yes	Evaluator	Aerial images (Google Earth) and parcel data	Pre and post			
			Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Installed solar photovoltaic capacity	Estimated kW of new solar PV capacity	Yes	Evaluator	UCLA / UCB Methodology (TBD)	Annually			
	Actual kW of new solar PV capacity	No	Grantee	Project documentation (e.g., installation invoices)	Continuously, as relevant			
Number of solar water heating systems installed by building type	See Indicator	No	Grantee	Project documentation (e.g. installer invoices)	Continuously, as relevant			

¹ Including locations of trees (X,Y coordinates) and whether the tree shades a building or not (yes/no).

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.5 - Low Income Weatherization Program (LIWP) Indicator Tracking Plan

Number of fossil fuel based water heating systems replaced by type	See Indicator	No	Grantee	Project documentation (e.g. installer invoices)	Continuously, as relevant			
Number/type of incentives/upgrades	Number of energy efficiency incentives/upgrades installed by incentive/upgrade type and building type	No	Grantee	Project documentation (e.g. installer invoices)	Continuously, as relevant			
Number of site visits to assess energy efficiency potential by building type	See indicator	No	Grantee	Project documentation (e.g. assessment paperwork)	Continuously, as relevant			
Number of site visits to assess solar PV potential by building type	See indicator	No	Grantee	Project documentation (e.g.assessment paperwork)	Continuously, as relevant			
Number of site visits to assess solar water heating potential by building type	See indicator	No	Grantee	Project documentation (e.g. assessment paperwork)	Continuously, as relevant			
Number of individuals trained on energy efficiency measures by building type	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			
Number of individuals trained on solar PV maintenance by building type	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			
Number of individuals trained on solar water heating system maintenance by building type	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.5 - Low Income Weatherization Program (LIWP) Indicator Tracking Plan

Intermediate Outcomes - Basis for Outcome Evaluation								
Renewable energy generation (kWh)*	Estimated renewable energy generation (kWh) from solar	Yes	Evaluator	CARB's LIWP GHG Quantification Methodology ²	When work plan is finalized, as needed 	X	X	
Fossil fuel based energy use reduction (kWh)*	Estimated fossil fuel based energy use reductions (kWh)	No	Evaluator	CARB's LIWP GHG Quantification Methodology ³	When work plan is finalized, as needed 	X	X	
Fossil fuel based energy use reduction (therms)*	Estimated fossil fuel based energy use reductions (therms)	No	Evaluator	CARB's LIWP GHG Quantification Methodology ⁴	When work plan is finalized, as needed 	X	X	
Water use reduction (gallons)*	Estimated water use reduction (gallons)	No	Evaluator	CARB's Water-Energy Grant Program GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB's LIWP GHG Quantification Methodology	When work plan is finalized, as needed 	X		
NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's LIWP GHG Quantification Methodology	When work plan is finalized, as	X	X	

² Calculated using the National Renewable Energy Laboratory's (NREL) PVWatts calculator.

³ Calculated using the Database for Energy Efficient Resources (DEER), the CSI Thermal Calculator, or the National Renewable Energy Laboratory's (NREL) PVWatts calculator to calculate reduced or offset energy consumption, respectively, and local power content.

⁴ Calculated using the Database for Energy Efficient Resources (DEER) and the CSI Thermal Calculator.

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.5 - Low Income Weatherization Program (LIWP) Indicator Tracking Plan

					needed 			
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's LIWP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's LIWP GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Reduced energy costs	Estimated energy cost savings	No	Evaluator	CARB's Energy and Fuel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized, as needed 			
Reduced water costs	Estimated water cost savings	No	Evaluator	UCLA/UCB methodology TBD ⁵	When work plan is finalized, as needed 			

⁵ Calculate using outputs from ARB's Water-Energy Efficiency Grant Program calculator and estimated water costs

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

APPENDIX 2.6 - Urban and Community Forestry (UCF) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for UCF (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for UCF (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Trees planted*	Number of trees planted	Yes	Evaluator	Aerial images (Google Earth)	Pre and post			
			Grantee	Project documentation ¹ (e.g. landscaping invoices)	Continuously, as relevant	X	X	
Square feet of other vegetation planted	See indicator	No	Grantee	Project documentation (e.g. design plans)	Continuously, as relevant			
Square feet of other permeable surfaces added	See indicator	Yes	Grantee	Project documentation (e.g. design plans)	Continuously, as relevant			
Total vegetation cover	Area covered by trees, shrubs, grass, and other herbaceous plants (%)	Yes	Evaluator	iTree Canopy	Annually			
Number of training activities related to tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			

¹ Including locations of trees (X,Y coordinates) and whether the tree shades a building or not (yes/no).

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (work plans) are confirmed.

APPENDIX 2.6 - Urban and Community Forestry (UCF) Indicator Tracking Plan

Number of residents invited to trainings activities related to tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. mailing lists)	Continuously, as relevant			
Number of stakeholders trained on tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Renewable Energy Generation (kWh)*	Actual renewable energy generation (kWh)	Yes	Evaluator	Quarterly Fuel and Energy Report (QFER) Database	When work plan is finalized, as needed 			
	Estimated renewable energy generation (kWh)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	X
Fossil fuel based energy use reduction (kWh)*	Estimated fossil fuel based energy use reductions (kWh)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Fossil fuel based energy use reduction (therms)*	Estimated fossil fuel based energy use reductions (therms)	No	Evaluator	CCARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X		

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (work plans) are confirmed.

APPENDIX 2.6 - Urban and Community Forestry (UCF) Indicator Tracking Plan

NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's UCF GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Stormwater captured	Stormwater captured (gallons)	No	Evaluator	iTree Planting	When work plan is finalized 			
Reduced energy consumption	Estimated change in energy use (kWh)	No	Evaluator	iTree Streets	Annually			
Reduced energy costs	Estimated energy cost savings	No	Evaluator	UCLA / UCB Methodology TBD	Annually			

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (work plans) are confirmed.

APPENDIX 2.7 - Urban Greening (UG) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for UG (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for UG (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Trees planted*	Number of trees planted	Yes	Evaluator	Aerial images (Google Earth)	Pre and post			
			Grantee	Project documentation ¹ (e.g. landscaping invoices)	Continuously, as relevant	X	X	
Square feet of other vegetation planted	See indicator	No	Grantee	Project documentation (e.g. design plans)	Continuously, as relevant			
Square feet of other permeable surfaces added	See indicator	Yes	Grantee	Project documentation (e.g. design plans)	Continuously, as relevant			
Total vegetation cover	Area covered by trees, shrubs, grass, and other herbaceous plants (%)	Yes	Evaluator	iTree Canopy	Annually			
Number of training activities related to tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			

¹ Including locations of trees (X,Y coordinates) and whether the tree shades a building or not (yes/no).

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (workplan) are confirmed.

APPENDIX 2.7 - Urban Greening (UG) Indicator Tracking Plan

Number of residents invited to trainings activities related to tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. mailing lists)	Continuously, as relevant			
Number of residents trained on tree/vegetation maintenance	See indicator	No	Grantee	Project documentation (e.g. training records)	Continuously, as relevant			
Linear feet and location of bike lanes by class	See indicator	No	Grantee	Project documentation (e.g., project design plans)	Continuously, as relevant			
Linear feet and location of completed pedestrian pathways	See indicator	No	Grantee	Project documentation (e.g., project design plans)	Continuously, as relevant			
Number and location of American Disabilities Act (ADA) standard ramps installed	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Number and location of signalized intersections with bike detection	See indicator	No	Grantee	Project documentation (e.g., design plans)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Fossil fuel based energy use reduction (kWh)*	Estimated fossil fuel based energy use reductions (kWh)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (workplan) are confirmed.

APPENDIX 2.7 - Urban Greening (UG) Indicator Tracking Plan

Fossil fuel based energy use reduction (therms)*	Estimated fossil fuel based energy use reductions (therms)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Fossil fuel based transportation fuel use reductions (gallons)*	Estimated fossil fuel based transportation fuel use reductions (gallons)	No	Evaluator	UCLA / UCB Methodology TBD	When work plan is finalized, as needed ▲	X	X	
Passenger VMT Reductions (miles)*	Estimated passenger VMT reduction	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	Yes	Evaluator	American Community Survey (Table S0801)	Annually			
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO2E)*	Estimated GHG Emission Reductions (MTCO2E)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed ▲	X		
Diesel PM Reductions (lbs)*	Estimated Diesel PM Reductions (lbs)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as	X	X	

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (workplan) are confirmed.

APPENDIX 2.7 - Urban Greening (UG) Indicator Tracking Plan

					needed 			
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB UG GHG Quantification Methodology	When work plan is finalized, as needed 	X	X	
Stormwater captured	Stormwater captured (gallons)	No	Evaluator	iTree Planting	When work plan is finalized 			X
Reduced bicycle injuries and fatalities	Number of bicycle injuries and fatalities	Yes	Evaluator	Statewide Integrated Traffic Records System (SWITRS)	Annually			
Reduced pedestrian injuries and fatalities	Number of pedestrian injuries and fatalities	Yes	Evaluator	Statewide Integrated Traffic Records System (SWITRS)	Annually			
Reduced energy consumption	Estimated change in energy use (kWh)	No	Evaluator	iTree Streets	Annually			
Reduced energy costs	Estimated energy cost savings	No	Evaluator	UCLA / UCB Methodology TBD	Annually			
Reduced transportation costs	Estimated transportation cost savings (dollars)	No	Evaluator	CARB's Travel Cost Savings Co-benefit Assessment Methodology	When work plan is finalized 			

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities (workplan) are confirmed.

APPENDIX 2.8 - Food Waste Prevention and Rescue Program (FWPRP) / Organics Program (OP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Key: *Required by the California Air Resources Board (CARB) for FWPRP/OP (but not necessarily required for TCC Program)

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs for FWPRP/OP (Not Necessarily Required for TCC)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Number of new food distribution facilities in production (by location)	See indicator	No	Grantee	Project documentation (e.g., building plans)	Continuously, as relevant			
Number of new food processing facilities in production (by location)	See indicator	No	Grantee	Project documentation (e.g., building plans)	Continuously, as relevant			
Number of new organics recycling facilities (by location)	See indicator	No	Grantee	Project documentation (e.g., building plans)	Continuously, as relevant			
Number of training events on food waste prevention and rescue	See indicator	No	Grantee	Project documentation (e.g., agendas)	Continuously, as relevant			
Number of training events on organics recycling	See indicator	No	Grantee	Project documentation (e.g., agendas)	Continuously, as relevant			
Number of businesses trained in food waste prevention/rescue	See indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

† For the various feedstock categories that should be tracked, see **Table 1** in the [FY 2015-16 and FY 2016-17 Greenhouse Gas Quantification Methodology for the California Department of Resources Recycling and Recovery Waste Diversion Grant and Loan Program](#).

APPENDIX 2.8 - Food Waste Prevention and Rescue Program (FWPRP) / Organics Program (OP) Indicator Tracking Plan

Number of businesses trained in organics recycling	See indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			
Number of residents trained in food waste of prevention/rescue	See indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			
Number of residents trained in organics recycling	See indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			
Intermediate Outcomes - Basis for Outcome Evaluation								
Material diverted from landfills (tons)*	Actual material diverted from landfills (tons) by feedstock category/composition ¹	No	Grantee	Delivery documentation (e.g., weight receipts from certified scales, tonnage reports from haulers) or operational logs	Continuously, as relevant	X	X	
Source reduction in food waste (tons)*	Actual source reduction in food waste (tons) from prevention activities	No	Grantee	Prevention tracking documentation (e.g., plate waste audit)	Continuously, as relevant	X		X
Edible food rescued and donated (short tons/year)*	Actual edible food rescued and donated (short tons/year)	No	Grantee	Delivery documentation (e.g., weight receipts from certified scales, tonnage reports from haulers)	Continuously, as relevant	X	X	X
Renewable transportation fuel generation (gallons)*	Actual renewable transportation fuel generation (gallons)	No	Grantee	Metered data, sales receipts, or operational logs	Continuously, as relevant	X	X	
Renewable energy generation (kWh)*	Actual renewable energy generation	Yes	Evaluator	Quarterly Fuel and Energy Report (QFER) Database	Annually	X	X	X

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

¹For the various feedstock categories that should be tracked, see **Table 1** in the [FY 2015-16 and FY 2016-17 Greenhouse Gas Quantification Methodology for the California Department of Resources Recycling and Recovery Waste Diversion Grant and Loan Program](#).

APPENDIX 2.8 - Food Waste Prevention and Rescue Program (FWPRP) / Organics Program (OP) Indicator Tracking Plan

	(kWh) from biomass		Grantee	Metered data, sales receipts, or operational logs	Continuously, as relevant			
Renewable energy generation (scf)*	Actual renewable energy generation (scf)	No	Grantee	Metered data, sales receipts, or operational logs	Continuously, as relevant	X	X	X
Diverted organic material sent for composting (short tons/year)	Diverted organic material sent for composting (short tons/year) by feedstock category/ composition ¹	No	Grantee	Delivery documentation (e.g., weight receipts from certified scales, tonnage reports from haulers) or operational logs	Continuously, as relevant			X
Compost produced (short tons/year)	Compost produced (short tons/year)	No	Grantee	Operations data maintained by composting facilities (e.g., sales receipts)	Continuously, as relevant			X
Waste Digested (tons)	Waste Digested (tons)	No	Grantee	Delivery documentation (e.g., weight receipts from certified scales, tonnage reports from haulers) or operational logs	Continuously, as relevant			X
Residual material landfilled or used as alternative daily cover	Residual material landfilled or used as alternative daily cover (tons)	No	Grantee	Delivery documentation (e.g., weight receipts from certified scales, tonnage reports from haulers) or operational logs	Continuously, as relevant			X
Impacts - Basis for Impact Evaluation								
GHG Emission Reductions (MTCO ₂ E)*	Estimated GHG Emission Reductions (MTCO ₂ E)	No	Evaluator	CARB's FWPRP / Waste Diversion Grant and Loan Program GHG Quantification Methodology	When work plan is finalized, as needed 	X		

 The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

¹For the various feedstock categories that should be tracked, see **Table 1** in the [FY 2015-16 and FY 2016-17 Greenhouse Gas Quantification Methodology for the California Department of Resources Recycling and Recovery Waste Diversion Grant and Loan Program](#).

