

Innovating From the Inside Out:

A Policy Framework for the Los Angeles Clean Innovation Lab

DRAFT
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Executive Summary

Despite much activity and a relatively favorable political climate, the cleantech market in Los Angeles has not coalesced into a more coherent form in the way it has in competitor cities across the country, such as Austin, San Francisco, San Jose, or Boston. While this fact can be partially attributed to the lack of a centralized cleantech “region” within LA, a significant element that has been missing in Los Angeles is an “infrastructure” of cleantech promotion and information-sharing. This report offers a framework for cleantech innovation development that has been designed to leverage one of the primary assets Los Angeles possesses: the Los Angeles Department of Water and Power (DWP), the largest municipal utility in the country. Thus, this report will outline the design of a new program at DWP, the Los Angeles Clean Innovation Lab, or iLab for short. Currently in the program implementation process at the DWP, iLab represents a new approach towards economic development, cleantech development, and sustainable practices to enhance LA’s economic competitiveness.

In 2009, the Los Angeles Mayor’s Office, in partnership with the Department of Water and Power, set out to enact a program to stimulate cleantech business development in LA. That program (now called the Los Angeles Clean Innovation Lab, or iLab) was modeled on a program at the Ports of Los Angeles and Long Beach which combines a demonstration project platform and investment fund concept. This report describes a framework for the design and implementation of the iLab within the DWP based on interviews with key members of the cleantech community as well as a case study of Austin, Texas’ cleantech innovation acceleration initiatives.

Through combining an investment fund and demonstration project, the utility itself, through its large-scale procurement and product-testing regimes, can aid cleantech startup firms in developing and refining their products on the path towards commercialization.

A selection of the key findings of this report follows:

- iLab should be a “brand” for the DWP that serves to unify the innovative and sustainable work that is already taking place within the utility.
- iLab’s sector focus should be on energy efficiency, smart grid technologies, energy storage, clean transportation, and the solar and water conservation sectors for greatest effect.
- iLab must draw upon the innovative work being conducted at the Los Angeles area’s world-class research universities and help to test and develop the most promising ideas to drive commercialization and economic growth.
- The DWP should take a “fund, don’t run” approach to the iLab, meaning that the iLab should be a separate entity funded by the DWP, rather than a new program area within the DWP.

As noted above, there is significant innovation already taking place at the DWP, however the public and most DWP employees are not aware of it. Thus, the iLab should:

1. Highlight innovation where it already exists;
2. Develop and spotlight high profile demonstrations that will spur business;
3. Coordinate efforts to get the word out about the iLab programs; and
4. Bundle traditional economic development tools to augment the benefits of the iLab and attract businesses to participate

While Los Angeles has a large and growing cleantech sector, a key element that has been missing is an organizing focus to drive the cleantech sector’s development in a coherent way for the greatest economic returns to the region. The Los Angeles Clean Innovation Lab could be a motivating force for cleantech and economic development by directly linking the cleantech sector’s development with the scale and capabilities of the country’s largest municipal utility.

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1: Introduction

Los Angeles stands at the precipice of a clean technology wave: a wave of innovation, economic growth and development, and sustainability that could transform the city. With numerous beneficial assets, including a network of major research universities, a history of manufacturing strength, and the largest port system in the country, the city has a unique opportunity to be a major market for cleantech innovation.

Despite much activity and a relatively favorable political climate, the cleantech market in Los Angeles has not coalesced into a more coherent form in the way it has in competitor cities across the country, such as Austin, San Francisco, San Jose, or Boston. While this fact can be partially attributed to the lack of a centralized cleantech “region” within LA, a significant element that has been missing in Los Angeles is an “infrastructure” of cleantech promotion and information-sharing. Furthermore, while there are a number of inter-organizational consortia, primarily CleanTechLA, which have approached cleantech development with a more cluster-oriented perspective in Los Angeles, those groups do not have the resources to comprehensively meet their goals.

This report offers a framework for cleantech innovation development that has been designed to leverage one of the primary assets Los Angeles possesses; specifically, the Los Angeles Department of Water and Power (DWP), the largest municipal utility in the country. While a large and hierarchically-oriented public utility may not appear to be an organization that can aid in facilitating the development of nimble and innovative cleantech startup firms, the synergies run deeper than one might expect. Thus, this report will outline the design of a new program at DWP, the Los Angeles Clean Innovation Lab, or iLab for short. Currently in the program implementation process at the DWP, iLab represents a new approach towards economic

development, cleantech development, and sustainable practices to enhance LA's economic competitiveness.

Purpose of the Study

The central research question this project has sought to answer is: What are key features of a DWP cleantech investment fund and demonstration project platform that would meet the technological needs of DWP while facilitating the development of a cleantech innovation sector and enhancing local economic development? In considering such a multifaceted question, it became clear that the key issue is not to simply design the "best" iLab on paper, but to take into account both the constraints and opportunities that Los Angeles, and particularly the entrenched interests at the DWP, present to the iLab. To that extent, rather than compile a roster of best practice examples and abstract key principles of program design from them, this report seeks to contextualize the iLab program within Los Angeles to ensure the feasibility of its recommendations.

Given the unprecedented nature of the iLab's hybrid investment/demonstration program tied to a municipal utility, as well as the high levels of institutional "buy-in" required for such a program, the focus of this project is to provide the DWP with a roadmap for the design and implementation of the iLab. While If enacted, iLab will be located within the Economic Development Group (EDG) at DWP, and thus, this report is directed at management and staff within EDG.

In order to leverage all of the cleantech resources that Los Angeles is developing most effectively, the iLab must be designed in such a way that cross-institutional relationships are essential elements of the program from the outset. Austin Energy, Austin, TX's municipal

utility, is a recognized leader in driving economic growth via the utility's judicious and creative use of its resources, including working closely with other public and non-profit organizations in the region to achieve its goals. This report is centered on an in-depth case study of Austin's cleantech ecosystem, and how Austin Energy is driving economic growth in the region, in order to draw out best practices for the DWP in building the iLab program going forward.

Recent UCLA Department of Public Policy Applied Policy Projects (APPs) have analyzed how to leverage the Los Angeles Department of Water and Power as a tool for developing a cleantech industry in LA,¹ as well as LA's comparative advantages as a cleantech hub over competitor cities.² This research project seeks to provide the final "piece of the puzzle" of the City of Los Angeles' cleantech innovation development strategy. By building from those APPs, the goal of this proposed research project is to design a program that satisfies the DWP's three goals for the iLab project:

1. Help meet DWP's water and power needs by filling key technology gaps
2. Build Los Angeles' clean innovation ecosystem
3. Catalyze the creation and growth of water and power-related businesses in Los Angeles to create jobs and increase revenues

As the iLab has three separate, and to some extent, conflicting goals, finding a balance between meeting the technology needs of the DWP, building LA into a clean innovation hub, and spurring wider economic development will be difficult. Oftentimes, government entities seek to drive investment into projects that guarantee the best job creation opportunities, rather

¹ Kerstein and Song 2009

² Bedrossian et al 2010

than focusing resources on projects with the greatest economic growth potential. This dynamic can lead to government resources being directed primarily towards well-established firms and technologies, rather than on smaller startups with potentially more innovative technologies. In order to create a self-sustaining cleantech sector in Los Angeles, however, the DWP's investment will be best spent in aiding the cultivation of an ecosystem of local startup firms. Investigating the successes and failures of existing cleantech investment funds and demonstration platform programs offers useful insights into how the iLab can be designed to maximize its potential for success in meeting those three goals

Methodology

The data employed in the course of this study has been gathered from stakeholder and expert interviews conducted by the author, as well as interviews conducted by the author in conjunction with Eos Consulting and affiliated consultants. Interviewees were selected based on the prominence and success of the organizations they work for, and for their expertise in the cleantech sector. Additional data was collected in a research visit to Austin, TX, often believed to be the cleantech capital of the United States, as well as in reviewing literature on clean technology development principles.

2: Setting, Issues and Analysis

Background

In 2009, the Los Angeles Mayor's Office, in partnership with the Department of Water and Power, set out to enact a program to stimulate cleantech business development in LA. That

program (now called the Los Angeles Clean Innovation Lab, or iLab) was modeled on the Ports of Los Angeles and Long Beach's Technology Advancement Program (TAP), a program that was designed to support and accelerate the development and demonstration of new emissions reduction technologies or strategies applicable to the port environment.³ Started in 2007, the TAP is comprised of two connected parts: a demonstration project platform to test new or emerging technologies and a clean technology investment fund to support technology developers.⁴ With funding of approximately three million dollars per year, the TAP represents an effort by the Ports to aid smaller firms to test and develop their products in the port environment, in order to make successful technologies more attractive to potential investors while also greening the port's operations.⁵

Noted contracting firm Parsons Brinckerhoff was retained to design a policy and implementation plan for the program, yet owing to internal staffing changes at DWP, the project was not able to move forward as intended. In June, 2010, outside consulting firm Eos Consulting was retained to supplement the project development efforts, and this author has had the privilege of working as a policy research associate for Eos since that time, providing access to key decision-makers within the DWP as well as numerous other organizations during the iLab's development.

Other Los Angeles Cleantech Initiatives

Recent years have seen much activity in cleantech development initiatives in and around Los Angeles. The siting and development of the Cleantech Corridor near downtown Los Angeles is the anchor that serves as a launching-point for much of the activity. The following is

³ San Pedro Bay Ports 2011.

⁴ San Pedro Bay Ports 2010

⁵ Ibid.

a sample of some of the primary organizations and initiatives that iLab should seek to partner with.

- **Clean Tech Corridor:** The Clean Tech Corridor is a development on the eastern end of downtown Los Angeles that brings together The Clean Tech Manufacturing Center, the Cornfields Arroyo Seco Plan, and the Clean Tech Research Center.⁶ The Clean Tech Corridor will create synergies among the innovative cleantech community with the manufacturing base that has traditionally defined Los Angeles' economic strength. Currently in development, the Clean Tech Corridor will form the basis for the eventual cleantech cluster that Los Angeles is seeking to develop.
- **CleanTech Los Angeles:** A multi-institutional collaborative organization that is aimed at coordinating efforts between regional stakeholders to establish LA as a global clean technology leader.⁷ Specific partners include: the city of Los Angeles, the Community Redevelopment Agency of the city of Los Angeles, UCLA, USC, Caltech, Jet Propulsion Laboratory (JPL), Central City Association, Los Angeles Area Chamber of Commerce, Los Angeles Business Council (LABC) and the Los Angeles County Economic Development Corporation (LAEDC).⁸ Clean Tech LA's three goals are job creation, stimulating the demand for cleantech goods and services, and facilitating environmental solutions, goals that align well with the iLab's purpose. Conversations with stakeholders indicated that CleanTech LA's primary hurdle has been a lack of resources with which to

⁶ Mayor of the City of Los Angeles 2011.