APPENDIX 2.8 - Food Waste Prevention and Rescue Program (FWPRP) / Organics Program (OP) Indicator Tracking Plan

Diesel PM Reductions (lbs)*	Estimated Diesel PM Reductions (lbs)*	No	Evaluator	CARB's FWPRP / Waste Diversion Grant and Loan Program GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
NOx Reductions (lbs)*	Estimated NOx Reductions (lbs)	No	Evaluator	CARB's FWPRP / Waste Diversion Grant and Loan Program GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
PM 2.5 Reductions (lbs)*	Estimated PM 2.5 Reductions (lbs)	No	Evaluator	CARB's FWPRP / Waste Diversion Grant and Loan Program GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	
Reactive Organic Gases Reductions (lbs)*	Estimated Reactive Organic Gases Reductions (lbs)	No	Evaluator	CARB's FWPRP / Waste Diversion Grant and Loan Program GHG Quantification Methodology	When work plan is finalized, as needed ▲	X	X	

▲ The methodologies used to estimate the values of these indicators require inputs in the form of anticipated project activities. These calculations can be made once anticipated activities in the grantee's work plan are confirmed.

*For the various feedstock categories that should be tracked, see **Table 1** in the [FY 2015-16 and FY 2016-17 Greenhouse Gas Quantification Methodology for the California Department of Resources Recycling and Recovery Waste Diversion Grant and Loan Program](#).

APPENDIX 2.9 - Displacement Avoidance Plan (DAP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#).

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs (N/A for DAP)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Total number of new housing units built	Same as indicator	Yes	Evaluator	County tax assessor parcel data	Annually			
	Total number of new housing units built (by number of bedrooms)	No	Grantee	Project documentation (e.g., occupancy permits)	Continuously, as relevant			
Total number of new affordable housing units built 	Same as indicator	Yes	Evaluator	California Housing Partnership Corporation (CHPC) Preservation Database; Local housing agency data	Annually			
	Total number of new affordable housing units built (by number of bedrooms)	No	Grantee	Project documentation (e.g., occupancy permits)	Continuously, as relevant			
Number of affordable units built under density bonus agreements  (by number of bedrooms)	Same as indicator	No	Grantee	Project documentation (e.g., agreement paperwork)	Continuously, as relevant			
Number of market rate units built under density bonus agreements	Same as indicator	No	Grantee	Project documentation (e.g., agreement paperwork)	Continuously, as relevant			

 For a definition of affordable, see **Appendix A** of the [FY 2017-18 AHSC Program Guidelines](#).

APPENDIX 2.9 - Displacement Avoidance Plan (DAP) Indicator Tracking Plan

(by number of bedrooms)								
Number of affordable units built under reduced development impact fees  (by number of bedrooms)	Same as indicator	No	Grantee	Project documentation (e.g., fee waivers)	Continuously, as relevant			
Number of market rate units built under reduced development impact fees (by number of bedrooms)	Same as indicator	No	Grantee	Project documentation (e.g., fee waivers)	Continuously, as relevant			
Number of workshops to inform residents about affordable housing opportunities	Same as indicator	No	Grantee	Project documentation (e.g., agendas)	Continuously, as relevant			
Number of residents invited to workshops about affordable housing opportunities	Same as indicator	No	Grantee	Project documentation (e.g., mailing lists)	Continuously, as relevant			
Number of residents engaged at workshops about affordable housing opportunities	Same as indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			
Number of tenants rights education classes held	Same as indicator	No	Grantee	Project documentation (e.g., agendas)	Continuously, as relevant			
Number of residents invited to tenants rights education classes	Same as indicator	No	Grantee	Project documentation (e.g., mailing lists)	Continuously, as relevant			
Number of residents participating in tenants rights education classes	Same as indicator	No	Grantee	Project documentation (e.g., sign-in sheets)	Continuously, as relevant			

 For a definition of affordable, see **Appendix A** of the [FY 2017-18 AHSC Program Guidelines](#).

APPENDIX 2.9 - Displacement Avoidance Plan (DAP) Indicator Tracking Plan

Number of foreclosure prevention events for homeowners and owners of multi-unit dwellings (MUDs)	Same as indicator	No	Grantee	Project documentation (e.g., agendas)	Continuously, as relevant			
Number of homeowners and MUD owners invited to foreclosure prevention workshops	Same as indicator	No	Grantee	Event sign-in sheets (e.g., mailing lists)	Continuously, as relevant			
Number of homeowners and MUD owners engaged at foreclosure prevention workshops	Same as indicator	No	Grantee	Event sign-in sheets (e.g., sign-in sheets)	Continuously, as relevant			
Number of site visits conducted to assess the health and needs of businesses	Same as indicator	No	Grantee	Project documentation (e.g., assessments)	Continuously, as relevant			
Impacts - Basis for Impact Evaluation								
Increase in business retention	% of businesses that renewed their licenses	No	Grantee	Business license data (e.g., licensing records)	Annually			
Increased housing stability	% of households who moved within the past year (by income group)	Yes	Evaluator	American Community Survey (Table B07010)	Annually			
Reduced housing crowding	% of households w/ more than one occupant per room	Yes	Evaluator	American Community Survey (Table B25014)	Annually			
Reduced housing costs for renters	% of households paying more than 20, 30, 40, & 50% of their	Yes	Evaluator	American Community Survey (Table B25074)	Annually			

▼ For a definition of affordable, see **Appendix A** of the [FY 2017-18 AHSC Program Guidelines](#).

APPENDIX 2.9 - Displacement Avoidance Plan (DAP) Indicator Tracking Plan

	income to rent							
Reduced housing costs for homeowners	% of households spending more than 20, 30, 40, & 50% of their income on mortgage payments	Yes	Evaluator	American Community Survey (Table B25091)	Annually			
Increase in available housing units for rent	Vacancy rate for rental units (%)	Yes	Evaluator	American Community Survey (Table B25002 & B25004)	Annually			
Increase in available housing units for sale	Vacancy rate for condos/homes for sale (%)	Yes	Evaluator	American Community Survey (Table B25002 & B25004)	Annually			

▼ For a definition of affordable, see **Appendix A** of the [FY 2017-18 AHSC Program Guidelines](#).

APPENDIX 2.10 - Community Engagement Plan (CEP) Indicator Tracking Plan

Note: All indicators related to tracking employment outcomes from this project are detailed in [Appendix 2.11 - Workforce Development Plan](#)

To complement these quantitative indicators, grantees should also use the questionnaire published by the California Air Resources Board (CARB) in the [Community Engagement Co-benefit Assessment Methodology](#), which helps to assess the quality and equity of the community engagement activities.

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Relevant CARB Reporting Template Tabs (N/A for CEP)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Number of community engagement events held (by language)	Same as indicator	No	Grantee	Project documentation (e.g., meeting agendas)	Continuously, as relevant			
Number of stakeholders engaged at each event	Same as indicator	No	Grantee	Project documentation (e.g., sign in sheets)	Continuously, as relevant			
Number of stakeholders engaged through the site's social media outreach	Same as indicator	No	Grantee	Social media traffic (e.g., followers)	Continuously, as relevant			
Number of materials distributed to stakeholders (by language)	Same as indicator	No	Grantee	Project documentation (e.g., mailing lists)	Continuously, as relevant			
Short-Term Outcomes - Basis for Outcome Evaluation								
Stakeholders feel that they can affect decisions	Number of engaged stakeholders who feel that they can affect decisions	No	Evaluator	Community Engagement User Survey	(1) First community engagement meeting (2) Final community engagement			

APPENDIX 2.10 - Community Engagement Plan (CEP) Indicator Tracking Plan

					meeting			
Stakeholders feel that community engagement is meaningful	Number of engaged stakeholders feel that community engagement activities have been effective in creating meaningful engagement with the community	No	Evaluator	Community Engagement User Survey	(1) First community engagement meeting (2) Final community engagement meeting			
Stakeholders feel more positively about TCC projects in their community	Number of engaged stakeholders who feel more positively about the TCC projects in their community	No	Evaluator	Community Engagement User Survey	(1) First community engagement meeting (2) Final community engagement meeting			
Stakeholders feel more positively about their community	Number of engaged stakeholders who feel more positively about their community	No	Evaluator	Community Engagement User Survey	(1) First community engagement meeting (2) Final community engagement meeting			
Stakeholders believe that the TCC program will positively affect their community	Number of engaged stakeholders who believe that the TCC will positively affect their community	No	Evaluator	Community Engagement User Survey	(1) First community engagement meeting (2) Final community engagement meeting			

APPENDIX 2.10 - Community Engagement Plan (CEP) Indicator Tracking Plan

Intermediate Outcomes - Basis for Outcome Evaluation								
Total number of people directly served by TCC projects	Same as indicator	No	Grantee	Project documentation (e.g., project level registration lists)	Continuously, as relevant			
Total number of volunteers who participated in project implementation	Same as indicator	No	Grantee	Project documentation (e.g., volunteer sign-in sheets)	Continuously, as relevant			
Total number of people who provided commentary or input on the project	Same as indicator	No	Grantee	Project documentation (e.g., meeting minutes, written comments, etc.)	Continuously, as relevant			
Stakeholder input was implemented by grantee	Same as indicator	No	Evaluator	Document review	Annually			

APPENDIX 2.11 - Workforce Development Plan (WDP) Indicator Tracking Plan

Key: *Required by the California Air Resources Board (CARB) for TCC Program

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source	Collection Frequency	Included in "Jobs" Tab of CARB Reporting Templates
Outputs - Basis for Process Evaluation						
Number of Community Benefits Agreements (CBA), labor agreements or community workforce provisions that focus on employment benefits	Same as indicator	No	Grantee	Project documentation (e.g., agreement records)	Continuously, as relevant	
Number of job training opportunities instituted with partner employers (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., memorandums of understanding)	Continuously, as relevant	
Number of job placement opportunities arranged with partner employers (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., memorandums of understanding)	Continuously, as relevant	
Number of events (by language) about job training opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., meeting agendas)	Continuously, as relevant	
Number of events (by language) about job placement opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., meeting agendas)	Continuously, as relevant	
Number of residents invited to events (by language) about job training opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., mailing lists)	Continuously, as relevant	

APPENDIX 2.11 - Workforce Development Plan (WDP) Indicator Tracking Plan

Number of residents engaged at events (by language) about job training opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., number of sign-ins)	Continuously, as relevant	
Number of residents invited to events (by language) about job placement (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., mailing lists)	Continuously, as relevant	
Number of residents engaged at events (by language) about job placement (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., number of sign-ins)	Continuously, as relevant	
Number of residents who applied for job training opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., job training applications)	Continuously, as relevant	
Number of residents who applied for job placement opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., job placement applications)	Continuously, as relevant	
Number of residents who enrolled in job training opportunities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., enrollment paperwork)	Continuously, as relevant	
Number of residents placed in employment through TCC job placement activities (by trade or occupational category)	Same as indicator	No	Grantee	Project documentation (e.g., placement records)	Continuously, as relevant	
Intermediate Outcomes - Basis for Outcome Evaluation						
Job training credentials (type and number of credentials earned)*	Number of job credentials earned by those receiving TCC funded	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X

APPENDIX 2.11 - Workforce Development Plan (WDP) Indicator Tracking Plan

	workforce development services (by credential type, trade or occupational category, and priority population status)					
Number of jobs provided*	Number of jobs funded by TCC dollars (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Number of jobs provided to priority populations*	Number of jobs funded by TCC dollars to priority populations (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Total project work hours*	Total project work hours (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Project work hours for priority populations*	Total project work hours by priority populations (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Average hourly wage*	Average hourly wage of populations holding TCC project jobs (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Average hourly wage for priority populations*	Average hourly wage of employees from priority populations funded by TCC (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Description of job quality*	Training benefits (\$) paid by employer for each employee funded by TCC dollars (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X

APPENDIX 2.11 - Workforce Development Plan (WDP) Indicator Tracking Plan

	Training benefits (\$) paid by employer for each employee from a priority population who is funded by TCC dollars (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	
	Retirement/pension benefits (\$) paid by employer for each employee funded by TCC dollars (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	
	Retirement/pension benefits (\$) paid by employer for each employee from a priority population who is funded by TCC dollars (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	
	Health benefits (\$) paid by employer for each employee funded by TCC dollars by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	
	Health benefits (\$) paid by employer for each employee from a priority population who is funded by TCC dollars (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	
Total number of workers that completed job training*	Number of workers that completed TCC funded job training (by trade or occupational category)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X

APPENDIX 2.11 - Workforce Development Plan (WDP) Indicator Tracking Plan

Number of workers in priority populations that completed job training*	Number of workers from a priority population that completed TCC funded job training (by trade or occupational category and by priority population type)	No	Grantee	Project documentation (e.g., TBD job reporting form)	Continuously, as relevant	X
Number of job training graduates placed in related job	Number of job training graduates placed in related job (by trade or occupational category and by priority population type)	No	Evaluator	WDP user survey	(1) First training (2) Final training	
Number of job training graduates that secured a wage/salary increase	Number of job training graduates that secured a wage/salary increase (by trade or occupational category and by priority population type)	No	Evaluator	WDP user survey	(1) First training (2) Final training	
Number of job training graduates that secured additional employment benefits	Number of job training graduates that secured additional employment benefits (by trade or occupational category, by priority population type, and benefit type)	No	Evaluator	WDP user survey	(1) First training (2) Final training	
Impacts - Basis for Impact Evaluation						
Higher median area income	Median household income (dollars)	Yes	Evaluator	American Community Survey (Table S1903)	Annually	
Reduced poverty	Percent of residents with income in the past 12 months below poverty level	Yes	Evaluator	American Community Survey (Table B17017)	Annually	
Reduced unemployment	Percent of residents 16 and older in labor force who are employed	Yes	Evaluator	American Community Survey (Table B23025)	Annually	

APPENDIX 2.12 - Mobility and Accessibility Enhancement (MAE) Indicators Tracking Plan

Note: This indicator tracking plan is cross cutting and does not apply to a single project type or transformative plan.

Indicator	Units	Control Feasible?	Entity Responsible for Data Collection	Data Source / Methodology	Collection Frequency	Relevant CARB Reporting Template Tabs (N/A for MAE)		
						Awarded/ Implemented	Project Closeout	Outcome
Outputs - Basis for Process Evaluation								
Increased access to fresh food	% of residents in TCC area who live within 10/15/20 minutes of a grocery store, farmers' markets, or community garden that offers fresh food (via walking, bicycling, transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Increased access to educational services	% of residents who live within 10/15/20 minutes of selected educational facility (via walking, bicycling, and transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Increased access to preventative or critical health care services	% of residents who live within 10/15/20 minutes of selected preventative health care providers (via walking, bicycling, and transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Increased access to recreational facilities	% of residents who live within 10/15/20 minutes of recreational facilities (via walking, bicycling, and transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Increased access to workforce development	% of residents who live within 10/15/20 minutes of	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

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related services	selected workforce development service providers (via walking, bicycling, and transit)							
Increased access to biking pathways (by class)	% of residents who live within 10/15/20 minutes of a bike path or pedestrian pathway (via walking, bicycling, and transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Increased access to transit stops	% of residents who live within 10/15/20 minutes of a transit stop (via walking, bicycling, and transit)	Yes	Evaluator	ArcGIS network analysis	Baseline and Closeout			
Intermediate Outcomes - Basis for Outcome Evaluation								
Decreased commute times*	Hours spent in transit / week made on daily commute route*	No	Evaluator	AHSC user survey	3 months following move-in			
Decreased trip links*	Number of transfers made on daily commute route*	No	Evaluator	AHSC user survey	3 months following move-in			
Increase in total number of trips using shared, public or active modes to important destinations*	Number of trips per week by mode*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased use of preventative or critical health care services*	% of times that residents accessed preventative or critical health care services when they needed them*	No	Evaluator	AHSC user survey	3 months following move-in			

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

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Increased physical activity*	Number of minutes that residents spend exercising for leisure*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased trips to stores, farmer's markets, or community gardens that sell, healthy, fresh food*	Number of trips per month*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased use of educational services*	% of respondents utilizing local educational facilities*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased use of workforce development related services*	% of respondents utilizing local workforce development related services*	No	Evaluator	AHSC user survey	3 months following move-in			
Increase in hours worked*	Hours worked per week*	No	Evaluator	AHSC user survey	3 months following move-in			
Increase in earnings*	Earnings per month*	No	Evaluator	AHSC user survey	3 months following move-in			
Reduced transportation costs*	Household expenditures on transportation (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			
Increased household assets*	Total household savings after accounting for debt (dollars)*	No	Evaluator	AHSC user survey	3 months following move-in			

*Subject to change as the AHSC user survey gets developed during the second evaluation phase that follows the main 5 year evaluation period.

Appendix 3.1 - Controllable Indicators

Indicator	Units	Data Source for Controlling
Affordable housing units*	Number of new affordable housing units	California Housing Partnership Corporation (CHPC) Preservation Database; Local housing authority data
Higher median area income	Median household income (dollars)	American Community Survey (Table S1903)
Housing units*	Number of new housing units	County tax assessor parcel data
Increase in available housing units for rent	Vacancy rate for rental units	American Community Survey (Table B25002 & B25004)
Increase in available housing units for sale	Vacancy rate for condos/homes for sale	American Community Survey (Table B25002 & B25004)
Increased access to biking pathways (by class)	% of residents who live within 10/15/20 minutes of a bike path or pedestrian pathway (via walking, bicycling, and transit)	ArcGIS network analysis
Increased access to educational services	% of residents who live within 10/15/20 minutes of selected educational facility (via walking, bicycling, and transit)	ArcGIS network analysis
Increased access to fresh food	% of residents in TCC area who live within 10/15/20 minutes of a grocery store, farmers' markets, or community garden that offers fresh food (via walking, bicycling, transit)	ArcGIS network analysis
Increased access to preventative or critical health care services	% of residents who live within 10/15/20 minutes of selected preventative health care providers (via walking, bicycling, and transit)	ArcGIS network analysis
Increased access to recreational facilities	% of residents who live within 10/15/20 minutes of recreational facilities (via walking, bicycling, and transit)	ArcGIS network analysis
Increased access to transit stops	% of residents who live within 10/15/20 minutes of a transit stop (via walking, bicycling, and transit)	ArcGIS network analysis
Increased access to workforce development related services	% of residents who live within 10/15/20 minutes of selected workforce development service providers (via walking, bicycling, and transit)	ArcGIS network analysis
Increased housing stability	% of households who moved within the past year (by income group)	American Community Survey (Table B07010)
Installed solar photovoltaic capacity	Estimated kW of new solar PV capacity	UCLA / UCB Methodology (TBD)

Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	American Community Survey (Table S0801)
Net density*	Number of dwelling units / acre	County tax assessor parcel data
New private EV purchases	New private EV purchases	California Air Resources Board (CARB) Fleet Web Database
Number and location of charging stations installed	See indicator	Alternative Fuels Data Center
Number and location of EV charging outlets installed by level of service	See indicator	Alternative Fuels Data Center
Number of solar PV systems installed by building type	See indicator	Aerial imagery (Google Earth) and parcel data
Reduced pedestrian injuries and fatalities	Number of pedestrian injuries and fatalities	Statewide Integrated Traffic Records System (SWITRS)
Reduced bicycle injuries and fatalities	Number of bicycle injuries and fatalities	Statewide Integrated Traffic Records System (SWITRS)
Reduced housing costs for homeowners	% of households spending more than 20, 30, 40, & 50% of their income on mortgage	American Community Survey (Table B25091)
Reduced housing costs for renters	% of households spending more than 20, 30, 40, & 50% of their income on rent	American Community Survey (Table B25074)
Reduced housing crowding	% of households w/ more than one occupant per room	American Community Survey (Table B25014)
Reduced poverty	Percent of residents with income in the past 12 months below poverty level	American Community Survey (Table B17017)
Reduced unemployment	Percent of residents 16 and older in labor force who are employed	American Community Survey (Table B23025)
Renewable Energy Generation (kWh)*	Estimated renewable energy generation (kWh) from solar	CARB's LIWP GHG Quantification Methodology
	Actual renewable energy generation (kWh) from biomass	Quarterly Fuel and Energy Report (QFER) Database
Total vegetation cover	Area covered by trees, shrubs, grass, and other herbaceous plants (%)	iTree Canopy
Transit departures added	Number of additional departures times by route and by stop	Publicly posted service schedules
Transit stops added	Number of additional transit stops by route and by location	Publicly posted service schedules
Trees planted*	Number of trees planted	Aerial images (Google Earth)

*Required by CARB for certain project types (but not necessarily required for TCC Program).

Appendix 3.2 - Methods for Selecting Control Sites

Control sites for the TCC sites were selected by identifying census tracts that matched TCC site census tracts along a number of key dimensions. The evaluator determined the demographic, economic, and environmental characteristics of census tracts within the TCC sites and then identified census tracts within the same county with a similar profile of characteristics.

The characteristics reviewed by the evaluator are summarized in **Table A3.2.1**. The relevant data sources that were used to assess these characteristics are summarized in the same table. Most of these characteristics were assessed using U.S. Census American Community Survey (ACS) 5-year data (2011-2016), the most robust secondary data source available for assessing socioeconomic characteristics at the neighborhood level.

Table A.3.2.1. Characteristics Reviewed for Control Site Analysis

Characteristic	Data Source
California Building Climate Zone	California Energy Commission
CalEnviroScreen Score (Percentile among all California tracts)	CalEnviroScreen 3.0
Race (% Black or African American, % Asian)	ACS 2011-2016 (B02001)
Ethnicity (% Latino or Hispanic)	ACS 2011-2016 (B03003)
Income to Poverty Ratio (% of population with Income to Poverty Ratio under 0.5)	ACS 2011-2016 (C17002)
Median Household Income	ACS 2011-2016 (B19013)
Unemployment (% unemployment among civilian labor force)	ACS 2011-2016 (B23025)
Renter Occupied Housing Rate (% housing units occupied by renters)	ACS 2011-2016 (B25003)
Housing Cost Burden (% of households in renter-occupied housing units spending \geq 50% of income on rent)	ACS 2011-2016 (B25070 and B25091)
Household language (% of households that speak Spanish at home; % of households that speak Asian and/or Pacific Island language(s) at home)	ACS 2011-2016 (B16002)

Identifying TCC Site Census Tracts

Census tract boundaries do not align perfectly with TCC site boundaries, as illustrated in the maps in [Appendix 3.3](#). In the process of identifying census tracts that fell within the TCC site areas, the evaluator excluded those which had less than a 10% overlap with the TCC site area. This process yielded 10 census tracts within the Fresno site; 10 census tracts within the Ontario site; and 11 census tracts within the Watts site.

Geographic Criteria

In order to ensure the control sites are as similar to the TCC sites as possible, the evaluator restricted potential census tracts by a number of geographic criteria. First, the evaluator limited the potential control site census tracts to the same county as the TCC site. This is so that any changes in county wide policies affect both the TCC site and control site similarly. As shown The evaluator also ensured that all selected control tracts were in the same building climate zone¹ as the affiliated TCC tracts, in order to ensure that the control sites are exposed to similar climate conditions. This is especially important for assessing differences in urban greening and urban forestry outcomes, which are sensitive to temperature and precipitation patterns. The evaluator also ensured that none of the selected control sites were directly adjacent to any of the TCC tracts. This is to limit attributing any spillover effects from the TCC projects to the control sites.

Matching Characteristics

The evaluator identified each of the three TCC sites' census tracts characteristics detailed in **Table A3.2.1**, and estimated the range of values found within each site. For instance, among the 10 TCC census tracts within the Fresno site, the tract with the lowest median household income had a value of \$11,774 for this metric, while tract with the highest value had a median household income of \$28,419. The evaluator developed ranges for all characteristic found in **Table A3.2.1**. Using these ranges, the evaluator identified census tracts whose characteristics fell within a similar range. These were determined by applying successive filters to a group of all census tracts within the affiliated county, and paring down the grouping of census tracts to yield a grouping with a "profile" that most closely matched the "profile" of the TCC tracts. The resulting group of control tracts and their characteristics are summarized in [Appendix 3.3](#), alongside the characteristics of the associated TCC tracts.

¹ As defined by the California Energy Commission's building climate zone map https://www.energy.ca.gov/maps/renewable/building_climate_zones.html

Limitations

While the evaluator worked to identify control tracts by selecting those similar to the TCC site census tracts on several important dimensions (i.e., sociodemographic characteristics, building climate zone, and pollution burden levels), it is intrinsically difficult, if not impossible to find control sites that perfectly match the set of TCC census tracts on all characteristics of interest. Notably, the evaluator did not review the control tracts on several other important dimensions, including existing transit infrastructure and land use characteristics because data on these spatial characteristics were more difficult to analyze by census tract than socioeconomic and pollution data, the latter of which were readily available through the U.S. Census and CalEnviroScreen 3.0.

However, during baseline data collection, the evaluator will develop new datasets that will assist with analyzing the urban form of TCC tracts in relation to control tracts. For example, the evaluator will acquire spatial data on existing transit infrastructure and land use characteristics in order to conduct the Accessibility Network Analysis (see [Appendix 4.2](#)). Additionally, the evaluator will conduct a land use cover analysis to determine the area covered by vegetation in TCC tracts and control tracts as part of Urban Community Forestry and Urban Greening indicator tracking plans (see [Appendix 2.6](#) and [Appendix 2.7](#), respectively). In this process, the evaluator will be able to understand if and how much the control sites' transit infrastructure and land use characteristics differ from those of the TCC census tracts. If any control tracts are substantially different on these dimensions, the evaluator will reconsider these tracts' usage or report subsequent findings with a note on the particular limitations of the control tracts.

Appendix 3.3 - Control Site Profiles and Maps

Table A3.3.1. Profile of Fresno TCC Census Tracts and Control Census Tracts

Characteristic	Fresno TCC Tracts (10)	Control Tracts within Fresno County (10)
Total Population*	39,322	48,026
CalEnviroscreen percentile	100%	83% - 100%
% Black	7% - 27%	8% - 25%
% Asian	1% - 18%	5% - 26%
% Latino or Hispanic	52% - 80%	46% - 69%
Median Household Income	\$11,774 - \$28,419	\$16,905 - \$28,750
% Population with Income to Poverty Ratio under 0.5	16% - 40%	18% - 36%
% Housing Units Occupied by Renters	56% - 100%	62% - 87%
% of Households* Spending ≥ 50% of Income on Rent	10% - 50%	35% - 56%
% Unemployment (age 16+)	2% - 17%	9% - 14%
% of Households that Speak Spanish at Home	17% - 71%	21% - 58%
% of Households that speak Asian and/or Pacific Island Language(s) at Home	0% - 13%	3% - 20%
Population Density (population / sq.mi.)**	1,175-9,323	1,800 - 10,948

(#): Count of census tracts

* : These are estimates from U.S. Census ACS 5-year (2012-2016). These estimates may differ from population estimates within the entire TCC site area, as these refer to the estimated population within those census tracts which have more than a 10% overlap with the TCC site area.