⁷ Clean Tech Los Angeles 2011.

⁸ Ibid.

pursue its mission, yet despite that fact, CleanTech LA has made some achievements in raising LA's profile.

- **CleanTech LA Business Incubator:** The Incubator is designed to support emerging cleantech companies with the express goal of creating “green-collar” jobs and economic growth in the City of Los Angeles.⁹ In addition to providing physical space for client firms to locate in, the Incubator will offer business support services, shared administrative staff, and it will operate programs and events to connect startup firms to investors and established companies.¹⁰ As we will explore later in this report, there are significant partnership opportunities between the Incubator and the iLab that the leaders of both organizations should pursue.
- **Smart Grid Demonstration Project:** Funded by a \$60M grant from the Department of Energy, the smart grid project is directed by a consortium of CleanTech LA partners, including DWP, UCLA, USC, and Caltech.¹¹ The goal of the project is to demonstrate how existing and emerging technologies can be applied to the smart grid of the future and to prove those technologies in use as they move towards commercialization. Spearheaded by Rajit Gahd of UCLA, the smart grid project could provide a useful testing platform for iLab-affiliated firms developing smart grid technologies.
- **Clean Technology Research Center:** The Research Center will serve as a space where industry, government, research institutions and investors can evaluate new technologies

⁹ CleanTech LA 2011.

¹⁰ Ibid.

¹¹ Ibid.

as they are being tested and developed to bring them to commercialization.¹² As a public facility, the Research Center will provide a physical space where researchers from the various research universities in the area will be able to pursue joint research projects, with a focus on technologies that can aid the DWP in meeting its sustainability and technology goals.¹³

The city of Los Angeles has developed or is developing many useful resources to boost the local cleantech economy, and yet the city has thus far lacked one central organizing force with the resources to push the city's agenda forward. This report argues that the Los Angeles Department of Water and Power can play a significant role in driving LA's cleantech economy, and subsequent sections of this report will outline a plan of action to that effect.

3. Potential iLab programs

Potential iLab Program Summary:

3.1 Begin by focusing on the lowest cost and highest impact programs first, to build internal and external support for later programs

3.2 Choose 3-4 programs from the lowest cost areas to focus on in the first year of the iLab

The Los Angeles Department of Water and Power faces a difficult political and fiscal environment, which will lead to greater scrutiny of new programs such as the iLab. It must be noted that there is typically a fairly steep learning curve in organizations launching new and innovative programs. Therefore, this report recommends that DWP begin with 3-4 smaller sized

¹² Ibid.

¹³ Ibid.

projects to focus on as part of the initial iLab efforts to gain experience, find champions and find partners. Then, expand to larger, more ambitious (and potentially more impactful) projects as conditions change.

Analysis of Potential iLab Programs

		Potential Impact	
		Low	High
Resource Requirements	Low	<ul style="list-style-type: none"> • Highlight programs like DWP-developed “shade balls” to prevent reservoir water evaporation • EV testing facility 	<ul style="list-style-type: none"> • Highlight internal demonstrations + innovation • Century City Green Zone • Smart Grid demo • Conferences/PR • Customer volunteer programs
	High		<ul style="list-style-type: none"> • Cleantech Investment Fund • Large scale demonstration projects

Potential first projects group in four areas:

- 5. Highlighting innovation where it already exists;**
- 6. Develop and spotlight high profile demonstrations that will spur business;**
- 7. Coordinated efforts to get the word out about the iLab programs; and**
- 8. Bundle traditional economic development tools to augment the benefits of the iLab and attract businesses to participate**

A. Highlight existing innovation

The iLab team should focus on helping develop products or technologies that **already exist at the DWP** – such as providing DWP employees with an outlet for their ideas, and highlighting

internal innovation where it's already occurring. Internal DWP interviews revealed that there are a number of potentially commercializable products developed and in use at the DWP; however there is no mechanism for bringing them to market currently. Additionally, there are no innovation incentives for DWP employees.

i. Highlight internal innovation at the DWP

The Economic Development Group should utilize the iLab's newly formed Steering Committee (see Section 7) to identify ongoing demonstration projects that EDG could use to highlight DWP's innovation, business friendliness and ability to work well with local businesses. Some examples that DWP interviewees shared include energy storage demonstration projects and the in-house creation of what are referred to as "shade balls" designed to reduce evaporation in DWP reservoirs.

ii. DWP Smart Grid Demonstration Project

Municipal utilities such as Austin Energy and the Sacramento Municipal Utility District (SMUD) have used their smart grid programs to highlight their commitment to innovation, ability to work with local business and create local jobs, as well as to portray the utility in a positive light to the local community. The DWP smart grid project is a \$120 million partnership between the Jet Propulsion Laboratory, UCLA and USC to accelerate the launching of a smart grid in Los Angeles. Such a program ought to have a higher profile locally than it does, and iLab can aid in highlighting the collaboration between the partners and the innovative work they are undertaking.

iii. EV Testing Facility

DWP has recently launched an electric vehicle (EV) testing facility. This report recommends that the DWP launch the EV Testing Facility under the iLab brand to claim it as a part of the Department's larger "innovation" or "cleantech" strategy.

B. High profile demonstrations

A key value-added measure that the iLab will provide to Los Angeles cleantech entrepreneurs is the possibility of product testing and evaluation using DWP facilities and engineering input. Conversations with key DWP managers revealed that engineers routinely work with private firms to develop products for application to the DWP grid and/or water system. That development process is on a relatively *ad hoc* basis, however, due to the lack of dedicated R&D funding for departments and general lack of appropriate infrastructure.

As previously noted, iLab projects must be well-aligned with DWP's objectives. This principle suggests that two kinds of technologies/demonstration projects will be most successful:

- Technologies that **fill a gap** for the DWP in achieving its water and power goals. These technologies will have the extra benefit of having a high chance of being purchased by the DWP if they uniquely fill a DWP need
- Demonstrations that move the DWP **towards a goal it wants to accomplish**, and that have significant outside funding potential. A good example is the \$60 million smart grid grant the DWP received from the federal Department of Energy (DOE).

i. Demonstration projects pipeline

iLab could provide a more structured approach to development and procurement of new products and technologies for use at DWP by acting as the liaison for engineers, and thus seeking potential synergies and opportunities for mutual gains between outside firms and DWP technological needs. Initially, DWP could use the Steering Committee set up to work with the Economic Development Group to bring these demonstrations to fruition. Longer term, DWP may want to consider creating a “Director of Innovation” position empowered to cross organizational silos and to support internal divisions of the Department.

ii. Century City Building Efficiency “Green Zone”

Past DWP incentives have spurred building owners in the high-rent Century City area to invest in some of the world’s most cutting edge technologies in building efficiency. The Los Angeles Business Council and the large building owners would like to begin advertising this fact. DWP could declare Century City a special “green zone” where cutting edge efficiency technologies are demonstrated, leveraging the private sector to promote a program where DWP has already made a signification investment.

iii. Cleantech Incubator

Supported by the Mayor’s Office, the DWP and the Los Angeles Community Redevelopment Agency (CRA) have partnered in the development of a cleantech incubator that will aid in the commercialization of new products in the Los Angeles area. The Incubator is scheduled to open at a temporary site in summer 2011. Immediately, DWP could make a small investment to seed the first companies coming into the Incubator. This investment would increase the quality of the

first companies entering the incubator and at the same time give DWP the opportunity to create cleantech jobs in Los Angeles.

Longer term, with the Incubator developing a network of technologists and commercialization experts, another area where the iLab and the Incubator could partner is in the evaluation, testing and development of new technologies. iLab would provide the testing and development platform for Incubator client companies, and the Incubator would provide business development guidance, leveraging each organization's strengths for maximum effect. Indeed, the potential synergies between the iLab and Incubator are clearly delineated in the Incubator Business Plan Executive Summary: "It is anticipated that client companies will be attracted if they can obtain assistance with product development and find a place and/or resources to enable the successful launch, testing and demonstration of their product."¹⁴ We recommend that the iLab and the Incubator sign a Memorandum of Understanding to catalyze these joint economic development efforts and set out a formal framework for partnership. Again, this partnership would help the Incubator attract higher quality applicants. Austin Energy has used interlocal agreements (their local version of MOUs) for such purposes to great effect.

iv. Develop a "Green Pioneer" program for residential and commercial customers

Use volunteers from the existing customer base (both residential and commercial) to test new technologies. Many DWP customers have suggested that they would be willing to demonstrate new renewable energy or resource efficiency technologies (for example, the Mar Vista Neighborhood Council has shown such interest). Private sector companies have expressed interest in testing their new technologies through such a program as well.

¹⁴ Business Cluster Development 2010.

One of the iLab's primary functions will be as a conduit of information about the cleantech market in Los Angeles, and reaching out to the extensive DWP customer base is a key to that information flow. iLab could work with Customer Services or other DWP departments to seek out volunteer customers to test out new consumer-oriented technologies in their homes and businesses and to provide testing data. The Sacramento Municipal Utility District (SMUD) employs just such a program through its Customer Advanced Technologies program, where customers agree to test new equipment in their homes for a two-year time period.¹⁵ Providing local firms the chance to test their products in such a way could provide a great competitive advantage for Los Angeles firms in the competition for venture funding and product commercialization. The Los Angeles region has many technology "early adopters" who would likely be willing to sign up for such a program, and furthermore, iLab could create a "blog" space where customers could comment online on their experiences with the products they test, thus increasing the visibility of both the product and the iLab test program itself.

On the commercial side, companies can derive great marketing gains from being perceived as "green," and thus, beta product testing could be quite successful with local firms if they are able to inform their consumer base about their efforts. A lesson learned from Austin Energy is that companies will make significant investments in green energy/technologies if they can expect to receive increased visibility from their investments. AE agreed to provide advertising for firms that signed up for their GreenChoice renewable energy purchasing program, and the iLab could potentially develop a similar program to "reward" participants in testing programs.