** : Determined by dividing the estimated population (ACS 5-year (2012-2016)) by the area of the census tract.

Table A3.3.2. Profile of Ontario TCC Census Tracts and Control Census Tracts

Characteristic	Ontario TCC Tracts (10)	Control Tracts within San Bernardino County (30)
Total Population*	48,442	179,951
CalEnviroscreen percentile	78% - 100%	76% - 99%
% Black	0% - 14%	0% - 14%
% Asian	0% - 11%	0% - 10%
% Latino or Hispanic	57% - 96%	58% - 90%
Median Household Income	\$28,295 - \$63,900	\$33,438 - \$61,716
% Population with Income to Poverty Ratio under 0.5	2% - 17%	4% - 16%
% Housing Units Occupied by Renters	27% - 92%	30% - 87%
% of Households* Spending \geq 50% of Income on Rent	21% - 42%	21% - 41%
% Unemployment (age 16+)	3% - 10%	3% - 10%
% of Households that Speak Spanish at Home	40% - 89%	42% - 87%
% of Households that Speak Asian and/or Pacific Island Language(s) at Home	0%-12%	0% - 10%
Population Density (population / sq.mi)**	1,197-18,664	945 - 15,377

(#): Count of census tracts

* : These are estimates from U.S. Census ACS 5-year (2012-2016). These estimates may differ from population estimates within the entire TCC site area, as these refer to the estimated population within those census tracts which have more than a 10% overlap with the TCC site area.

** : Determined by dividing the estimated population (ACS 5-year (2012-2016)) by the area of the census tract.

Table A3.3.3. Profile of Watts TCC Census Tracts and Control Census Tracts

Characteristic	Watts TCC Tracts (11)	Control Tracts within LA County (38)
Total Population*	57,518	169,881
CalEnviroscreen percentile	91% - 100%	83% - 100%
% Black	15% - 39%	16% - 38%
% Asian	0% - 2%	0% - 2%
% Latino or Hispanic	59% - 81%	59% - 84%
Median Household Income	\$14,483 - \$42,470	\$19,492 - \$42,279
% Population with Income to Poverty Ratio under 0.5	13% - 45%	13% - 34%
% Housing Units Occupied by Renters	44% - 100%	47% - 89%
% of Households* Spending \geq 50% of Income on Rent	31% - 54%	29% - 59%
% Unemployment (age 16+)	7% - 18%	3% - 12%
% of Households that Speak Spanish at Home	49% - 74%	39% - 78%
% of Households that Speak Asian and/or Pacific Island Language(s) at Home	0% - 2%	0% - 5%
Population Density (population / sq.mi)**	13,086 - 27,559	10,160 - 32,644

(#): Count of census tracts

* : These are estimates from U.S. Census ACS 5-year (2012-2016). These estimates may differ from population estimates within the entire TCC site area, as these refer to the estimated population within those census tracts which have more than a 10% overlap with the TCC site area.

** : Determined by dividing the estimated population (ACS 5-year (2012-2016)) by the area of the census tract.

Figure A3.3.4. Fresno TCC site and Selected Control Tracts

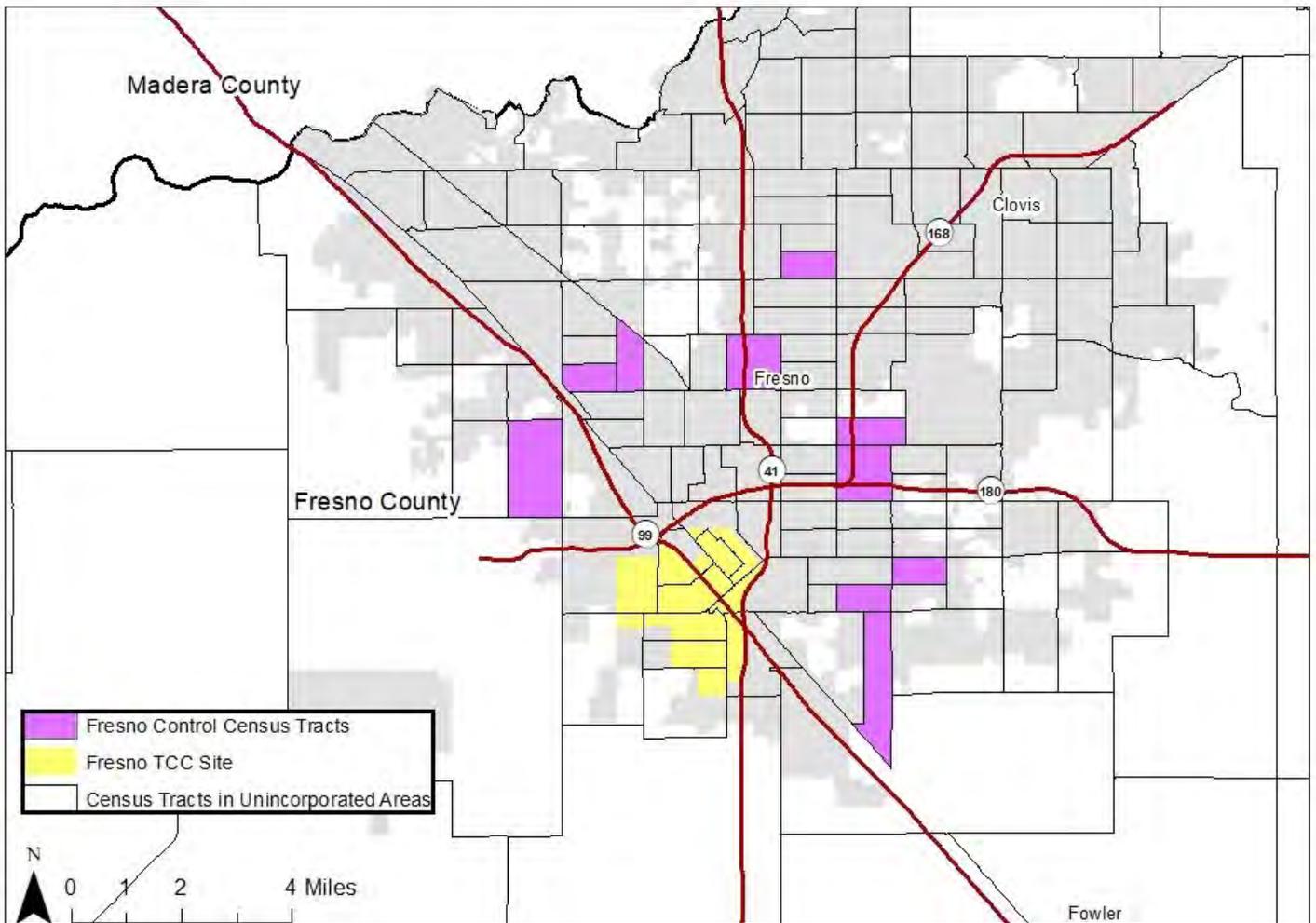


Figure A3.3.5. Ontario TCC site and Selected Control Tracts

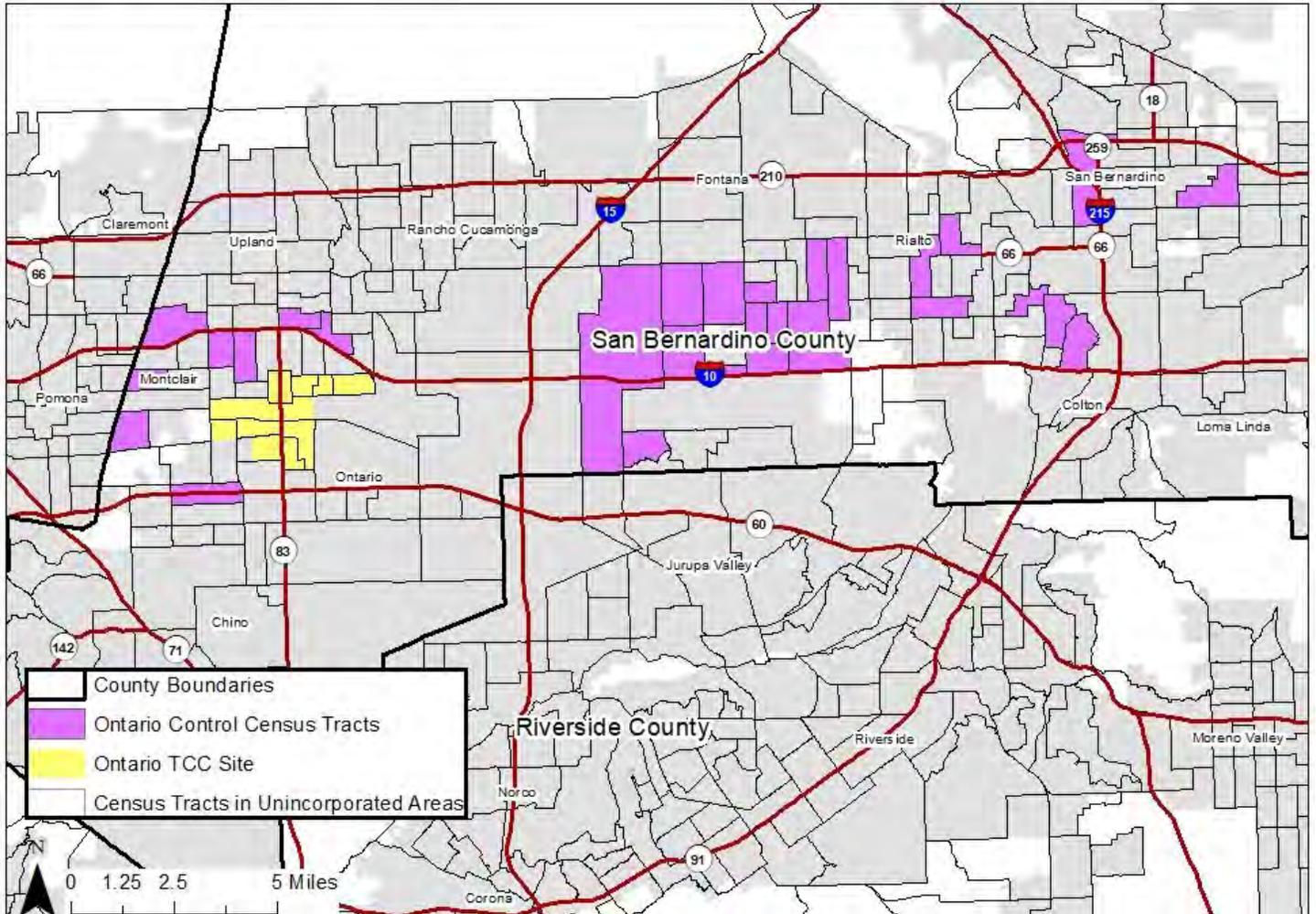


Figure A3.3.6. Watts TCC site and Selected Control Tracts

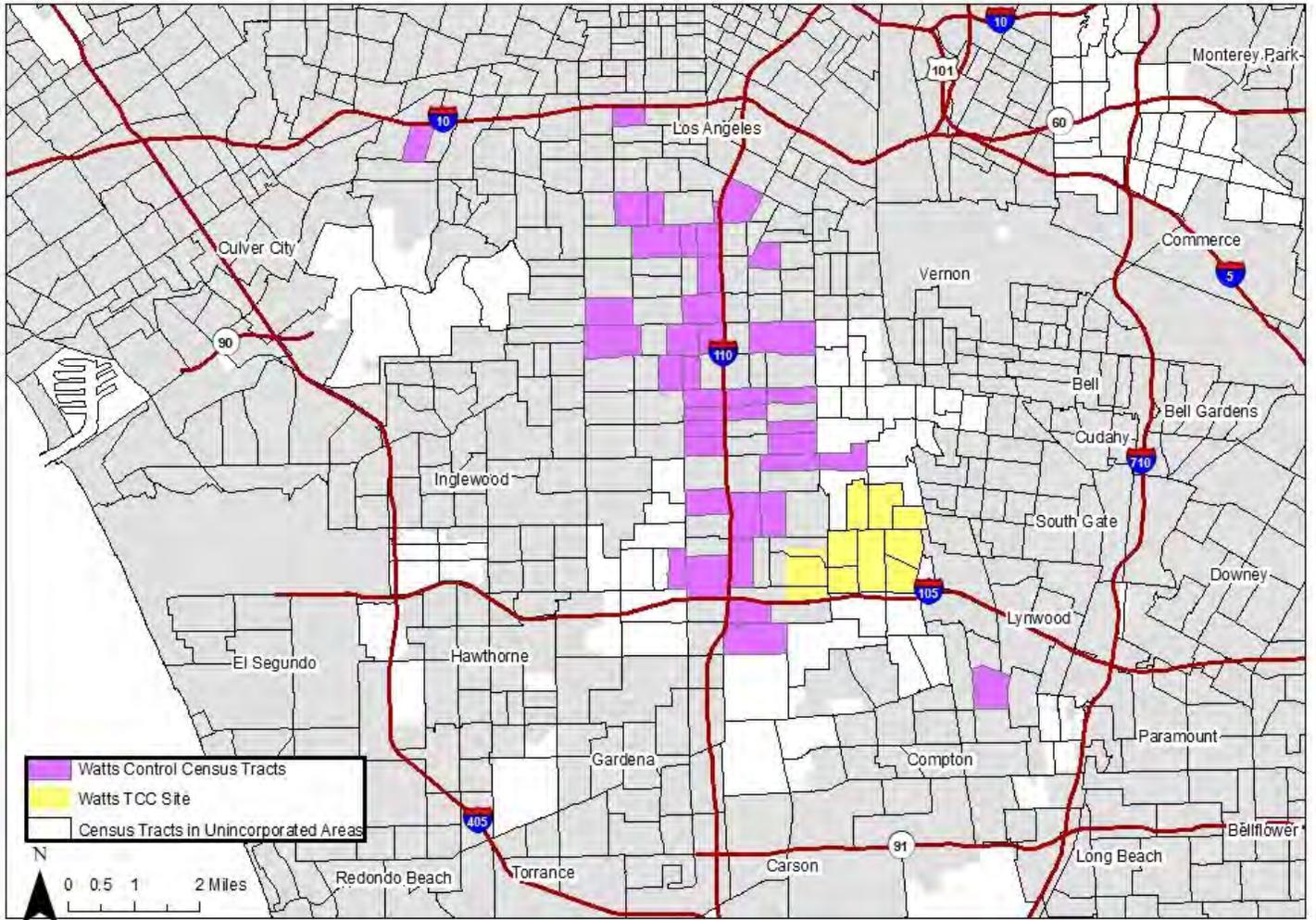


Table A3.3.7. Detailed List of Fresno TCC Tracts

Census Tract GeoID Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06019000700	Fresno / Unincorporated	3758	3.20	1,175
14000US06019001100	Fresno	2728	1.45	1,883
14000US06019001000	Fresno / Unincorporated	3955	1.89	2,093
14000US06019000901	Fresno / Unincorporated	2979	0.75	3,947
14000US06019000200	Fresno	3147	0.77	4,100
14000US06019000300	Fresno	3270	0.73	4,487
14000US06019000400	Fresno	6016	1.31	4,578
14000US06019000600	Fresno	5351	0.95	5,624
14000US06019000902	Fresno	5082	0.76	6,680
14000US06019000100	Fresno	3036	0.33	9,323

Table A3.3.8. Detailed List of Ontario TCC Tracts

Census Tract GeoID Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06071001600	Ontario	5742	4.80	1,197
14000US06071001702	Ontario	5073	0.97	5,257
14000US06071001400	Ontario	2611	0.44	5,902
14000US06071001813	Ontario	4898	0.60	8,187
14000US06071001707	Ontario	6740	0.66	10,211
14000US06071001812	Ontario	3715	0.34	10,831
14000US06071001504	Ontario	5571	0.50	11,240
14000US06071001706	Ontario	5924	0.43	13,765
14000US06071001501	Ontario	4177	0.29	14,393
14000US06071001503	Ontario	3991	0.21	18,664

Table A3.3.9. Detailed List of Watts TCC Tracts

Census Tract GeoID Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06037241001	Los Angeles	4580	0.35	13,086
14000US06037240900	Los Angeles	5745	0.41	13,901
14000US06037242700	Los Angeles	5969	0.39	15,228
14000US06037242100	Los Angeles	2911	0.18	16,404
14000US06037242000	Los Angeles	4159	0.25	16,656
14000US06037240800	Los Angeles	4625	0.25	18,762
14000US06037242300	Los Angeles	4577	0.24	18,815
14000US06037242200	Los Angeles	6366	0.31	20,274
14000US06037243000	Los Angeles	7147	0.28	25,804
14000US06037242600	Los Angeles	4980	0.18	27,097
14000US06037243100	Los Angeles	6459	0.23	27,559

Table A3.3.10. Detailed List of Fresno Control Census Tracts

Census Tract Geoid Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06019001202	Fresno / Unincorporated	4,828	1.31	3,676
14000US06019001304	Fresno	5,528	0.50	1,0948
14000US06019001407	Fresno	4,530	0.50	9,078
14000US06019002800	Fresno	4,458	1.02	4,372
14000US06019003202	Fresno / Unincorporated	5,352	0.62	8,630
14000US06019003807	Fresno / Unincorporated	3,144	1.75	1,780
14000US06019004704	Fresno	4,772	0.49	9,820
14000US06019004802	Fresno	4,871	0.56	8,674
14000US06019005100	Fresno	6,276	1.00	6,281
14000US06019005403	Fresno	4,267	0.50	8,521

Table A3.3.11. Detailed List of Ontario Control Census Tracts

Census Tract Geoid Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06071000603	Chino / Ontario	5,090	0.87	5,852
14000US06071003803	Rialto / San Bernardino	5,222	0.64	8,193
14000US06071000207	Montclair	4,744	0.49	9,770
14000US06071002804	Fontana	5,958	0.39	15,377
14000US06071002602	Fontana	7,616	0.78	9,802
14000US06071002902	Fontana	6,579	0.75	8,762
14000US06071003200	Fontana	8,724	1.00	8,719
14000US06071003102	Fontana	5,939	0.50	11,850
14000US06071003301	Fontana	5,111	0.75	6,830
14000US06071003101	Fontana	4,638	0.53	8,711
14000US06071003509	Rialto	4,335	0.75	5,760
14000US06071004700	San Bernardino	5,143	0.77	6,677
14000US06071004604	San Bernardino	5,438	0.94	5,755
14000US06071006700	Colton	4,424	0.73	6,023
14000US06071007000	Colton	6,880	0.88	7,836
14000US06071000201	Montclair	4,455	1.14	3,923
14000US06071003401	Fontana	7,453	1.00	7,448
14000US06071000904	Upland	3,273	0.45	7,321
14000US06071001104	Ontario	5,783	0.69	8,356
14000US06071001001	Ontario	5,500	0.56	9,855
14000US06071001305	Ontario	4,621	0.46	10,153

14000US06071003607	Rialto	5,626	0.71	7,974
14000US06071006604	Colton	3,883	0.38	10,299
14000US06071002204	Unincorporated / Fontana	7,039	7.45	945
14000US06071006302	Unincorporated / San Bernardino / Highland	9,383	1.00	9,365
14000US06071000303	Unincorporated / Montclair	7,799	0.81	9,639
14000US06071002402	Unincorporated / Fontana	8,166	1.51	5,418
14000US06071002401	Unincorporated / Fontana	8,847	1.52	5,818
14000US06071002501	Unincorporated / Fontana	6,185	1.54	4,017
14000US06071003302	Unincorporated / Fontana	6,097	1.04	5,854

Table A3.3.12. Detailed List of Watts Control Census Tracts

Census Tract Geoid Number	City	Population (ACS 2011-2016 estimate)	Area (sq. mi)	Population Density (pop./ sq.mi)
14000US06037239601	Los Angeles	3,644	0.16	22,350
14000US06037219901	Los Angeles	4,444	0.20	21,928
14000US06037232120	Los Angeles	5,715	0.20	28,363
14000US06037221500	Los Angeles	4,011	0.15	27,286
14000US06037237720	Los Angeles	3,134	0.13	24,958
14000US06037238310	Los Angeles	4,927	0.15	32,138
14000US06037238320	Los Angeles	4,133	0.18	22,859
14000US06037237710	Los Angeles	3,281	0.17	19,658
14000US06037241120	Los Angeles	5,082	0.26	19,832
14000US06037231100	Los Angeles	3,516	0.35	10,185
14000US06037231210	Los Angeles	3,509	0.12	28,341
14000US06037231300	Los Angeles	5,142	0.25	20,257
14000US06037231600	Los Angeles	6,957	0.37	18,874
14000US06037231710	Los Angeles	4,081	0.13	32,644
14000US06037240500	Los Angeles	6,509	0.31	20,748
14000US06037237500	Los Angeles	2,716	0.13	20,853
14000US06037232500	Los Angeles	4,762	0.30	16,066
14000US06037232700	Los Angeles	5,968	0.28	21,139
14000US06037240600	Los Angeles	5,685	0.26	21,786
14000US06037237101	Los Angeles	3,653	0.24	15,043
14000US06037237202	Los Angeles	4,714	0.43	11,014
14000US06037237401	Los Angeles	3,737	0.20	18,753

14000US06037239202	Los Angeles	5,347	0.49	10,856
14000US06037239501	Los Angeles	3,599	0.18	19,657
14000US06037239602	Los Angeles	3,586	0.14	25,937
14000US06037239802	Los Angeles	5,102	0.24	21,682
14000US06037239801	Los Angeles	3,524	0.14	24,617
14000US06037228500	Los Angeles	4,581	0.17	26,431
14000US06037231720	Los Angeles	4,789	0.18	26,265
14000US06037237102	Los Angeles	3,239	0.18	18,238
14000US06037241400	Los Angeles	3,377	0.22	15,196
14000US06037240010	Los Angeles	3,625	0.23	15,955
14000US06037241202	Los Angeles	4,807	0.45	10,703
14000US06037240401	Los Angeles	5,562	0.27	20,786
14000US06037541604	Compton	6,391	0.32	19,839
14000US06037535102	Unincorporated	5,055	0.23	22,150
14000US06037540901	Unincorporated	4,565	0.45	10,160
14000US06037600304	Unincorporated	3,412	0.17	19,825

Appendix 4.1 - Overview of Secondary Data Sources

Alternative Fuels Data Center

The U.S. Department of Energy (DOE) provides latitudinal and longitudinal coordinates for alternative fueling stations through its Alternative Fuels Data Center.¹ The evaluation team will utilize this data source to monitor the following indicators for all three TCC sites as well as their respective control site census tracts:

- Number of EV charging outlets installed by level of service, if applicable
- Number and location of charging stations installed, if applicable

The alternative fuels database includes information on the location of charging station by fuel type. For electric charging stations, the database provides the number of charging outlets per station, as well as the level of service. This information is gathered and verified by the National Renewable Energy Laboratory (NREL) through a variety of sources, including “trade media, Clean Cities coordinators, [submissions] on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.”² The data is updated on an ongoing basis, with data for each fuel station updated annually, at minimum.

California Housing Partnership Corporation (CHPC) Preservation Database

The evaluation team will utilize data from the California Housing Partnership Corporation (CHPC) Preservation Database and data from TCC sites’ county housing authorities to track the following indicator for the TCC sites and the control sites:

- Number of subsidized affordable housing units

The California Housing Partnership Corporation (CHPC) Preservation Database provides information on affordable housing units in California--specifically “properties with HUD subsidized mortgages and/or Section 8 contracts, USDA Section 514 and 515 rural properties, and properties with Low Income Housing Tax Credits.”³ CHPC provides information on the number of affordable housing units subsidized or financed through the aforementioned sources, along with affiliated rental assistance expiration dates and mortgage maturity dates. This information is linked to the properties’ addresses. All aforementioned data is updated annually, at minimum.⁴

The CHPC database does not include units funded by other local and/or state programs and incentives. To paint a more complete picture of all affordable housing units existent in a given

¹ U.S. Department of Energy, “Alternative Fueling Station Counts by State,” https://www.afdc.energy.gov/fuels/stations_counts.html

² U.S. Department of Energy, “Alternative Fueling Station Locator,” <https://www.afdc.energy.gov/stations/#>

³ California Housing Partnership Corporation. “CHPC Preservation Database Access Policy,” <https://1p08d91kd0c03rlxhmtydpr-wpengine.netdna-ssl.com/wp-content/uploads/2018/06/Preservation-Database-Access-Policy.pdf>

⁴ Data on HUD-subsidized properties is updated quarterly; data on USDA-subsidized housing is updated annually; data on LIHTC properties is updated semi-annually.

region, the evaluator will also review additional data sources as available, particularly focusing on those data maintained by county housing authorities in the three TCC sites, all of whom are co-applicants to the program (see below). Using this information, we will track the number of affordable housing units annually in both the TCC sites and the control sites.

Affordable Housing Data from Local Housing Agencies

In addition to the statewide data sources described above, local housing authorities maintain their own data on the affordable housing units that they manage. See **Table A.4.1.1** for an overview of the various databases of affordable housing units tracked by local housing authorities and other local housing agencies (may not be all inclusive). The data can be spatially disaggregated by property and is updated by each agency, but must be requested by the evaluator.

Table A.4.1.1. Affordable Housing Units Tracked by Local Agencies Across TCC Sites

Site	Affordable Housing Units by Funding Source / Financing Mechanism
Watts (Los Angeles County)	Housing Authority of the County of Los Angeles (HACLA) ⁵ <ul style="list-style-type: none"> - Los Angeles County Community and Development Commission (CDC) capital resources awarded through the Notices of Funding Availability (NOFA); - Department of Health Services (DHS) programs (e.g., Housing for Health, the Flexible Housing Subsidy Pool (FHSP), Rapid Re-housing (RRH) vouchers - Department of Mental Health (DMH) resources such as Mental Health Service Act (MHSA) and Special Needs Housing Program (SNHP) and Federal Housing Subsidy Program; - Land use policies and Housing Successor Agency properties monitored by the Department of Regional Planning (DRP); - Programs administered by HaCoLA (public housing; Housing Choice Voucher; Veteran Affairs Supportive Housing (VASH); Shelter Plus Care/Continuum of Care Program; Homeless Initiative Program; Section 8 Family Unification Program) - LA Homeless Services Authority (LAHSA) administered RRH vouchers - Tax-exempt bond financing Los Angeles Housing and Community Investment Department (HCID) <ul style="list-style-type: none"> - Density bonus units
Ontario (San Bernardino County)	Housing Authority of the County of San Bernardino ⁶ <ul style="list-style-type: none"> - Units made affordable through public funds such as HOME and Redevelopment Housing Set-Aside funds Ontario Housing Agency <ul style="list-style-type: none"> - Additional units not included in CHPC Preservation database (e.g., density bonus units, as relevant)

⁵ California Housing Partnership Corporation. “Los Angeles County Annual Affordable Housing Outcomes Report,” (2018): 22.
<https://1p08d91kd0c03rlxhmhtydpr-wpengine.netdna-ssl.com/wp-content/uploads/2018/06/Full-LA-County-Outcomes-Report-with-Appendices.pdf>

⁶ Housing Authority of the County of San Bernardino. “2019 Moving to Work Annual Plan,” (2018): 103.
<http://ww2.hacsb.com/files/pdf/news-reports/mtw/plans/2019-mtw-plan-final-approved.pdf>

Fresno (Fresno County)	Fresno Housing Authority - Additional units not included in CHPC Preservation database (e.g., public housing units) City of Fresno Development and Resource Management (Housing and Community Development Division) - Additional units not included in CHPC Preservation database (e.g., density bonus units, as relevant)
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Google Earth Aerial Imagery

Google Earth aerial imagery is a program that allows users to view high resolution satellite images and examine detail of individual trees and buildings. This tool can be used to track the following indicators for all TCC sites and control sites:

- Number of trees planted
- Number of solar PV systems installed by building type⁷

Google Earth allows the user to make shapefiles (points, polygons) directly in the Google Earth platform. The user can also import shapefiles into google earth, so the evaluator can import the shapefiles of census tracts (TCC tracts, control tracts) to mark points of interest, such as the indicators listed above.