¹⁵ Sacramento Municipal Utility District 2011.

v. Investment Fund

In order to serve as a catalyst for local cleantech acceleration efforts, iLab will provide funding for pre-venture capital cleantech firms to test and develop their products in partnership with DWP engineers and/or customers. This gives the DWP leverage to require the firms to meet certain standards, such as locating their company headquarters in the LA area, or providing DWP with a preferred purchasing option for the firm's technology. The particular challenge of investment is in vetting products for their market potential, and it is in this area that a well-formed steering committee will play a key role.

C. Begin to get the word out

i. Public Relations/Conferences

For iLab to be successful, it must tell its story and market its uniqueness so that the thought leaders of the cleantech industry hear and repeat it. We recommend that the iLab invest significant resources (both monetary and in terms of staff time) in earned and paid media exposure, staff presentations at the major national and regional cleantech conferences, and acknowledgement of the iLab in DWP executive public appearances, where appropriate. Austin's cleantech organizations promote their initiatives in many venues, resulting in a widespread perception that Austin is the leading city in cleantech innovation nationally, giving the city a prominence in the cleantech world that belies its geographic and demographic size. While Austin has achieved much in a relatively short time (see Appendix A) the external *perception* of the city's success appears to *beget success* and opportunities for the city, and much of that perception can be traced back to Austin's aggressive outreach efforts.

ii. Quick investments in innovative partnerships

Using the criteria developed in this report, it is recommended that iLab staff scan potential partners for high impact, high visibility projects ripe for investment/participation by DWP. Partnering with a high profile organization or nearly-completed project gives DWP an opportunity to rack up some early “wins.” For example, partnering with a high-profile organization such as Cleantech Open for a Los Angeles-area event would provide a great “bang for the buck” in terms of gaining visibility and impact in the cleantech world for the iLab’s efforts. As small an investment as \$50,000 in prize money for an LA-based Cleantech Open winner could pay dividends within a year through increased visibility and media coverage of the iLab’s and DWP’s efforts. DWP should also explore possible “quick win” opportunities with local partner organizations such as CleanTechLA or the various research universities—given the demand for funding and testing in the cleantech market, there are likely to be many different opportunities. This effort could also create a prioritized list of targets for Department sponsorship dollars that have a high return to the DWP.

D. Bundle traditional economic development tools

Interviews with cleantech companies and investors suggest that while many of the iLab programs are attractive to companies, they may not always be sufficient to guide companies’ investment and growth decisions. Competition is strong with other municipalities and states. For example, while cleantech companies bringing products to market do want the ability to field-test equipment in live trials and are willing to provide value in return, a field test program alone is not sufficient for businesses to relocate to Los Angeles. For companies to relocate to Los

Angeles and grow here, DWP and the City need a more comprehensive clean-tech strategy, including incubation options, cash incentives/subsidies, field-trial facilities and preferred vendor status. Such facilities and programs are (as noted) currently in development, and yet, a recent UCLA study has shown that it is likely that Los Angeles will continue to be plagued by its perennial image as a city that is unfriendly to business.¹⁶ Procurement practices that emphasize local purchasing preferences as well as streamline bureaucratic hurdles would be particularly useful; however, current DWP processes keep many firms from participating in the RFP process.

i. Streamlining processes

A key concern expressed by a number of interviewees was that contracting with the DWP was excessively lengthy and filled with bureaucratic hurdles. Such difficulties dissuade businesses from seeking to work with DWP, particularly those who are not as established or well-capitalized. To the extent that iLab can serve as a conduit for innovative cleantech firms to do business with the DWP, we recommend that iLab seek to streamline the procurement process and advise firms on how to best work through the process efficiently.

ii. Procurement

To the extent that iLab staff can work across the different departments of the DWP to gain an understanding of the various contracting mechanisms involved in procurement, those staff can serve as internal advocates for firms that require such aid. Furthermore, as the one cleantech acceleration program with direct access to utility purchasing, iLab could play an integral role in driving demand for locally-produced cleantech products, as exemplified by Austin Energy's procurement practices (see Appendix A).

¹⁶ Bedrossian et al 2010.

4. Sector Focus

Sector Focus Summary:

4.1 Focus on energy efficiency, smart grid technologies, energy storage, clean transportation, solar and water conservation sectors for greatest effect.

Many reports have already looked at what clean technology sectors the City of Los Angeles and the DWP should focus on. Most recently, in December 2010, the CRA/LA revisited this issue as part of the business plan for the Los Angeles Clean Tech Incubator. Their report summarized:

Based upon a clean tech industry analysis contained in the business plan and a previous strategic plan, [we] recommend a special focus within the LA Clean Tech Incubator on solar, water, clean transportation and energy efficiency/smart grid technologies. In this way, the LA Clean Tech Incubator can enhance current efforts underway within the City and surrounding universities and produce more significant economic benefits. This approach can position the LA Clean Tech Incubator as the leader in the development of specific clean tech sub-sectors in Los Angeles and the surrounding region, allowing the City of Los Angeles to differentiate itself from similar clean tech initiatives in other regions throughout California and the United States.¹⁷

A lengthier discussion of recommended sectors is available in the Los Angeles Clean Tech Incubator business plan (Appendix B).

¹⁷ Business Cluster Development 2010.

5. Role of the DWP

Role of the DWP Summary:

5.1 The iLab must be well aligned with the DWP's core mission.

5.2 Strong leadership and buy-in to the iLab program from the top echelons of DWP and other organizations will be important for sustaining and enacting its initiatives.

5.3 Find champions to build organization-wide support for the iLab.

5.4 Start with small projects, and then build on successes.

The utility's impact on economic development

A region's utility can play a critical role in the development of clean technology clusters and job creation through initiatives like innovative clean energy and energy efficiency programs and large-scale demonstration projects. Utilities can also inhibit the growth of an innovation cluster with rigid rules, bureaucracy and policies that simply do not take into account the economic impact of their decisions. The potential upside to a progressive approach towards economic development is particularly true for public utilities, with Austin Energy (see Appendix A), the Tennessee Valley Authority and SMUD providing positive examples of well-crafted economic development agendas.¹⁸ At the same time, economic development programs at these utilities work best when they are well aligned with the utility's core public power mission.

¹⁸ The Tennessee Valley Authority has long invested resources in supporting local business incubators and has designed competitive electricity incentive packages for targeted businesses and industries, and SMUD offers a range of incentive programs for businesses and residents, including educational courses, financing programs for solar installations, online energy audit tools, and others.

DWP sits at a crossroads. More than any other single institution, it is the critical player in the development of a cleantech cluster in Southern California. DWP has already begun to develop a number of programs focusing on the development of clean technologies and green jobs in Los Angeles, but they have not made a true organizational commitment. Efforts have largely been uncoordinated and sometimes siloed off from those areas of the DWP where the largest synergies exist. This lack of coordination has been further exacerbated by DWP economic development initiatives that have not always focused on DWP's core water and power mission.

Innovation at DWP

Interviews uncovered real areas of innovation and progress at the DWP, from new in-house inventions (shade balls, ultraviolet water treatment), the results of successful incentive programs (energy efficiency leadership in Century City), to interesting and cutting edge demonstration projects (smart grid demo, Quallion battery storage demo) to exciting new programs (Cleantech Research Center, Main Street Smart Grid testing center, EV Testing Center) and research (dust mitigation research at the Owens Lake solar installation site with the Harvey Mudd School and USC within the Power Systems Engineering Division). These examples represent only a few of the programs that were uncovered in interviews. However, DWP has received little credit for these programs—most of these projects are little known outside the utility, and often, different divisions within the utility are unaware of potential areas for partnership across the silos within the DWP. Unifying these disparate activities under the rubric of “innovation” would allow the iLab to tell the story of DWP's innovative practices and begin to shift public perceptions of the largest municipal utility in the country.

Challenging perceptions of DWP

Interviews also uncovered a number of potentially significant challenges for the DWP when developing innovative programs, including the iLab. DWP's reputation among business leaders, contractors and entrepreneurs (and even internally within the DWP) is currently not good. Even internal interviews reveal that many innovative projects at the DWP succeeded despite many internal barriers. Interviewees typically focused on 3 areas:

- 1. Lack of innovation:** Despite examples of innovation and experimentation that were uncovered during the interviews, there is a perception by outsiders that DWP is a conservative organization that stifles innovation. The public is usually unaware of the innovative projects (e.g., even the \$120M smart grid demonstration project is relatively unknown).
- 2. Too much red tape:** Both internally and externally, there is a perception that working with the DWP involves too much red tape and is “not worth the trouble.” There is a perception that this is particularly true for any program that is new or innovative.
- 3. Lack of commitment:** There is a perception that DWP frequently rolls out programs only to cancel or alter them significantly after companies and other stakeholders have already invested in participating (e.g., DWP's rolling solar RFP).

Interviews also revealed that the large organizational silos within the DWP frequently limited the potential of programs. Economic development programs were often not coordinated with the efforts of other departments within the DWP. Equally, large programs from other departments would very infrequently consider the potential local economic impact of their decisions. It is

also often difficult to find internal experts on particular issues or topics relating to economic development.¹⁹ Sometimes those subject experts do not exist at DWP. When they do, they are also distributed haphazardly across the utility, and must prioritize the needs of the department that they work in. There is no entity specifically seeking out synergies between departmental projects and working to make connections between relevant projects and actors within the DWP; iLab should fill that role.

Aligning the iLab with the DWP's core mission

The most successful utility-affiliated economic development programs that we explored, including Austin Energy's initiatives, were well aligned with their utility's priorities. For example, in Austin, all of Austin Energy's initiatives relate to their core mission of providing affordable and cheap power and developing the economy of Austin: a clean energy incubator, promotion of cleantech efforts, etc. AE has done a good job of leveraging existing efforts at the utility, particularly their renewable and energy efficiency goals, in order to promote economic development.

Similarly, in Los Angeles the DWP's core mission is providing Los Angeles with the cleanest, lowest cost and most reliable water and power possible. This means that the iLab:

¹⁹ It is the view of some interviewees is that DWP does not have the expertise to conduct a pilot testing program because many of its senior engineers have retired recently and DWP has historically relied on outside consultants to vet new technologies. However, DWP does have some limited experience with technology demonstration and testing. For example, the DWP does operate a testing lab at their Main Street Facility. Typically, the DWP will test equipment (transformers, meters, relays, etc.) to ensure that it meets the performance specifications reported by the manufacturer. This testing is usually reserved for products after the RFP has been awarded.

- In order to be successful, the program must be structured so that it **solves people's problems** at DWP, and does not add to staff responsibilities without a payback of either greater convenience or efficiency.
- Should focus on solving difficulties or filling technology gaps that help DWP achieve its renewable energy, water and resource conservation goals.
- Will require significant buy-in and participation by key stakeholders in Power, Water and Joint Systems, as well as Environment, in order to identify the greatest areas of need.
- Should also seek to highlight innovation and impactful projects already underway, as well as existing incentive programs.

Developing internal champions

In many cleantech acceleration programs this project investigated, those organizations jump-started innovative initiatives by identifying individuals or groups who were most receptive to or ideally placed to catalyze change. For example, Austin Energy created a position entitled the “Program Manager for Innovation and Opportunity Development;” a position specifically created to cross departmental silos and create partnerships across the organization.²⁰ This cross-organizational perspective allowed Kurt Stogdill, the person hired for the position, to formulate and launch initiatives in ways that built broad internal constituencies for the new programs.

The iLab too must cross silos to succeed. Based on internal interviews and a review of other utilities, we believe that DWP is most likely to find these champions in the following departments: energy efficiency, water efficiency, smart grid, engineering and public affairs.

²⁰ Stogdill 2011.

Interviewees indicated that departments with a mandate to look outwards for solutions (or that are outward-facing, in terms of public affairs) will tend to have an organizational perspective that is accepting of new and innovative ideas or products. iLab staff must establish strong rapport with the key employees in these departments in order to build successful and sustainable programs.

Start by funding smaller, but strategically-chosen programs

Initially, any program will likely face challenges getting internal buy in, finding internal funding at anticipated levels, or attracting sufficient outside funding. Based on internal interviews, as well as a review of the current political and fiscal environment, we would recommend choosing 3-4 smaller sized projects to focus on as part of the initial iLab efforts, with the program to then grow to begin the larger projects initially envisioned when ready. This approach will allow DWP and its partners to make the inevitable mistakes and to learn from them in a relatively low-stakes environment, as well as identifying the right internal champions and “pressure points” within the DWP organization. See Section 3 above for recommendations on which programs to start the iLab with.

6. Partnerships

Partnerships Summary:

6.1 Leverage outside partners for funding, expertise and other resources.

6.2 As much as possible, leverage outside partners to help manage iLab programs.

6.3 DWP needs to develop expertise in securing federal funds.

Stretch DWP resources by leveraging partners

DWP already has relationships with many key players in the Los Angeles area, and there are many organizations that would be willing to partner with DWP for the right kind of programs. The iLab should seek to leverage the resources, reputation, marketing and expertise of partners whenever possible. iLab's philosophy ought to be: If someone else can do it better, use them. Some areas in particular that DWP should consider developing partnerships include:

- **Financial resources:** Wherever possible, DWP should seek to leverage its investment in innovative programs with funds from other governmental sources, nonprofits and the private sector.
- **Reputation:** To respond to the negative perceptions of DWP that were uncovered in our interviews, DWP should seek to partner with select organizations that could enhance DWP's credibility with important stakeholders.
- **Marketing/Outreach:** Los Angeles is the media capital of the world, yet DWP has not sought to engage partners who could help it tell a positive story about DWP's contribution to innovation and job creation in Los Angeles. DWP should seek partners who can help do that.
- **Expertise:** While strong in many areas, there will be areas where DWP does not have expertise (e.g., to conduct due diligence evaluations of companies participating in iLab programs). DWP should seek partners who can complement DWP's strengths.

Leverage outside management

Many successful programs we analyzed were initiated by government agencies or utilities, which then spun those programs out to be managed by affiliated, but outside organizations. Some successful programs that used this model to help develop clusters of clean technology companies included Austin Energy (see Appendix A for examples), San Jose Environmental Business Cluster, the New York City Accelerator for a Clean & Renewable Economy (NYC-ACRE) incubator and the Ohio Gateway Fund. Many people involved in Austin Energy's projects referred to this model as **“fund, don't run.”** This report recommends that DWP use this model as much as possible for its iLab projects. This does not mean that DWP should not be involved in management, but it should resist the urge to tightly control projects where it is providing funding.

One cautionary tale comes from the Port of Los Angeles, who set up a \$15M Technology Advancement Project fund to invest in clean technology demonstrations. The Port chose to manage the program entirely internally. While the program has received overall positive press, individuals involved with the program report that the Port spent increasingly more resources managing TAP (including 3 full time staff members) and had a difficult time vetting the large number of companies who applied for Port funding for their technologies.

Recommended partnerships

DWP already has begun to establish good partnerships with relevant stakeholders in the Los Angeles area. DWP should specifically seek to leverage:

A. Clean Tech LA:

DWP was a founding member of Clean Tech LA, along with Caltech/JPL, UCLA, USC, the Mayor's Office, CRA/LA, the LA-Area Chamber of Commerce, LA Business Council and the LA Economic Development Corporation. DWP can use its leadership role at Clean Tech LA to access resources that it otherwise would not have access to (e.g., the DWP's \$120M smart grid demo with Caltech, UCLA and USC was an outgrowth of the Clean Tech LA partnership). Other regions have taken advantage of these kinds of partnerships to build their clean energy economy. For example, Austin's Clean Energy Incubator is highly integrated with the University of Texas system, to the extent that the Incubator is physically headquartered in UT buildings, providing both parties with more resources than they would have otherwise. These two organizations also work side by side with the Austin Chamber of Commerce on economic development initiatives of mutual interest.

B. City of Los Angeles Cleantech Efforts:

The City, partnered with the DWP, has already launched a number of initiatives aimed at positioning Los Angeles as a capital of clean technology. Many of the interviewees pointed out that the chances of success will be increased if the iLab is partnered with other cleantech efforts at DWP, specifically the **smart grid demonstration project** and the **cleantech incubator**, and other City efforts, for example, the **Cleantech Corridor** and **Port Technology Fund**).

C. Other government agencies:

DWP traditionally has not focused on finding funding opportunities from federal, state and local agencies, yet there are significant potential funding opportunities to be had (as the DOE smart grid grant shows). **DWP needs more expertise in finding the funding opportunities,**

writing the grant applications, and supervising the grants. Specific agencies that DWP should focus on include the US Department of Energy, US Department of Commerce, the California Energy Commission and the Southern California Air Quality Management District. Some examples of programs that did this well include the (now-defunct) SMUD ReGen program and the recently-expanded Nevada Institute for Renewable Energy Commercialization (NIREC), both of which were funded extensively with DOE and State grants.

Target organizations: US Department of Energy, US Department of Commerce, the California Energy Commission, Metropolitan Water District and the Southern California Air Quality Management District.

D. Universities & research labs:

Successful cluster development requires a steady influx of new and groundbreaking ideas as well as talented individuals with the abilities to bring those ideas to fruition. While there are numerous funding mechanisms at the federal and state level to nurture early-stage research and development of products coming out of universities, there are fewer processes in place to test pre-venture capital products and bring them to commercialization. By partnering with the major research universities in the area, including UCLA, USC and Caltech, and establishing relationships with the key cleantech-oriented institutions at those universities, the iLab can have direct access to the innovative research being conducted. Furthermore, the universities can provide business or engineering students to work in the iLab as interns, offering cheap and well-trained labor to add capacity to the iLab while training the next generation of professionals. Austin's Clean Energy Incubator and Pecan Street Project maintain strong connections to researchers at the University of Texas, and both organizations also utilize graduate-level interns

from UT, showing that such relationships between universities and cleantech organizations can be quite fruitful.

Target organizations: Caltech, JPL, Lawrence Berkeley National Lab, UCLA Luskin Center for Innovation, UCLA Office of the Vice Chancellor of Research, USC Stevens Institute for Innovation, and the USC Energy Institute.

E. Foundations & Nonprofits:

Foundations and nonprofits are useful avenues for finding additional funding for specific projects or leveraging the reputation of the organization to promote DWP initiatives. For example, Austin's Pecan Street Smart Grid Project recently received a \$350,000 grant from the Doris Duke Charitable Foundation after winning one of nine grants in a competitive process.²¹ Similarly, many nonprofits offer opportunities for effective partnerships, from environmental organizations like Green LA, who can lend their legitimacy to iLab, to the Cleantech Open, where a strategic partnership could leverage Cleantech Open's selection process and marketing for DWP at a relatively minimal cost. Partnerships with conferences (e.g., Opportunity Green, VerdeXchange) with prominent speaking opportunities for iLab and DWP officials would give DWP the opportunity to present its innovation story to targeted audiences of thought leaders.

Target organizations: Cleantech Open, Green LA, Opportunity Green (others to be determined).

F. Private Sector and Business Organizations:

Private sector firms and business organization such as the LA Chamber of Commerce and the LA Business Council can provide crucial support for DWP economic initiatives in the

²¹ Pecan Street Project 2010.

business community. These organizations are also a conduit for funding and expertise. For example, DWP will need help in evaluating companies that it will work with, including commercializing and vetting technologies and evaluating firm management. There are business organizations and private sector companies who would be willing to play this role. Good examples of this dynamic in other regions include Austin Energy's Pecan Street Project (which partnered with Intel and other private-sector firms to determine its strategic focus) and the Environmental Business Cluster in San Jose, which has many interested firm managers on its board.

Target organizations: LA Chamber of Commerce, LA Business Council, LA Economic Development Corporation, Valley Economic Alliance, Investors Circle.

7. Organizational Structure

Organizational Structure Summary:

7.1 DWP should set up a Steering Committee for iLab programs that includes both internal and external groups

7.2 iLab's Steering Committee should develop a set of guiding principles for all iLab programs

Getting buy in internally and externally

The organizational structure of iLab will largely depend on which programs DWP chooses to focus on first. As a priority, however, it is important that the DWP establish a formal Steering Committee for the iLab. A Steering Committee offers the opportunity to give key

players from other departments within the DWP as well as from the business, political, and academic communities of Los Angeles a stake in the iLab’s success. Building a network of prominent “boosters” will aid the iLab and its projects to gain traction within the business community and will show ratepayers that DWP is investing in expanding job creation, innovation and sustainability in Los Angeles. To that extent, DWP should invite participation and governance support from some of the organizations it would like to partner with, particularly in the business and research communities.