The frequency of this data varies by site, and therefore tracking is limited to the number of updates. Since 2011, Watts' satellite images have been updated at least once per calendar year. Fresno's satellite images have been updated at least once per calendar year, with the exception of 2016. Ontario has annual updates to their satellite images since 2013.

The indicators tracked by this tool will require manual estimations based on visual data and therefore may be prone to human error in accurately counting trees and solar panels. Depending upon the labor demands to count trees and solar panels, a random sampling method may be adopted for performing the counts. To document classification decisions around trees and solar PV panels, shapefiles will be made that show point locations of trees and solar PV panels that were counted. Shapefiles of trees and solar PV panels will be constructed for TCC sites and control sites.

⁷ Using parcel data alongside data gathered from Google Earth, the evaluator can classify each building with a solar photovoltaic system by building type. Installed solar photovoltaic capacity can then be *estimated* by building type based on a visual count of panels for each system and the average capacity per panel.

California Air Resources Board (CARB) Online Fleet Database

CARB has developed an online database that provides access to aggregated vehicle counts from vehicle registration data at the census block group level. The data includes information on vehicles' model year, weight classes, fuel technology, electric miles range for plug-in electric vehicles, and the number of the vehicles belonging to the same home household. For fuel types, the available options are internal combustion engine (ICE), battery electric vehicle (BEV), fuel cell vehicle (FCV), and plug-in hybrid electric vehicle (PHEV).

This database can be used to track the following indicator for all TCC sites and control sites:

- New private EV purchases

Data can be provided upon request by sending a request to CARB's Emissions Factors (EMFAC) group.⁸ Currently, data is only available for 2015 and 2016 calendar years, but the evaluator expects that database to be annually updated.

Quarterly Fuel and Energy Report (QFER) Database

The California Energy Commission's (CEC) Quarterly Fuel and Energy Report (QFER) Database provides facility level electricity generation data, updated quarterly. This database relies on power plant owner self-reporting through forms collected by the CEC.⁹ The database does not provide geospatial coordinates for facilities, but does provide facility names and the cities in which they are located.

This database can be used to track the following indicator for all TCC sites and control sites:

- Renewable energy generation (kWh)

The Food Waste Prevention and Rescue Program (FWPRP), Organics Program (OP), and the Urban Community Forestry (UCF) program have the potential to generate biomass, which can be utilized to generate renewable energy. This data source can be used to track changes in renewable energy generation at TCC-associated biomass facilities, as well as compare these facilities' generation to trends in biomass generation at other facilities and statewide.

In order to use this data source, grantees will need to identify which facilities the project-produced biomass is delivered to by its California Energy Commission (CEC) Plant Identification Number. It is important to note that TCC sites may send their biomass to facilities that are not actually located within the TCC sites. Thus, to control for external factors that may also be affecting trends in renewable energy generation from biomass, the evaluator can not

⁸ California Air Resources Board, "Mobile Source Emissions Inventory — Categories," <https://www.arb.ca.gov/msei/categories.htm>

⁹ California Energy Commission, "QFER CEC-1304 Power Plant Owner Reporting Database," https://www.energy.ca.gov/almanac/electricity_data/web_qfer/

simply compare generation outcomes of facilities located in TCC sites to those located in control sites. Instead, the evaluator will control for trends in renewable energy generation by comparing generation outcomes at biomass facilities that receive green waste from TCC sites to other biomass facilities in California that do not receive waste from TCC-funded projects.

Additionally, the database only provides information for facilities larger than 1 megawatt. If grantees deliver biomass to a facility smaller than 1 megawatt, the evaluator will have to use an alternative data source, such as requesting generation data from the facility directly. This data, however, will not be able to be compared against control facilities of a similar size.

Statewide Integrated Traffic Records System (SWITRS)

The Statewide Integrated Traffic Records System (SWITRS) is a database created and maintained by the California Highway Patrol. The evaluation team will use data collected by SWITRS and analyzed and geocoded by UC Berkeley's Transportation Injury Mapping System (TIMS) to track the following two indicators at all three TCC sites as well as their control site census tracts on an annual basis:

- Pedestrian injuries and fatalities
- Bicycle injuries and fatalities

SWITRS catalogues information from vehicle collision scenes throughout the state, including data on the date and time of the collision; location (provided with information on the primary road, secondary road, and distance and directionality of the collision from these points of reference); types of vehicle(s) involved (i.e., motorcycle, car, bicycle); and the number of fatalities and injured persons, represented as the count of bicyclists, pedestrians, and/or motorcyclists affected. This information is released in annual reports by the CHP. UC Berkeley's Safe Transportation Research and Education Center (SafeTREC) has also been analyzing this data since 2003 and has geocoded collisions in the SWITRS database to points with geographic coordinates. SafeTREC has mapped these points in the TIMS. The evaluation team will access these collision data points in geocoded form so that those which occurred specifically within the TCC sites and their control tracts can be identified. This information will be tracked annually.

Tax Assessor's Parcel Data

The evaluation team will utilize tax assessors data's maintained by Fresno County, Los Angeles County, and San Bernardino County to track the following indicators:

- Number of housing units
- Net density (dwelling units per acre)

County Tax Assessors are responsible for identifying all taxable properties in given a county (excluding state-assessed properties), and for establishing their assessed values. In addition to assessed values of properties, many tax assessor databases offer parcel-level data on building attributes (e.g., square footage, number of units).

The evaluator can utilize this tax assessor's data to calculate the number of housing units within the TCC site area, as well as the net density (dwelling units per acre) in the site area. The three

counties' databases are updated at least once each year, and thus the evaluator will be able to track changes to these metrics annually. Because building characteristics are affiliated with properties with unique addresses, the evaluator will be able to isolate required information to desired spatial boundaries (i.e., the TCC site areas).

The evaluator will be able to estimate changes in these metrics within control site census tracts since this data will be available at the county-level and all control site tracts are located within the same county as their respective TCC sites.

U.S. Census American Community Survey (ACS)

The US Census American Community Survey provides data on the following metrics at the census tract scale in the form of 5-year estimates. The evaluator will track metrics annually for both the TCC tracts as well as control site census tracts. **Table A4.2.** provides a summary of the indicators that will be tracked vis-a-vis ACS data.

Table A4.1.2. Indicators to be Tracked via ACS Data

Indicator	Metric	ACS Table Number
Employment rate	% of residents 16 and older in labor force who are employed	B23025
Housing costs for renters	% of households paying more than 20%, 30%, 40%, & 50% of their income to rent	B25074
Housing costs for homeowners	% of households spending more than 20%, 30%, 40%, & 50% of their income on mortgage payments	B25091
Housing crowding	% of households with more than one occupant per room	B25014
Housing stability	% of households who moved within the past year (by income group)	B07010
Median area income	Median household income (\$)	S1903
Mode shift for journey to work	% of households commuting to work by car (alone), carpool, public transit, foot, bike, and other modes	S0801
Poverty rate	% of residents with income in the past 12 months below poverty level	B17017
Vacant housing units for rent	% of housing units for rent that are vacant	B25002 & B25004
Vacant housing units for sale	% of housing units for sale that are vacant	B25002 & B25004

Appendix 4.2 - Accessibility Network Analysis Methodology

Overview:

To measure changes in residents' ability to access key services and resources within their community, the evaluator recommends conducting a network analysis in ArcGIS to determine the percentage of TCC area residents who live within an approximated travel time (i.e., 10, 15, and 20 minutes) of critical facilities such as grocery stores, health care facilities, and recreational facilities by mode (i.e., walking, biking, and by utilizing public transit). A summary of the network analysis methodology and a full list of the facilities of interest can be found below.

To perform the analysis, a network dataset including mode data and facilities of interest must be assembled. Using this framework, the evaluator can run a network analysis in ArcGIS to generate service areas for three travel modes (walking, biking and transit) originating at each facility of interest, in the form of polygons drawn on a map. These service area polygons spatially represent the distance a person can travel from the facility at a time interval of 10, 15 and 20 minutes in a car. Repeating this process for walking, biking and transit allows the evaluator to examine the percentage of TCC area residents located within the service area of each facility, demonstrating the accessibility of these facilities to the surrounding population.

Data Sources:

Streets

Spatial data on roads for all three sites will be accessed from CalTrans.

Transit Networks

General Transit Feed Specification (GTFS) data will be accessed from LA Metro's developer resource page and the open-source transit data website TransitFeeds.

Facilities

We will examine TCC residents' accessibility to the facilities listed in **Table A4.2.1**. The evaluation team's preliminary definitions of these facilities and the data sources used to identify them are detailed below; these may be modified and/or expanded in the process of conducting the analyses. In addition to utilizing geographic data (e.g., shapefiles, addresses) as provided by the sources listed in **Table A4.2.1**, the evaluator will also reference satellite imagery and data on Google Maps to ensure an accurate accounting of facilities.

Definitions of Facilities of Interest:

- **Retail food channels** are defined as stores and markets that sell a broad selection of fresh foods such as fruits, vegetables, and meats (e.g., grocery stores, farmers markets);
- **Recreational facilities** are defined as parks and other amenities available to the public for physical recreation (e.g., basketball courts, baseball fields, gymnasiums, public pools);

- **Workforce development related service providers** refer to locations where residents can access a comprehensive range of services to find and secure employment (e.g., career guidance, employment referrals, job training);
- **Health care service facilities** include hospitals and clinics, as defined by the CDPH;¹
- **Bikeways** are defined as a Class I, Class II, or Class IV bikeways for the purposes of the evaluation (Class III bikeways were excluded from the evaluation because they are difficult to delineate from aerial imagery);²
- **Transit stops** are defined as stops for any bus, light rail, or subway stations.

Table A4.2.1. Data Sources for Locations of Facilities

Facility of Interest	Sources for Spatial Data		
	Fresno	Ontario	Watts
Retail food channels	California Department of Public Health Nutrition Education and Obesity Prevention Branch ³		
Recreational facilities	<ul style="list-style-type: none"> - City of Fresno Parks, After School, Recreation and Community Services Department⁴ - Fresno County Department of Public Works & Planning (Resources and Parks Division)⁵ 	<ul style="list-style-type: none"> - City of Ontario Department of Recreation⁶ - County of San Bernardino Regional Parks Department⁷ 	<ul style="list-style-type: none"> - City of Los Angeles Department of Recreation and Parks⁸ - LA County Department of Parks and Recreation⁹

¹ California Department of Public Health. "Licensing and Certification Program Facility/Provider Types" Accessed November 21, 2018.

https://www.cdph.ca.gov/Programs/CHCQ/LCP/CalHealthFind/Pages/Facility_ProviderTypes.aspx.

² California Department of Transportation. *A Guide to Bikeway Classification*. 2018. Accessed November 21, 2018.

http://www.dot.ca.gov/d4/bikeplan/docs/caltrans-d4-bike-plan_bikeway-classification-brochure_072517.pdf

³ California Department of Public Health. "Nutrition Education and Obesity Prevention Branch GIS Map Viewer." Accessed November 21, 2018. <http://gis.cdph.ca.gov/NEOPBGIS/>

⁴ City of Fresno. "Parks and Recreation Facilities Finder." Accessed November 21, 2018.

<http://gis4u.fresno.gov/parks/>

⁵ County of Fresno. "Parks." Accessed November 21, 2018.

<https://www.co.fresno.ca.us/departments/public-works-planning/divisions-of-public-works-and-planning/resources-and-parks-division/parks>

⁶ City of Ontario. "Parks and Community Centers." Accessed November 21, 2018.

<https://www.ontarioca.gov/recreation/parks-and-facilities>

⁷ San Bernardino County. "Regional Park Locations." Accessed November 21, 2018.

<http://cms.sbcounty.gov/parks/Maps.aspx>

⁸ City of Los Angeles. "Park Venues and Activities." Accessed November 21, 2018.

<https://www.laparks.org/park-venues-and-activities>

⁹ County of Los Angeles. "Find an LA County Park." Accessed November 21, 2018.