Furthermore, iLab’s Steering Committee should include leaders from different parts of the utility, not just Economic Development, so that others have buy-in. Internal DWP interviews with managers showed that a program that is seen as collaborative in nature with other divisions will be most well-received within the DWP community. DWP’s “core” departments of Power, Water, Joint Systems and Environment must all be involved in the iLab.

Developing guiding principles

The Steering Committee should develop a core set of guiding principles for the entire project of the iLab.²² Some principles that have been suggested include:

²² Austin’s Pecan Street Project presents a good set of guiding principles:

- 1. Environmental Protection.** Environmental benefits are a core goal – not incidental benefit – of the system we will develop.
- 2. Replicability.** The organization is committed to developing replicable delivery, economic and pricing models and to freely sharing these with stakeholders across the country.
- 3. Economic Development.** Pecan Street Project Inc.’s research targets solutions that bolster economic development and capitalize on local and domestic energy, technology and research expertise.
- 4. Economic Feasibility.** Our work must make economic sense. That means we must keep in mind the economic realities that utilities and private sector companies face, as well as the financial impacts that changes to the energy system will have on customers.
- 5. Interdependency of Renewable Energy and Efficiency.** An advanced energy system must rely more heavily on energy efficiency and locally generated renewable energy, and the two are heavily reliant on the success of each other.

- Programs must have a fast, simple and transparent process.
- Programs must have a strong value proposition (time, money, expertise).
- Where possible, programs should partner with existing and emerging local, state and federal programs.
- The iLab should be an "engineer-led" program - engineers from DWP should have buy-in to the products as they are being demonstrated and developed.
- Always look to leverage external partners before spending dedicated internal resources.

Design principles

Any process associated with the iLab should be **quick, easy and transparent**, with the ratepayers' best interests in mind. Interviews with private firms and investors showed that the best way for DWP to overcome the negative images of its bureaucracy and red tape is to ensure that business processes be as transparent and apolitical as possible.

Many of the interviewees also suggested that to overcome DWP's reputation for inconsistent programs, iLab needs to be able to **signal to the market** and the participants that it is a stable program with a **long-term focus**; perhaps one way to achieve this goal is to implement multi-year budget cycles for iLab.

To be successful, the iLab will have to find a way to cut red tape, i.e. seeking to streamline the contracting process; perhaps this focus takes the form of acting as a "case

6. Scope of Community Integration. The organization's efforts will create replicable models that go beyond the scope of the electric utility – into water management, public policy, regional economic development and other community interests that contribute to a dynamic energy sector.

7. Collaborative Process. This is not a utility-driven organization. Rather, it is a true collaboration that draws on the interests and expertise of the many stakeholders and experts that will be affected by and make possible the kinds of modifications that will be required.

manager” for client firms as they work through the DWP contracting process. Internal DWP interviews, as well as interviews with organizations who work closely with the DWP, revealed that business’ perceptions of DWP are not good, and a primary concern is excessive bureaucracy and paperwork.

8. Outreach, Marketing and Public Relations

Outreach, Marketing and Public Relations Summary:

8.1 Position iLab as a brand, rather than a particular program which will allow it to change as we learn.

8.2 Be prepared to spend a significant portion of the iLab budget on outreach and marketing efforts to ensure that the goals of the iLab are achieved.

8.3 Bring in a marketing professional to advise on DWP’s outreach strategy.

8.4 Use conferences, panels and white papers as an opportunity to showcase the DWP’s successes and begin to shift opinion.

Successful programs have a strong and sophisticated outreach and communications strategy. This outward-facing strategy is important both to attract the most desirable participants and partners as well as to promote the progress of the program to relevant stakeholders and DWP customers. Outreach and marketing is particularly important in an organization like the DWP, where there are many examples of internal innovation that have gone unrecognized outside the DWP (and often even inside!). A coordinated and strategic outreach plan is necessary for iLab.

For example, Austin Energy has made significant investments in targeted outreach and marketing campaigns such as Opportunity Austin (\$350,000/yr.) and the Austin Clean Ventures Summit (\$90,000/yr.). Despite the somewhat tenuous link to Austin Energy’s core mission, the result of these outreach efforts has been increased job creation, national recognition, global “buzz” around Austin cleantech efforts, closer relations with the business community and improved community relations (see Appendix A).

“Branding” iLab

As noted above, there is a significant amount of innovation already occurring within the DWP, yet there is currently no mechanism for sharing information about that innovation either within DWP or with the larger community. The iLab could serve as a unifying brand under which the various and disparate innovation activities that are underway at DWP would be promoted and information from those projects shared with the rest of the utility and the outside world. In this way, iLab could quickly establish a name for itself as a new program within DWP’s roster of cleantech and economic development-oriented initiatives, and one that is geared towards helping the DWP to more efficiently and sustainably enact its core mission.

What Outreach Would Look Like

The iLab outreach strategy would need to be multifaceted:

- i. iLab will need to create a **unique web identity** and utilize social media in order to get its message out. A strong web presence is integral to an organization’s launch, particularly for one that is innovation-oriented, as witnessed by the websites for NYC-ACRE and the Austin Energy Pecan Street Project.

- ii. Development of collateral materials.
- iii. Use conferences, seminars and white papers as a way to educate and begin to shift public opinion about the DWP.
- iv. DWP needs to target its outreach more strategically than it has in the past, pursue “earned media” in the blogs, newsletters, trade publications, panels, white papers, and conferences that DWP’s target audiences (e.g., business community, neighborhood councils) consume. Eventually, this wealth of smaller stories percolates up into more mainstream stories and opinion about the DWP.
- v. Hold meetings with individuals and groups important to iLab programs to inform them of the iLab’s purpose and goals.

10. Conclusion

The Los Angeles Clean Innovation Lab, or iLab, represents a significant departure from the traditional business model of the Los Angeles Department of Water and Power. The iLab program is an acknowledgement that, in order for Los Angeles to compete in clean technology, the next great growth industry for the foreseeable future, policies must be aligned and taxpayer dollars must be invested wisely and for the greatest economic returns locally. While there are some risks to a municipal utility embarking on such a new course of economic development, in reality, a municipal utility is the only entity that has the correct combination of incentives and resources to be able to make such investments for the public’s benefit.

With so many pieces of the cleantech economic development puzzle falling into place in Los Angeles, it would appear that the city is primed for rapid future growth. The iLab program,

if enacted correctly, can help ensure that the DWP, the largest municipal utility in the nation, is providing institutional and financial support to catalyze the growth of innovative and sustainable new industries in Los Angeles. By acting in concert with, and indeed, coordinating the actions of other organizations in Los Angeles, the iLab help bring jobs and investment back to the city, while contributing to a cleaner future for our planet.

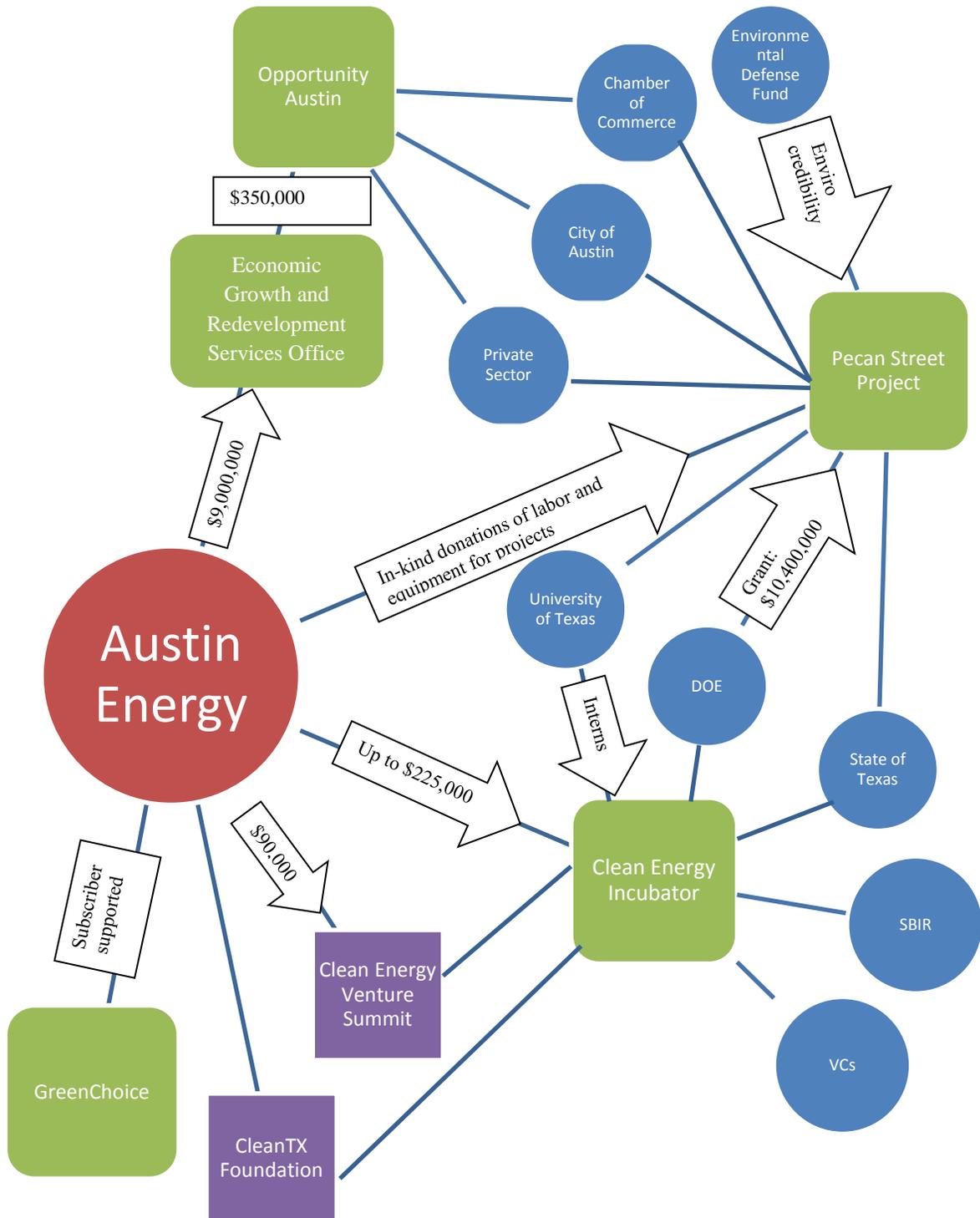
11. Appendix A: Austin, Texas: A Case Study in Cleantech Development

Introduction

Austin has emerged as a cleantech dynamo over the last ten years²³. Partnerships across organizations have led to the creation of innovative programs such as GreenChoice, the Pecan Street Project, the Austin Clean Energy Incubator and the Opportunity Austin initiative. The city's success hasn't been an accident. Austin's "whole of city" approach to economic development and innovation acceleration is supported by a web of partners, including the Chamber of Commerce, the University of Texas, the city of Austin, the state, the US Department of Energy and a host of private sector players. Running through the center of all of these innovative efforts is Austin Energy; Austin's municipally owned electric utility. This report seeks to understand Austin Energy's role and how the utility has leveraged its local partners, as well as what lessons Austin's experience can offer the LADWP and its local partners in the Los Angeles area.

²³ SustainLane, an internet and media company focused on green journalism, ranked Austin as the #1 market for cleantech incubation clusters in 2008 (Karlenzig 2008).

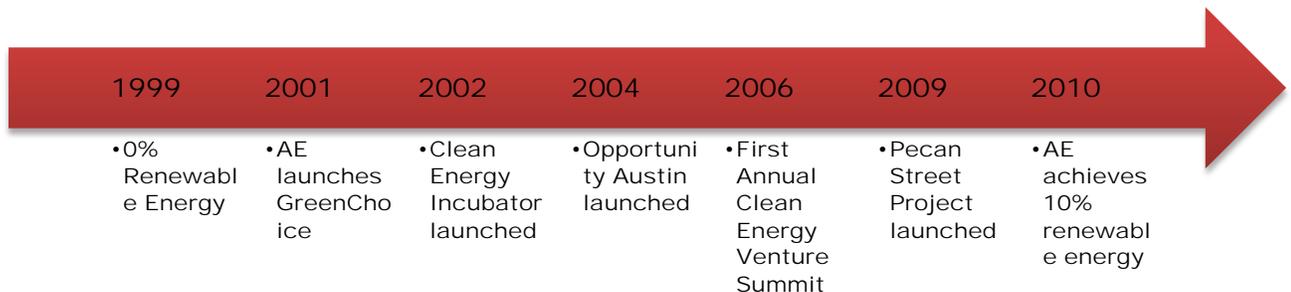
Figure A: Austin Energy-Supported Economic Development Efforts



Austin Energy

Serving 400,000 ratepayers and 1,000,000 people in the Austin region and with \$1.3 billion in yearly revenues, Austin Energy (AE) provides nearly 3,000 megawatts (MW) of diversified energy to Central Texas customers.²⁴ Starting in 2001, Austin Energy began making a strong investment in renewable energy and cleantech initiatives. Coupled with increased outreach to and partnership with the business community, Austin Energy began to rehabilitate its public image from that of a conservative utility to one that was more progressively-minded and responsive to its customers' needs.

Figure B: Timeline of Austin Clean Energy Milestones



The move towards clean energy

AE's signature renewable energy program, GreenChoice, is a program where ratepayers subscribe to a fixed pricing package to, in effect, subsidize renewable power purchase agreements for the utility.²⁵ By customers agreeing to pay higher fixed rates, the utility can purchase more power from green sources, and with an increased subscriber base, AE can

²⁴ Austin Energy 2010.

²⁵ Austin Energy 2011.

increase the portion of its energy mix that is renewable. First opened for subscriptions in 2001, GreenChoice has been the country's most-subscribed voluntary renewable energy purchase program for the past eight years, a fact that has garnered significant attention in the media and among the power sector.²⁶

Partnerships

Interviews with Austin Energy officials revealed that, beyond simply increased marketing, Opportunity Austin offers a framework for longer-term partnerships between regional businesses, government, and non-profit organizations. One particular method for enhancing partnerships between organizations is through interlocal agreements, which facilitate separate government entities working together towards common objectives. For example, Austin Energy signed interlocal agreements with both the University of Texas and the ATI Clean Energy Incubator so the utility could coordinate efforts with the two organizations.

“Fund, don't run”

AE's approach to the interlocal agreements as well as to other partnerships it has entered into is characterized by key decisionmakers as “fund, don't run,” with an emphasis on projects being led from outside of the utility itself, and the utility providing funding and support only. While such an approach reduces the utility's direct control over programming decisions, it also allows the contract organization to operate with its professional focus intact, and without getting bogged down in the internal politics and bureaucracy of the utility. Ultimately, program costs to the utility are lower as well, as building the necessary capacity in-house would require either

²⁶ Ibid.

hiring additional employees or transferring employees from other departments, both propositions that could increase costs.

While building capacity outside of the utility does grant the outside organization some autonomy, this arrangement does not mean that Austin Energy is not involved. On the contrary, Austin Energy executives and program managers play a major role in the development and governance of the programs they fund. At the same time, the physical and bureaucratic distance from the utility provides the outside organizations with the ability to claim independence from AE in representing themselves to the world, while AE is able to leverage its financial resources to achieve its broader goals at minimal costs.

Economic development at Austin Energy

As a key participant in the Opportunity Austin initiative, Austin Energy had a chance to significantly alter its relationship with the local business community in helping to lead the city's efforts at economic recovery following the high technology recession that marked the early 2000s. While AE has economic development as part of its charter, there is no specific budget earmarked for ED efforts, and so prior ED work through the utility has been targeted towards providing reduced- rate energy incentives to local firms for both attraction and retention purposes.²⁷ With the advent of Opportunity Austin, Austin Energy was provided with the institutional mechanism to pursue more proactive economic development policies in concert with other government agencies. As a result, Austin Energy's reputation within the local business community has been enhanced, and the utility's active promotion of innovation seen as a key driver of economic development in the Greater Austin area.

²⁷ Rivera 2000.

Opportunity Austin

In order to properly assess the various programmatic elements that define Austin’s “whole of city” efforts towards cleantech and economic development, it is most instructive to investigate the city’s efforts in a comprehensive fashion. With vigorous leadership from the Austin Chamber of Commerce, seed funding from Austin Energy, and supported by regional business, government, and academic partners, Opportunity Austin was launched in 2004, a five-year regional economic development strategy that was funded by \$14.4 million raised from the region’s business community.²⁸ Opportunity Austin identified a five-part strategy for its initial five-year plan:

- targeted **business recruitment**;
- **promotion** of existing businesses;
- stimulation of nascent **technology startup** companies;
- effective **marketing** of Austin;
- and improving quality of life through **education, transportation and sustainability** enhancements.²⁹

As of 2009, regional employment growth was reported to exceed Opportunity Austin’s initial targets, with an estimated 123,400 jobs created and \$5.6 billion added to the regional payroll, surpassing its self-identified goals by 171% and 193%, respectively.³⁰

²⁸ Austin Chamber of Commerce 2008.

²⁹ Austin Chamber of Commerce 2005.

³⁰ Austin Chamber of Commerce 2008.

Figure C: Opportunity Austin Statistics



Austin Energy was the first major investor in Opportunity Austin, giving \$350,000 per year. As a condition of that contribution, Austin Energy required that a substantial portion of the marketing budget be spent on promoting Austin as a destination for cleantech firms to locate. Widespread media coverage of Austin’s various cleantech initiatives has resulted, with stories relating to AE’s green energy programs, the Pecan Street Project, and the Clean Energy Incubator appearing in national media outlets and creating a virtuous cycle of positive reinforcement for Austin’s business environment (Please see Appendix A for sample articles). While Opportunity Austin was launched with a focus on promoting other sectors of the Austin economy, clean energy has grown in stature within the program to now be a leading area of focus.

Economic Growth and Redevelopment Services Office

The Economic Growth and Redevelopment Services Office (EGRSO) is Austin's primary economic development office, which works in close concert with other Austin organizations in business attraction and retention efforts. Austin Energy provides \$9 million of funding per year to the EGRSO, with \$350,000 earmarked for Opportunity Austin's cleantech target marketing, making AE by far EGRSO's largest funding source.³¹ EGRSO works with AE and other City agencies to design incentive packages for firms seeking to move or expand their operations, an arrangement that is aided by AE's status as a municipal utility, with the attendant opportunities to link tax incentives with energy incentives.

University of Texas at Austin

The University of Texas (UT) has played a key role in the development of Austin as a clean technology hub. The University provides office space, professors to serve in various advisory capacities, and interns to staff the various organizations around Austin, as well as the institutional capacity a major research university provides. Furthermore, UT has acted as a home to many of Austin's cleantech efforts, co-locating the Pecan Street Project, the Clean Energy Incubator, and the Clean Technologies and Sustainable Industries Organization in UT facilities.

Due to the inter-relating missions of all of these organizations, their physical co-location has created a "cluster effect" in miniature, with participating companies gaining further insights and capacities through learning from one another's experiences. As well, the internship opportunities provided by the Incubator and PSP offer students (primarily graduate-level) the chance to work with cutting-edge firms and gain exposure to the cleantech sector, while the organizations get access to cheap, high-skill labor.

³¹ Vice 2011.

ATI Clean Energy Incubator

In 1989 the Austin Technology Incubator (ATI), was founded at the University of Texas, focusing on bioscience, information technology, and wireless technology.³² In 2002, with funding from the Texas State Energy Conservation Office and the Department of Energy, ATI spun off the Clean Energy Incubator to focus on developing a cluster of cleantech companies in the Austin region. In 2006, the City of Austin and Austin Energy partnered to provide funding to the CEI to both expand its operations and to host an annual Clean Energy Venture Summit.³³

The interlocal agreement between Austin Energy and the Clean Energy Incubator has three parts: 1) AE provides \$100,000 per year for infrastructure support, primarily staff salaries and travel funding; 2) AE provides approximately \$60,000 per year for the Clean Energy Venture Summit; 3) finally, AE provides up to \$30,000 of seed money per incubated company, with companies to remain in the incubator no longer than two years. An additional feature of the interlocal agreement is that Austin Energy will test CEI firms' new technologies on the grid, and this past year those beta testing costs totaled about \$75,000. The total of all of these Austin Energy expenditures is generally around \$325,000 per year. The express goal of the interlocal agreement is that the CEI will use the funding to the organizations' (and the city of Austin's) mutual gain.³⁴ Under a separate interlocal agreement with the University of Texas (UT), the seed money is sent directly to the university, where the Incubator is located, which then distributes the money to client incubator firms as needed.