<http://parks.lacounty.gov/park-search-2/>

Workforce development related service providers	Fresno Regional Workforce Development Board - Workforce Connection locations ¹⁰	San Bernardino County Workforce Development Department - Job Centers locations ¹¹	Los Angeles Economic and Workforce Development Department - WorkSource locations ¹²
Preventative or critical health care services	California Health and Human Services Open Data Portal - Licensed Healthcare Facility Listing ¹³		
Biking pathways	City of Fresno ¹⁴	San Bernardino County Transportation Authority ¹⁵	LA County Department of Public Works ¹⁶
Transit stops	City of Fresno Department of Transportation ¹⁷	San Bernardino County Transportation Authority (OmniTrans) ¹⁸	<ul style="list-style-type: none"> - Los Angeles County Metropolitan Transportation Authority (LA Metro)¹⁹ - Los Angeles Department of Transportation (LADOT)²⁰

¹⁰ Fresno Regional Workforce Development Board Workforce Connection. "Workforce Connection Locations." Accessed November 21, 2018. <https://www.workforce-connection.com/contact-us/>

¹¹ San Bernardino County Workforce Development Board. "Job Seekers." Accessed November 21, 2018. <http://wp.sbcounty.gov/workforce/job-seekers/>

¹² City of Los Angeles Economic & Workforce Development Department. "Worksource Location Map." Accessed November 21, 2018.

<http://ewddlacity.com/index.php/employment-services/adults-age-24-and-older/worksource-locations>
¹³ California Health & Human Services Agency Open Data Portal. "Licensed Healthcare Facility Listing, June 30, 2018." Accessed November 21, 2018.
<https://data.chhs.ca.gov/dataset/licensed-healthcare-facility-listing/resource/6ff44089-c5d8-46f0-add1-8c10236ce7fa>

¹⁴ City of Fresno. "Bicycle Plan." Accessed November 21, 2018.

<http://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fgis4u.fresno.gov%2Farcgis%2Frest%2Fservices%2FPublicInfoServices%2FGeneralLayers%2FFeatureServer%2F3&source=sd>

¹⁵ San Bernardino County Transportation Authority. "San Bernardino County Non-Motorized Transportation plan Revised June 2018." Accessed November 21, 2018.

<http://sbcta.maps.arcgis.com/apps/webappviewer/index.html?id=e41d902a89d04866b55078333432c353>

¹⁶ Los Angeles County Department of Public Works. "LA County Bikeways Map." Accessed November 21, 2018. <http://dpw.lacounty.gov/pdd/bike/map.cfm>

¹⁷ City of Fresno Department of Transportation. "Routes." Accessed November 21, 2018.

<https://www.fresno.gov/transportation/fax/routes/>

¹⁸ OmniTrans. "Maps & Schedules." Accessed November 21, 2018. <http://www.omnitrans.org/schedules/>

¹⁹ Los Angeles County Metropolitan Transportation Authority. "Download GIS Data." Accessed November 21, 2018. <https://developer.metro.net/introduction/gis-data/download-gis-data/>

²⁰ City of Los Angeles GeoHub. Accessed November 21, 2018.

<http://data-lahub.opendata.arcgis.com/datasets?q=dash>

Appendix 5.1 - TCC Displacement Avoidance Plan Evaluation: Focus Group Script

Objective: To identify widely held perceptions of the challenges of residential and commercial displacement in the community and assess group attitudes regarding the effectiveness of the TCC Displacement Avoidance Plan in addressing these challenges. Focus group discussions will provide insight into common beliefs and opinions regarding displacement in a particular community, as well as thoughts about the implementation of the TCC DAPs and potential ideas on how to improve specific projects.

Frequency: Three separate focus groups will be held once towards the second half of the first year of program implementation.

Target Audience: 6-8 highly engaged representatives of community organizations, businesses, and government. In all cases, participants must have been involved to some degree with the DAP development or TCC more broadly in their community so that they understand the context of the questions.

- 1) **Community focus group:** Representatives from community organizations, especially including housing- or tenant-focused organizations, associated with the project area
- 2) **Business focus group:** Local business owners and others associated with retail economy in the project area

Participant Selection Method: Word of mouth references from TCC community partners

Questions

Each session will take between 1.5 and 2 hours. Expect each question to take 5-20 minutes for everyone to answer. Facilitator will write down main ideas on a flipchart and will summarize key points at the end of the session and ask for amendments/additions.

Discussion will be prefaced by a brief description of the Transformative Climate Communities program, specific TCC activities in the community, and the major goals and activities of the relevant Displacement Avoidance Plan.

Introductions

1. Let's go around and everyone introduce themselves and tell us your favorite food when you were a kid [or another suitable ice-breaker]. (5-10 mins)

Warm up questions - sense of community/place

2. What do you like most about living in [city/community]? (5-15 mins)

3. What if anything would you change about [city/community]? (5-15 mins)

Key questions - defining and characterizing displacement

4. What does displacement mean to you? (10-20 mins)

5. Do you think involuntary residential or commercial displacement is occurring here in [city/community]? If so, how much and how rapidly is it occurring? (5-10 mins)

6. What do you think are the main causes of involuntary displacement here in [city/community]? (10-20 mins)

7. What do you think should/can be done to reduce involuntary displacement in [city/community]? (10-20 mins)

Key questions - TCC and DAP

8. In what ways do you think the Transformative Climate Communities project activities might affect involuntary displacement in [city/community]? (10-20 mins)

9. In what ways do you think the Transformative Climate Communities' Displacement Avoidance Plan might affect involuntary displacement in [city/community]? (10-20 mins)

10. Is there anything that you think the Displacement Avoidance Plan is missing or should try to do that it is not doing? (10-20 mins)

Summarize big ideas from Questions 4-10 out loud.

Wrap up questions

11. (After summarizing) Did I miss any big ideas that we discussed? (5 mins)

12. Before we wrap up the discussion, is there anything else you'd like to add?

Thank everyone for coming.

Debrief with notetaker immediately to confirm major takeaways.

Appendix 5.2 - TCC Displacement Avoidance Plan Evaluation: Interview Script

Objectives: The purpose of the Displacement Avoidance Plan (DAP) interviews is to identify individual perceptions of the challenges of residential and commercial displacement¹ in the community and assess individual attitudes regarding the effectiveness of TCC DAPs in addressing these challenges. Individual in-depth interviews with key representatives from various community housing organizations and business associations will provide detailed qualitative data on the actual and perceived risks of residential and commercial displacement in the community, as well as insights into the potential and real impacts of the TCC DAPs before and during their implementation.

Target Audience: 6-8 key representatives of community organizations, particularly housing and tenant organizations who were involved in the creation and/or implementation of the DAP for each site

Participant Selection Method: Recommendations from TCC community partners; DAP focus group participants

Planned Frequency: Once, 6 months after DAP focus group, and possibly again after another 1-2 years (TBD)

Time/Location: Each interview is expected to last between 45 minutes and an hour. Ideally the interviews will be conducted in person, however they may be conducted over Skype or over the phone if necessary.

Questions

The first questions are background questions about [name of organization] and the individual's role with them. This information helps to confirm that the person is a good representative and appropriate interviewee.

1. What is your role with [name of organization]?
2. How long have you been with [organization]?
3. What are the group's mission and goals with respect to preventing residents and local businesses from being forced to relocate due to rising rents or other reasons?

¹ We follow Grier and Grier's 1978 definition: "Displacement occurs when a household is forced to move from its residence by conditions that affect the dwelling or its immediate surroundings, and that: 1) are beyond the household's reasonable ability to control or prevent; 2) occur despite the household's having met all previously imposed conditions of occupancy; and 3) make continued occupancy by that household impossible, hazardous, or unaffordable".

4. How have you (or has your organization) been involved in the creation or implementation of the DAP in [city/community]?

The next questions will focus on the perceived and actual challenge of residential and commercial displacement in the community.

5. Are residents [in city/community] being focused to move because of rising rents or other factors outside of their control? If so, what in your opinion is causing this? *(If they are unsure of what is meant by the question could prompt with: lack of affordable housing, increasing rents, lack of well paying jobs, environmental conditions, etc.)*

7. Are local businesses in [city/community] being forced to close or relocate due to rising rents or other factors outside of their control? If so, what in your opinion is causing this? *(If they are unsure of what is meant by the question could prompt with: lack of affordable commercial space, increasing rents, lack of workers with the proper skills, loss of customers, etc.)*

The next questions are about the TCC-supported DAP initiatives taking place in [Fresno/Watts/Ontario]. The questions try to get at the perceived impact that various TCC and DAP projects have had on displacement in the community.

8. Do you feel that TCC project activities, on the whole, will improve or worsen involuntary displacement in [city/community]?

9. If answer to above is “worsen,” what project activities are most likely to contribute to involuntary displacement, in your opinion? How might they do so?

10. Do you feel that the goals and programs of the DAP are the right ones for [city/community]? Will they be sufficient, in your opinion, to lessen or prevent involuntary displacement?

11. What programs and activities of the DAP are most likely to lessen or prevent involuntary displacement in [city/community]?

12. Do you feel that the DAP, so far, has been successful in achieving its goals? If so, how? If not, why not?

Demographic questions.

13. In what year were you born?

14. How do you identify in terms of race?

15. How do you identify in terms of ethnicity?

16. How do you identify in terms of gender?

17. What is the highest level of education you have completed?

18. What is your total annual household income (can round to the closest thousand)?

Concluding questions

19. What more, if anything, could the DAP be doing to address concerns about involuntary displacement?

20. Was there anything I didn't ask about that you wanted to mention related to the DAP?

Appendix 5.3 - TCC Workforce Development Program Evaluation: User Survey (First Meeting)

Objective: To assess changes over time in perceptions about the value of workforce development activities in the TCC program, both for individuals and the community, and to gauge the effectiveness of relevant training programs offered as part of the TCC program. These insights will inform ongoing implementation of TCC Workforce Development activities, including potential areas of improvement.

Frequency: To be distributed at FIRST meeting of workforce development training/workshop

Target Audience: Workforce Development training meeting participants

Participant Collection Method: Distributed at workshops to participants

Questions

Personal history

1. What is your current job or the most recent job you have held?

Job title: _____

Employer: _____

2. If you do not currently have a job, when did your last job end?

3. What is the **hourly** wage of your current job, or the most recent job you have held?:

4. What benefits, if any, do you receive as part of your current job, or the most recent job you have held [check all that apply]?

- Retirement saving program
- Health insurance
- Dental insurance
- Life insurance
- Disability insurance
- Commuter benefits (discount transit passes or similar)
- Paid time off
- Other: _____

5. In the past year, on average, how many hours per week have you worked?

- 40+ hours
- 30-40 hours
- 20-30 hours
- 10-20 hours
- 0-10 hours

6. Over the previous three years, how many different jobs have you had?

- 0
- 1-2
- 3-5
- 6 or more

7. How many job training programs have you participated in before?

- 0
- 1
- 2
- 3 or more

8. If you have participated in a job training program before this one, how long ago was the most recent one?

- Less than 3 years
- 3-6 years
- 6-9 years
- More than 9 years

Workforce development program effectiveness

9. What is your previous experience with the Transformative Climate Communities (TCC) program [check all that apply]?

- No previous experience with TCC of any kind
- Heard about TCC activities from others in the community
- Read about TCC on the internet, social media or in publications
- Attended previous public meetings or events where TCC activities were discussed
- Participated in planning TCC projects or activities in the community

10. How familiar would you say you are with the goals and activities of the Transformative Climate Communities (TCC) program in your community?

- Not at all familiar
- A little bit familiar
- Somewhat familiar
- Very familiar

11. Overall, how do you feel that the TCC project activities will affect your community [check only one]?

- Very negatively
- Negatively
- Neutral
- Positively
- Very positively

12. What is your top personal goal for participating in this job training program [choose only one]?

- Find a full time job
- Find a part time job
- Find a better-paying job
- Placement in a new job sector
- Acquire new job skills

13. Overall, to what extent do you expect this job training program to assist you in meeting your top personal goal [choose only one]?

- Not at all
- A little bit
- A fair amount
- A great deal

Demographics

14. Age [check only one]

- Under 18
- 18-24
- 25-44
- 45-64
- 65+

15. Race [check all that apply]

- White
- Black or African-American
- Asian
- American Indian and Alaska Native
- Native Hawaiian and other Pacific Islander
- Other

16. Ethnicity [check all that apply]

- Hispanic or Latino
- Not Hispanic or Latino

17. Ancestry [check all that apply] - *to be tailored to project sites. Illustrative examples:*

- Chinese
- Filipino
- Mexican
- Salvadorian
- South Asian
- Other: _____

18. Gender

- Male
- Female
- Non-binary or other

19. Education level [check only one]

- Attended high school
- High school degree
- Attended college
- Technical/vocational degree
- Associate's degree
- Bachelor's degree
- Master's degree

20. Household income range [check only one]

- Less than \$10,000/year
- \$10,000 – \$20,000/year
- \$20,000 - \$40,000/year
- \$40,000 - \$60,000/year
- \$60,000 - \$80,000/year
- More than \$80,000/year

Follow-up survey

21. Would you be willing to participate in a follow-up survey in 6-12 months?

22. If yes, please provide us with your contact information:

Name: _____

Address: _____

City: _____ ZIP: _____

Email: _____

Phone: _____

23. Preferred method of contact:

- Email
- Phone

Appendix 5.4 - TCC Workforce Development Program Evaluation: User Survey (Last Meeting)

Objective: To assess changes over time in perceptions about the value of workforce development activities in the TCC program, both for individuals and the community, and to gauge the effectiveness of relevant training programs offered as part of the TCC program. These insights will inform ongoing implementation of TCC Workforce Development activities, including potential areas of improvement.

Frequency: To be distributed at LAST meeting of workforce development training/workshop

Target Audience: Workforce Development training participants

Participant Collection Method: Distributed at workshops to participants

Questions

Personal history

1. What job, if any, did you hold when this job training program began?

Job title: _____

Employer: _____

2. What is the **hourly** wage of the job, if any, that you held when this job training program began?: _____

3. What benefits, if any, did you receive as part of the job, if any, that you held when this job training program began [check all that apply]?