The Clean Energy Venture Summit (CEVS) is Austin's premier cleantech-related event, in operation annually since 2006. The Incubator coordinates the CEVS, which has generally had about 400 people attend year-to-year. Austin contacts noted that the attendees were still largely

³² Austin Technology Incubator 2011.

³³ Ibid.

³⁴ Stogdill 2011.

locally-based, however interest in the CEVS has picked up so that a significant number of attendees come from out of state and overseas. About 15-20 companies pitch investors as part of the CEVS, and in preparation for those pitches, AE and the Incubator vet the applicant firms as well as provide coaching. The range of companies presenting run the gamut from early-stage firms seeking angel funding, to later-stage venture capital-targeted firms. Austin Energy sees its investment in the Venture Summit as a way of reinvesting in local economic development as well as giving the utility first access to cutting-edge technology, as well as the right to negotiate future benefits with the firms, as noted above.

Pecan Street Project

Founded in 2009, the Pecan Street Project (PSP) is an innovative smart grid and economic development demonstration project that brings together Austin Energy, government agencies, private firms, research institutions and environmental organizations.³⁵ Phase 1 of the PSP was a collaborative process across business, government and citizens to envision a new model of economic development based on the smart grid, distributed generation, and energy efficiency. The goal of Phase 1 was to determine how to help build local companies to develop technologies for the smart grid; to develop a framework for integrating local innovation in “reinventing” the energy system and the economic model of utilities.³⁶

With the passage of the American Recovery and Reinvestment Act (ARRA) stimulus bill in early 2009, however, the PSP quickly shifted its efforts towards securing funds to implement a pilot/demonstration smart grid project at Austin’s Mueller community,³⁷ and those efforts netted a \$10.4 million DOE grant. Austin Energy provided a matching \$10.4 million in-kind donation

³⁵ Pecan Street Project Inc. 2010.

³⁶ Ibid.

³⁷ Ibid.

of services and equipment, as required under the ARRA guidelines. That funding was put to use in hiring former City Councilman Brewster McCracken as Executive Director as well as 7 staff.³⁸ Phase 1 of the PSP initiative culminated in the March 2010 report of recommendations detailing the findings of the initial research and the “roadmap” for the PSP, and according to interviews, the PSP is currently assembling its partnerships for Phase 2, where the recommendations are to be carried out.

CleanTX Foundation

The Incubator and AE also worked together with other partner organizations to form the CleanTX Foundation, a cleantech educational and networking group setup to facilitate the face-to-face interactions and learning that are essential to successful startup companies.³⁹ CleanTX offers monthly networking events sponsored and underwritten by local law firms and other businesses that have an interest in expanding the cleantech market in Austin, thus keeping program costs low, and it receives an additional \$25,000 per year from Austin Energy. Furthermore, CleanTX is also responsible for promoting Austin and Central Texas as a cleantech and renewable energy hub through a large annual conference and quarterly Solar Energy Entrepreneurs Networking (SEEN) events, thus serving the function of boosting Austin’s image on a regular basis.⁴⁰

Partnering To Achieve Common Goals

³⁸ Ibid.

³⁹ CleanTX Foundation 2009.

⁴⁰ Ibid.

With the Austin cleantech and economic development landscape now established, let us turn to mapping out the ways in which these organizations interact and pursue common initiatives.

Finding Champions, Working Across Silos

Austin Energy interviewees noted that, in order to cultivate innovation from within a large and conservative organization, it is essential to find those individuals and departments that are most naturally inclined towards creating innovative solutions. In AE's case, this meant working with the engineers within the Energy Efficiency department as well as the public-facing individuals within the Marketing and Advertising and Key Accounts departments. Energy Efficiency was a natural fit for playing a leading role in this effort, as the department had led demonstration projects of new products in order to meet internal needs, and thus the staff were used to developing and integrating new technologies into their operations. Marketing and Advertising, on the other hand, offered the prospect of telling a compelling story of green innovation at AE, and broadcasting that story across multiple media channels. The marketing and advertising efforts not only informed AE ratepayers of the utility's efforts to "green" their operations, but also inculcated an image of AE as being a key player in regional economic development and building a cleantech innovation cluster.

An example of Austin Energy's unconventional thinking was evidenced in the utility's efforts to sell its larger customers on the GreenChoice purchased power agreements. Because the GreenChoice subscriptions were sold at higher-than market rates (although increased natural gas costs reversed this situation in the early GreenChoice batches) firms often balked at the higher prices. AE devised a package deal to provide its larger customers who purchased at least

10% of their power from GreenChoice with advertising showing the firms' green credentials to the public. Furthermore, AE worked with larger firms to attain (or retain) their place at or near the top of the Department of Energy's "Green Power Partners" list of "green" companies for their particular sector, thereby further enhancing the firms' marketing abilities. Through working together across the silos of the utility, Austin Energy was able to sell more renewable energy through the strategic use of the Key Accounts and Marketing departments' skills and ingenuity.

Partnerships

The responsibility for building and maintaining these partnerships across multiple organizations and across the silos of a municipal utility falls to Kurt Stogdill, who until a reorganization of the utility in March 2011 served as the Program Manager for Innovation and Opportunity Development. Stogdill described his work within AE as having "ongoing conversations" with the innovators within the utility to ensure that their needs are being met, and treating them as the clients, rather than the private market.⁴¹ When a department identifies possible efficiencies or enhanced capabilities that could be gained if a certain technology were developed, Stogdill will seek to match a company that supplies the needed technology with the department in question. These connections are often directed through the ATI Clean Energy Incubator, in order to not only boost the firm's chances of commercial success, but also as a way of providing access to AE's test bed program for nascent companies.⁴² These efforts create a "pull" for technology development that is driven by the Austin Energy engineers; a pull that

⁴¹ Stogdill 2011.

⁴² Austin Technology Incubator n.d.

ensures that utility procurement funding is spent to reinvest in local economic development as much as possible.

Stogdill noted that Austin Energy does not have any dedicated testing funds in its budget, so it is necessary to find internal champions who are both willing to devote resources to the testing and can see the value in such efforts for their own purposes. These internal champions are key for creating a sustainable pull for technology development, and thus will keep the local economic and cleantech development process moving forward. Testing and piloting costs to the utility are very low, according to Stogdill. Once the testing setup has been agreed upon, there is a clearly-defined “hand-off point” where Stogdill and his team pass the project off to be led by the AE staff and the testing firm.

There is flexibility in the way the agreements are structured with each company, to better fit each individual firm’s needs. For example, certain firms have required no seed money at all, and were satisfied with having the opportunity to test their products with AE, while another has accepted the \$30,000 funding with the agreement that the company will pay the money back when it is reasonably profitable. Thus, AE leverages its connections with partner organizations in order to reduce the budgetary constraints and the staff time necessary to achieve its goals.

One particular success story of note is Ideal Power Converters (IPC), which has developed a new power inverter design for use in clean energy and smart- and microgrid technologies. Kurt Stogdill helped to foster the relationship between Austin Energy and IPC, and IPC in 2008 joined the Clean Energy Incubator as a member company.⁴³ Stogdill aided in connecting IPC with the Austin Energy Energy Efficiency and Solar Power groups, where he “handed off” IPC for testing purposes. Starting in 2010, IPC began to pilot its technologies on the Austin Convention Center and a water treatment plant, and signed a technology licensing

⁴³ Ideal Power Converters 2011.

agreement with Lockheed Martin to use IPC's technologies in defense applications.⁴⁴ IPC appears to be poised for rapid growth in the future, and its success showcases the possibilities of coordinated action between the various Austin clean tech organizations.

Building Capacity outside the Utility

Many interviewees pointed out that the institutional culture of a utility is not well-suited to fast-moving, entrepreneurial organizations, particularly when the innovations at hand could disrupt the utilities business model (for example, distributed solar power generation.) Of particular note on this topic, Brewster McCracken of the Pecan Street Project observed that “the closer a program is to the utility, the more likely it is to be killed,”⁴⁵ a wry commentary on the structural barriers to innovation at a utility.

The operative concepts of collaboration across organizations and “fund, don't run” have shown up in multiple forms in the foregoing review of Austin's various clean energy promoting organizations. Austin Energy was a key partner in expanding the reach of the Clean Energy Incubator and helped to institute the Pecan Street Project, independent organizations both. The managers at AE have leveraged these outside organizations to work towards achieving their policy goals and to support Austin Energy's core mission through enacting interlocal agreements between the utility and the two other organizations.

Key Findings from Austin, TX

1. **Leverage Partners:** Austin Energy sidestepped the multiple hurdles and institutional inertia that often plague utilities by leveraging outside partners with the expertise and

⁴⁴ Ibid.

⁴⁵ McCracken 2011.

funding to help achieve policy goals. This makes them much more nimble than they would ordinarily be. Ideal partners include:

- Local universities, who provide access to facilities, grant writing expertise, and interns;
- Key business organizations in the region, such as Chambers of Commerce, for help in branding and promoting new initiatives;
- Environmental organizations, such as the Environmental Defense Fund in Austin's case, which provide added legitimacy to the utility's sustainability efforts.

As a personnel-constrained public utility, the most relatively-available asset is program funding. AE funds and participates in almost all of the touchstones of Austin's clean energy ecosystem—but none are located inside Austin Energy, and most of the staffing is external. Keeping the programs, which generally do not fit with the utility culture external to the utility gives the impression of nimbleness needed to attract private sector interest. Furthermore, working with outside partners (both funding and non-funding) reduces the budgetary strain of these joint ventures, as does leveraging those outside partners' strengths and capacities.

2. **Sign Agreements with Key Partners:** Once partners have been identified, the partnership should be solidified with a well-defined goal, a plan of action, and clearly delineated responsibilities for each organization.
3. **Identify Internal Champions:** Like most utilities, Austin Energy is a fairly conservative organization. Innovation and capacity building cannot be forced upon those who are not

open to change. Austin Energy found leaders and risk-takers within its organization to champion the early programs.

Innovators must be provided with the materials to create the sustainable technologies they require, and they must be given control over the projects they enter into. Treating the champions as clients whose needs for products must be met creates a pull for technology at the utility, and it aligns innovative programs to the core mission of the utility.

4. **Designate an Innovation Facilitator:** Kurt Stogdill's position as Program Manager for Innovation and Opportunity Development at Austin Energy captures the critical elements needed to shift a large utility onto a path of sustainable economic development. Having a professional on staff that is focused on converting opportunities into avenues for mutual gain among different organizations is, in a sense, the "glue" that holds the whole enterprise together. That individual must push things forward institutionally.

5. **Invest in Outreach and Marketing:** Investing resources into developing innovative economic and clean tech development strategies that enhance a region's competitive advantages is useless if key audiences don't hear the message. Opportunity Austin provides the framework and the partnerships to effectively tell Austin's story to the outside world through its unified branding and marketing strategy. Further public appearances at conferences and trade shows by representatives of Austin's clean tech development community emphasize Austin's commitment to economic competitiveness,

and how Austin's public sector seeks to work *with* business, rather than against it. The result in Austin has been dramatic.

6. **Provide Venues and Opportunities:** By investing some funding in hosting and attending conferences and networking functions, interested organizations can drive a lot of energy and “buzz” in a local market. The chance encounters between innovators which produce game-changing inventions have a much greater chance of occurring when those social functions occur regularly.

7. **Leadership is Important:** While the institutional structures and design elements of Austin's various organizations are significant, they are all for naught without the presence of dynamic, charismatic and driven leaders working to make things happen, both behind the scenes and in public. Roger Duncan, despite serving only 2 years as the General Manager of Austin Energy, had so many concurrent initiatives developed in over 25 years at many levels of Austin city government that he can rightfully claim responsibility for much of Austin's green revolution. Similarly, Brewster McCracken (with Duncan's input, it must be noted) is putting pieces in place to help drive the second wave of Austin's green revolution forward through the Pecan Street Project. Innovative organizations need strong leaders at their helms to tell their stories and to elucidate the reasons why those organizations matter, as well as to find ways to deal with the inevitable opposition to innovations from entrenched interests.

Media Coverage of Austin Initiatives

Austin Energy Media Coverage:

“Austin Energy Sets the Curve,” Nora Ankrum, Austin Chronicle, July 23, 2010

Smith compares AE's current challenges to the initial damming of the Colorado River in the late 1800s – which "created an economic boon because we took a problem and made it into an asset" – and the efforts of forward-thinkers in the Eighties to "attract the next generation of chipmakers." Similarly, says Smith, the Pecan Street Project "is looking to create the next generation of electrical appliances and tools ... through manufacturing things here in Austin." Through the combined purchasing power of AE and other Central Texas municipal utilities, Smith says, the Pecan Street Project envisions creating wealth throughout the region. "If we look at environmental solutions as ways to grow the economy, we all can make money off of the deal," he says. "It's a maturity in both sectors that have come to the realization that what's good for the economy is good for the environment and vice versa" (Ankrum 2010).

“USA's greenest cities? You might be surprised,” Wendy Koch, USA Today, August 5, 2010

Austin, Texas: 15 percent of Austin's city limits are devoted to parks and other green open spaces: 206 parks, 26 green belts and 50 miles of biking and hiking trail. Austin's municipally owned Austin Energy is the largest renewable energy provider in the United States. Austin plans to be carbon neutral by 2020 as part of the Austin Climate Protection Plan. The city is currently undergoing the adoption of a smart grid, called the Pecan Street Project, which will reinvent the city's energy use (Koch 2010).

ATI Clean Energy Incubator Media Coverage:

“America’s clean tech clusters: Venture capitals,” The Economist, March 24, 2007

Another contender is Austin—the “capital city of the most polluting state in the most polluting country in the world”, as the mayor likes to say. Some \$210m of venture capital was invested in clean-tech across Texas last year. Like Silicon Valley and Boston, Austin is already a technology hub for the computer industry, and is home to Dell and Freescale. Biofuels are big, too: they bring together Texans' knowledge of agriculture and oil. Willie Nelson, a local country crooner, has even started BioWillie, a biofuel firm. Austin also has a clean-energy incubator at the University of Texas, one of several allied with the National Renewable Energy Laboratory (NREL) (The Economist 2007).

“Austin clean tech incubator to spread its message,” Asher Price, Austin-American Statesman, February 11, 2011

Barchas said that over the past three years, ATI has worked with 50 companies to raise more than \$70 million for their projects, leading to jobs and wealth creation in Central Texas.

Among the companies developed at ATI is one developing a high-altitude wind power system; another that looks at ways to recycle large amounts of water; and one refining energy-efficient light bulbs. The idea is to replicate the success in other parts of the state.

"We're going to train them up and introduce them to our investor network and teach them how to build their own," Barchas said (Price 2011).

Pecan Street Project Media Coverage:

“Austin Aiming for a Grid Makeover,” Kate Galbraith, New York Times Green, March 25, 2010

“But the key idea was rethinking the way Austin Energy, the electric utility, makes its money. Currently, the more electricity customers use, the more money the utility — and the city of Austin, whose single largest source of revenue is the utility — earns.

“This basic economic model is the single greatest obstacle standing between Austin Energy and a modernized energy delivery system,” the report stated (Galbraith 2010).

“Pecan Street Project Goes Live with First Phase of Smart Grid Deployment,” Pecan Street Project, February 1, 2011

Pecan Street Project Inc. announced today that it has completed systems installation and has gone live with the first phase of its smart grid demonstration project in Austin’s Mueller community.

Deployed by Austin-based Incenergy LLC, the home smart grid systems capture minute-to-minute energy usage for the whole home and six major appliances or systems. The project achieved an installed cost per home of \$341 (\$241 for equipment plus \$100 for installation).

The systems are deployed in 100 homes at Mueller, all of which are green built and 11 of which have rooftop solar PV systems. This spring, Pecan Street Project will deploy

Incenergy systems in a second group of 100 homes outside Mueller that are at least 10 years old. All participants in both groups are volunteers .

12. Appendix B: Los Angeles Cleantech Incubator Business Plan

13. Appendix C: Researcher, Eos Consulting and Parsons Brinckerhoff Interviews Conducted for Los Angeles Clean Innovation Lab (iLab LA) Program Development

1. Kathryn Atchison, VP Intellectual Property, UCLA
2. Raj Atluru, Managing Director, Draper Fisher Jurvetson
3. Jose Beceiro, Director, Economic Development – Clean Energy, Greater Austin Chamber of Commerce
4. Sumeet Bidani, Director Business Development and Investments, Duke Energy Investments Group
5. Suzanne Biegel, CEO, Investors' Circle
6. Amanda Brock, CEO, Water Standard
7. Marnie Cervenka, Manager, Key Accounts, Austin Energy
8. John X. Chen, Executive Director, Customer Service, DWP
9. Sunny Choi, Director of Strategy, Belkin
10. Michael A. Coia, Assistant General Manager, Power Systems, DWP
11. Paula Daniels, Commissioner, DPW-LA
12. Roger Duncan, Fmr. General Manager, Austin Energy
13. Thomas M. Erb, Director of Water Resources, DWP
14. Fred Farina, Director of Technology Transfer, Caltech
15. Jessica Feldman, Senior Vice President, Willis
16. David Foster, Executive Director, Blue Green Alliance
17. Tom Gackstetter, Director, Energy Efficiency Programs, DWP
18. Rajit Gahd, Director of Smart Grid Demonstration Project, UCLA
19. Eydie Galper, Director, Strategic Initiatives, LAEDC
20. Sam Garrison, Head of Policy, Chamber of Commerce
21. Sharon Gi, Assistant Project Manager, CRA-LA
22. Brian Gildea, Economic Development Manager, Economic Growth and Redevelopment Services Office, City of Austin
23. Jenna Gulager, Special Assistant to Deputy Chief of Operations, CRA-LA
24. Randy Hall, Vice Provost for Research, USC
25. Robert Holmes Herzstein, Research Director, Blue Hill Medical Group LLC
26. Krisztina Holly, Vice Provost for Innovation, USC Stevens Institution for Innovation, USC
27. Randy Howard, Manager, Commercial Services, DWP
28. Richard Hull, Head of Innovation Ecosystem Initiatives, USC - Stevens Innovation Institute
29. Mitch Jacobson, Executive Director, Clean Energy Incubator, Austin, TX
30. Beth Jines, Director of Sustainability, Mayor's Office
31. Mark Kapner, Senior Strategy Engineer, Strategic Planning and Enterprise Development, Austin Energy
32. Alexander Karsner, Chairman & CEO, Manifest Energy
33. Martha Krebs, Deputy Director for Energy Research and Development, California Energy Commission
34. Matt Laudon, Founder and President of Clean Technology and Sustainable Industries Organization
35. Mary Leslie, President, LA Business Council

36. Julia Lindesay, Consultant, Genesis Energy
37. Brewster McCracken, Executive Director, Pecan Street Project, Austin, TX
38. Cheryl Mele, Chief Operating Officer, Austin Energy
39. Brett Messing, Senior Advisor to Mayor Antonio R. Villaraigosa and Chief Operating Officer of the Office of Economic and Business Policy, Mayor's Office, Economic Policy
40. Marvin D. Moon, Director, Power System Engineering Division, DWP
41. Ali Morabbi, Manager Power System Information and Advanced Technologies, DWP
42. Alex Paxton, Manager of Policy Analysis, CRA-LA
43. Roberto Peccei, Vice Chancellor for Research, UCLA
44. Katherine Perez, Executive Director, Urban Land Institute
45. Matt Petersen, President & CEO, Global Green USA
46. Jamie Ponce, Manager, AT Kearney
47. Dave Porter, Vice President, Economic Development, Greater Austin Chamber of Commerce
48. Jim Robbins, Partner, Business Cluster Development
49. Andy Seidel, President, Underground Solutions
50. Kurt Stogdill, Program Manager for Innovation and Opportunity Development, Austin Energy
51. David Thrasher, Director, DWP
52. Tom Unterman, Partner, Rustic Canyon
53. Jeff Vice, Director, Local Government Relations, Austin Energy
54. Michael Webster, Systems Development and Production, DWP
55. Jason Weiss, Managing Partner, Terrapin
56. Chuck Wolfe, Principal, Claggett Wolfe Associates; Port of LA (Consultant)
57. James (Ken) Wolfenbarger, Manager - Commercial Program Office, Jet Propulsion Laboratory
58. Will Wynn, Principal, Will Wynn
59. Stephanie Yanchinski, Manager, Caltech/MIT Enterprise Forum
60. Mark Zimring, Senior Research Associate, Lawrence Berkeley National Laboratory

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