- Retirement saving program
- Health insurance
- Dental insurance
- Life insurance
- Disability insurance
- Commuter benefits (discount transit passes or similar)
- Paid time off
- Other: _____

4. In the past year, on average, how many hours per week have you worked?

- 40+ hours
- 30-40 hours
- 20-30 hours
- 10-20 hours
- 0-10 hours

5. Over the previous three years, how many different jobs have you had?

- 0
- 1-2
- 3-5
- 6 or more

Workforce development program effectiveness

6. How familiar would you say you are with the goals and activities of the Transformative Climate Communities (TCC) program in your community?

- Not at all familiar
- A little bit familiar
- Somewhat familiar
- Very familiar

7. Overall, how do you feel that the TCC project activities will affect your community [check only one]?

- Very negatively
- Negatively
- Neutral
- Positively
- Very positively

8. When you began this program, what was your top personal goal for participating in this job training program [choose only one]?

- Find a full time job
- Find a part time job
- Find a better-paying job
- Placement in a new job sector
- Acquire new job skills

9. At the present time, which of the following personal goals, if any, has this job training program helped you achieve [choose all that apply]?

- Find a full time job
- Find a part time job
- Find a better-paying job
- Placement in a new job sector
- Acquire new job skills

Please provide the job title and company/employer if a new job was secured:

Job title: _____

Employer: _____

10. If you have obtained a new job since the job training program began, what is the hourly wage range of the new job?

- Less than \$10/hour
- \$10-15/hour
- \$15-20/hour
- \$20-25/hour
- \$25-30/hour
- More than \$30/hour

11. If you have obtained a new job since the job training program began, what benefits, if any, does the new job provide?

- Retirement saving program
- Health insurance
- Dental insurance
- Life insurance
- Disability insurance
- Commuter benefits (discount transit passes or similar)
- Paid time off
- Other: _____

12. Overall, to what extent has this job training program assisted you in meeting your top personal goal so far [choose only one]?

- Not at all
- A little bit
- A fair amount
- A great deal

13. If you have not yet achieved your top personal goal for this job training program, how confident do you feel that you will achieve that goal in the coming year?

- Not at all confident
- Not very confident
- Somewhat confident
- Very confident

14. Overall, how effective do you feel this job training program has been [check only one]?

- Not at all effective
- Not very effective
- Somewhat effective
- Very effective

Demographics

15. Age [check only one]

- Under 18
- 18-24
- 25-44
- 45-64
- 65+

16. Race [check all that apply]

- White
- Black or African-American
- Asian
- American Indian and Alaska Native
- Native Hawaiian and other Pacific Islander
- Other

17. Ethnicity [check all that apply]

- Hispanic or Latino
- Not Hispanic or Latino

18. Ancestry [check all that apply] - *to be tailored to project sites. Illustrative examples:*

- Chinese
- Filipino
- Mexican
- Salvadorian
- South Asian
- Other: _____

19. Gender

- Male
- Female
- Non-binary or other

20. Education level [check only one]

- Attended high school
- High school degree
- Attended college
- Technical/vocational degree
- Associate's degree
- Bachelor's degree
- Master's degree

21. Household income range [check only one]

- Less than \$10,000/year
- \$10,000 – \$20,000/year
- \$20,000 - \$40,000/year
- \$40,000 - \$60,000/year
- \$60,000 - \$80,000/year
- More than \$80,000/year

Follow-up survey

22. Would you be willing to participate in a follow-up survey in 6-12 months?

23. If yes, please provide us with the following contact information:

Name: _____

Address: _____

City: _____ ZIP: _____

Email: _____

Phone: _____

24. Preferred method of contact:

- Email
- Phone

Appendix 5.5 - TCC Workforce Development Program Evaluation: Interview Script

Objectives: The purpose of the Workforce Development (WFD) Plan interviews is to gather examples from participants on how the training has impacted their employment.

Target Audience: 6-8 workforce training participants per site.

Participant Selection Method: Participants will be informed during training that the evaluation team will contact participants for interviews six months after the training. Evaluators will email all participants to request interviews. If more than the eight participants respond, the evaluation team will randomly select who to interview. If fewer than eight respond, the evaluators will develop a randomized process to select participants for follow-up phone calls.

Planned Frequency: Once, 6 months after WFD training ends.

Time/Location: Each interview is expected to last between 45 minutes and an hour. Ideally the interviews will be conducted in person, however they may be conducted over Skype or over the phone if necessary.

Introduction

To establish rapport and trust, the evaluator will introduce his/herself and the evaluation process. The evaluator will inform the participant that all information will remain anonymized and express gratitude for their participation.

Questions

The first questions are background questions about [name of organization] and the individual's role with them. This information helps to confirm that the person is a good representative and appropriate interviewee.

1. What field do you work in?
2. How did you learn about the training originally?
3. Are you currently employed or looking for work?

The next questions will focus on the interviewees motivation for taking the course.

4. Why did you sign-up for the training? Were there specific skills you hoped to learn?
5. In what ways did you believe the training would assist you in finding work or increasing your income?

The next questions focus on the individual's perception of the course.

6. Did you find the course beneficial? If so, how? If not, why not?
7. Did you learn the skills you expected to learn?
8. Did you learn any other skills?

The next questions focus on changes in the participant's life since the course.

9. Has your employment or income changed since the course?
10. If you have a new job or better pay, do you feel what you learned in the course helped you to obtain them?
11. In your experience, are there employers in your area looking for individuals with the skills you learned in the course?
12. Are there ways that the course could have been more helpful to you personally?
13. Are there ways that the course could have been more helpful to the community as a whole?

Demographic questions

14. In what year were you born?
15. How do you identify in terms of race?
16. How do you identify in terms of ethnicity?
17. How do you identify in terms of gender?
18. What is the highest level of education you have completed?
19. What is your total annual household income (can round to the closest thousand)?

Concluding questions

20. If you've had an increase income due to the training program, how do you plan to use it?
21. Was there anything else you would like to share or think I should know to understand the training?

Appendix 5.6 - TCC Community Engagement Plan Evaluation: User Survey

Objective: To assess changes over time in perceptions about the role of community engagement in the TCC program and to gauge the effectiveness of relevant workshops organized as part of the TCC Community Engagement Plan (CEP). These insights will inform ongoing implementation of TCC CEPs, including potential areas of improvement.

Frequency: Twice, at first and last CEP meetings/workshops

Target Audience: CEP meeting/workshop participants

Participant Collection Method: Distributed at workshops to participants

Questions

Community engagement role and experience

1. What is your role in the community [check all that apply]?

- Resident
- Property owner
- Business owner
- Representative of organization receiving funding for a Transformative Climate Communities (TCC) project
- Representative of other community organization
- Member or volunteer with community organization
- Participant on a public or non-profit commission, board, or other body with interests in the community
- Public office holder or staff
- Clergy

2. What is your previous experience with the Transformative Climate Communities (TCC) program [check all that apply]?

- No previous experience with TCC of any kind
- Heard about TCC activities from others in the community
- Read about TCC on the internet, social media or in publications
- Attended previous public meetings or events where TCC activities were discussed
- Participated in planning TCC projects or activities in the community

3. What is your previous experience with community engagement processes apart from TCC [check all that apply]?

- No previous experience of any kind

- Attended public meetings for non-TCC community or public projects, plans or investments
- Provided written or verbal comments for non-TCC community or public projects, plans or investments
- Participated in planning non-TCC community or public projects, plans or investments
- Participated on a public or non-profit commission, board or other decision-making body

Type of participation in community engagement events

4. In your understanding, which of the following are part of the TCC community engagement activities in your community [check all that apply]?

- Verbal presentations from TCC project leaders
- Opportunities for verbal comment
- Opportunities for written comment (by hand or online)
- Project planning or design activities (e.g. workshops, brainstorming sessions, small group exercises)
- Project selection activities (e.g. choosing projects by vote, group consensus or other means)
- Community-based research or fact-finding
- Participatory budgeting
- Citizen advisory committees

5. If you have previous experience engaging with the TCC program, what form did that engagement take [check all that apply]?

- Listened to presentations
- Provided verbal comment
- Provided written comment (by hand or online)
- Participated in project planning or design activities (e.g. workshops, brainstorming sessions, small group exercises)
- Participated in project selection (e.g. choosing projects by vote, group consensus or other means)
- Participated in community-based research or fact-finding
- Participatory budgeting
- Served on a citizen advisory committee

6. If you have previous experience engaging with the TCC program, what effect do you feel that engagement had on subsequent TCC activities [check only one]?

I haven't seen any effect from my input

- Project leaders considered my input
- Project leaders referred to my input in subsequent meetings or documents
- A project was changed based on my input
- A project alternative that was not subsequently funded was developed with my input
- A project that was subsequently funded was planned and designed with my input

- The entire TCC program in my community was planned and designed with my input

7. Which specific TCC community engagement activities, if any, are the most important to you or the organization you represent?

Evaluation of community engagement activities

8. Overall, to what extent do you feel you have been able to affect decisions made about the TCC projects in your community [check only one]?

- Not at all
- A little bit
- A fair amount
- A lot
- A great deal

9. Overall, how effective do you feel that the TCC community engagement activities have been in creating meaningful engagement with the community [check only one]?

- Not at all effective
- Not very effective
- Neutral
- Effective
- Very effective

10. Overall, how do you feel that the TCC community engagement activities have affected your feelings toward the TCC projects planned in the community [check only one]?

- Much more negative
- More negative
- No change
- More positive
- Much more positive

11. Overall, how do you feel that the TCC community engagement activities have affected your feelings toward the community itself [check only one]?

- Much more negative
- More negative
- No change
- More positive
- Much more positive

12. Overall, how do you feel that the TCC project activities will affect your community [check only one]?

- Very negatively
- Negatively
- Neutral
- Positively
- Very positively

13. What specific aspects of your community do feel the TCC project activities will most strongly affect?

Demographics

14. Age [check only one]

- Under 18
- 18-24
- 25-44
- 45-64
- 65+

15. Race [check all that apply]

- White
- Black or African-American
- Asian
- American Indian and Alaska Native
- Native Hawaiian and other Pacific Islander
- Other

16. Ethnicity [check all that apply]

- Hispanic or Latino
- Not Hispanic or Latino

17. Ancestry [check all that apply] - *to be tailored to project sites. Illustrative examples:*

- Chinese
- Filipino
- Mexican
- Salvadorian
- South Asian
- Other: _____

18. Gender

- Male
- Female
- Non-binary or other

19. Education level [check only one]

- Attended high school
- High school degree
- Attended college
- Technical/vocational degree
- Associate's degree
- Bachelor's degree
- Master's degree

20. Household income range [check only one]

- Less than \$10,000/year
- \$10,000 – \$20,000/year
- \$20,000 - \$40,000/year
- \$40,000 - \$60,000/year
- \$60,000 - \$80,000/year
- More than \$80,000/year

Follow-up survey

21. Would you be willing to participate in a follow-up survey in 6-12 months?

- Yes
- No

22. If yes, please provide us with your name, phone number and an email where you can be reached.

Name: _____

Address: _____

City: _____ ZIP: _____

Email: _____

Phone: _____

23. Preferred method of contact:

- Email
- Phone

Appendix 5.7 - TCC Community Engagement Plan Evaluation: Interview Script

Objectives: The purpose of the Community Engagement Plan (CEP) interviews is to gather detailed examples of how important community organizations feel the process has or has not been.

Target Audience: 6-8 participants from CEP workshops. If evaluators deem it necessary they can also seek out representatives from organizations that did not participate in the community engagement process.

Participant Selection Method: Participants will be informed during training that the evaluation team may contact participants for interviews and request that anyone interested in being interviewed inform the evaluation team by checking the box on the user survey. Evaluators will also ask for recommendations on interviewees from the grant lead and project leads.

Planned Frequency: Once, six to twelve months after implementation kickoff

Time/Location: Each interview is expected to last between 45 minutes and an hour. Ideally the interviews will be conducted in person, however they may be conducted over Skype or over the phone if necessary.

Introduction

To establish rapport and trust, the evaluator will introduce his/herself and the evaluation process. The evaluator will inform the participant that all information will remain anonymized and express gratitude for their participation.

Questions

The first questions are background questions about [name of organization] and the individual's role with them. This information helps to confirm that the person is a good representative and appropriate interviewee.

1. What is your role in your organization?
2. What is the role of your organization in the CEP?
3. How long have you and your organization been involved in the CEP?
4. Have you participated in similar engagement processes in the past?

The next questions will focus on the interviewee's motivation for participating in the workshops.

5. Why did your organization decide to participate in the CEP?
6. Are there specific ways your organization hoped to influence the process?

The next questions focus on the individual's perception of the CEP.

7. Do you feel your organization's voice was heard in the workshop and process more generally? If so, what specifically made you feel that way? If not, what specifically could have been done differently to make you feel that way?
8. Do you feel your organization's input will impact decision-making? If so, what makes you feel that way? If not, what could be done differently to make you feel that way?

The next questions focus on the interviewees perspective on the CEP and TCC more generally.

9. Would you say that the CEP was successful at meeting its goal of [insert goal from site CEP]?
10. Do you feel the TCC program will benefit your organization and your stakeholders? If so, how? If not, why not?
11. Do you feel the TCC program will benefit the community as a whole? If so, how? If not, why not?¹

Demographic questions

12. In what year were you born?
13. How do you identify in terms of race?
14. How do you identify in terms of ethnicity?
15. How do you identify in terms of gender?
16. What is the highest level of education you have completed?

¹ Connects with the following indicator in the CEP evaluation plan: stakeholders believe that the TCC program will benefit their community

17. What is your total annual household income (can round to the closest thousand)?

Concluding questions

18. Is there anything else you think I need to know to fully understand the CEP and your role in it?

19. Is there anything else you think you would like to share about your perception of the TCC program and its impacts on your community?