Sharing Solar's Promise:

Harnessing LA's FIT to Create Jobs and Build Social Equity

The Southern California Trophy Company in downtown Los Angeles – California Solar

Source: Solar Provider Group, KB Racking.

Source: iStock Photos

LABC Institute
LOS ANGELES BUSINESS COUNCIL

PERE
USC Program for Environmental & Regional Equity

UCLA Luskin School of Public Affairs
Luskin Center
FOR INNOVATION

Acknowledgements

The LABC Institute's Board of Directors is pleased to partner with the USC Program for Environmental and Regional Equity (PERE) and the UCLA Luskin Center for Innovation to present *Sharing Solar's Promise: Harnessing LA's FIT to Create Jobs and Build Social Equity.* We want to thank the report's authors from PERE: Dr. Manuel Pastor, Director; Mirabai Auer, Data Analyst; Chad Horsford, Graduate Researcher; from UCLA Luskin Center: Dr. J.R. DeShazo, Director; Alex Turek, Program Manager. We gratefully acknowledge JPMorgan Chase & Co. and Sierra Club for supporting this important equity and workforce research.

LABC Institute Board of Directors

Executive Officers

Richard Ziman, *Founding Chair,* Rexford Industrial Realty

Brad Cox, *Chairman,* Trammell Crow Company

Antonio Manning, *Vice Chair,* JPMorgan Chase & Co.

Mary Leslie, *President,* Los Angeles Business Council

Ellen M. Berkowitz, *Secretary,* Gresham Savage Nolan & Tilden, PC

David Sears, *Treasurer,* JPMorgan Asset Management

Founding Directors

Linda Bernhardt, DLA Piper, LLC

Henry Cisneros, CityView

Kendra Doyel, Ralphs Grocery Company

Carlos Illingworth, Vons / Safeway

Joanne Kozberg, California Strategies

Jacob Lipa, Psomas

David Nahai, Lewis Brisbois Bisgaard & Smith LLP; David Nahai Companies

Dan Rosenfeld, George Crenshaw Development Company

Advisory Committee

Sean Arian, EOS Consulting

Joe Caves, Conservation Strategy Group

J.R. DeShazo, UCLA Luskin Center for Innovation

Sarah Dusseault, Consultant

Cecilia Estolano, Estolano LeSar Perez Advisors LLC

Joan Kradin, Greer Dailey

Nathan Miller, Miller Ink

Ron Nichols, Consultant

Lorraine Paskett, Cambridge LCF Group

Manuel Pastor, USC Program for Environmental and Regional Equity

Special thanks goes to **Steve Sugerman**, **Randy James**, and **Deepti Immaraju**, Sugerman Communications Group; **Sumi Parekh,** and **Soyoon Choo,** Los Angeles Business Council, for their work on this successful event. We would also like to thank the interviewees who contributed to this report and who provided feedback that is the foundation of the report's findings.

Sharing Solar's Promise: Harnessing LA's FIT to Create Jobs and Build Social Equity

Executive Summary

Los Angeles launched the nation's largest Feed-in Tariff (FiT) In Basin Solar program in 2013, helping to catalyze an emerging market for multifamily housing, commercial, warehouse and industrial rooftop solar. While the program has met with some initial success, and has positioned Los Angeles to play a larger role in a burgeoning sector that has made California the nation's leader in solar employment, there is more to be done to achieve the full promise of the program.

Part of the promise of a properly designed and well-implemented FiT is that it will drive economic growth, enhance environmental sustainability and create social equity in the workforce. After all, creating career ladder jobs through rooftop solar installations will expand the local economy and lead to a dynamic job market. The potential is clearly there: as evidenced in previous reports (and updated here), Los Angeles has numerous solar equity "hot spots," areas with rooftops waiting for conversion in disadvantaged areas in need of career ladder employment.

Developing a strong in-basin solar market is essential to the City's efforts to increase solar production. Commercial projects are less expensive per kWh than residential projects, and are often located nearby socioeconomically disadvantaged populations that could, with training and attention to networking and placement, access solar employment.

According to the 2013 California Solar Jobs Census, California leads the nation in solar jobs, accounting for about one-third of the nation's total solar industry employment. Within the state, solar job growth (8.1 percent in 2013) outpaced overall job growth (1.7 percent). And this solar job growth is resulting in new hires; nearly three-fourths (72.2 percent) of solar-related firms with job growth hired new workers in 2013. Assuming the new hire trend continues, this will create career ladder opportunities for disadvantaged and entry-level workers.[1]

Los Angeles should be leading the state in solar production and jobs, but instead is lagging. The Los Angeles Department of Water and Power (LADWP) has the capacity to deliver the largest rooftop solar program in California but falls behind other utilities in solar production per person, particularly in commercial rooftop solar development. Furthermore, Los Angeles has untapped rooftop potential in high-need neighborhoods. The FiT was designed to provide a pathway into the commercial solar rooftop market while also stimulating local job growth – and, if implemented well, could help secure Los Angeles' future as a statewide and national leader in in-basin rooftop solar production.

The good news is that the FiT is finally starting to realize its potential. From the gleaming solar panels on the roof of the 86-year-old California Trophy Company to those atop Oxnard Plaza Apartments in North Hollywood, new solar projects are accelerating. **Over 40 percent of the proposed FiT projects located in Los Angeles' solar equity "hot spots" are in neighborhoods with high solar rooftop potential and also are in high socioeconomic and environmental distress.** Indeed, while the majority of proposed projects are located in the San Fernando Valley (which has more pockets of socioeconomic distress than many observers realize), there are also a notable number of small projects proposed in and around Downtown Los Angeles and a concentration of larger projects near the Port of Los Angeles. While not all projects are in low-income communities, the solar programs will create the opportunity for career ladder jobs that are easily accessible to potential workers residing in or near those areas.

Los Angeles is home to a ready workforce. When it comes to innovative solar workforce training programs, Los Angeles excels in the quality, quantity and geographic diversity of its programs. FiT solar projects are connecting local workers through several innovative partnerships between solar providers and organizations with workforce training programs in economically deprived communities. One example: PermaCity Solar's

[1] The Solar Foundation, February 2014, California Solar Jobs Census 2013 (accessed February 27. 2014 from http://www.thesolarfoundation.org/sites/thesolarfoundation.org/files/California%20Solar%20Jobs%20Census%202013_Web.pdf).

5.1 MW project in Lincoln Heights is recruiting workers locally and also hiring graduates of the East Los Angeles Skills Center's (ELASC) Photovoltaic Installer Program while conducting outreach to other programs.

The FiT program has attracted new solar firms to Los Angeles, incentivized individuals to create new small businesses and provided a pathway for existing firms to expand their operations. All of these actions have created the foundation for a larger, in-basin solar industry. There are some key success stories that illustrate this potential, and many proposed projects are likely to achieve the solar equity future that is envisioned in this report. There is also spillover potential for manufacturing, particularly for niche and racking products: PermaCity has developed a solar racking technology that Orion Solar Racking, another local firm, will manufacture.

While the future for the solar rooftop program is bright, three major challenges need to be addressed to ensure further progress and better connect the environmental, economic and equity issues. First, uncertainty about the future of the FiT's scale and program design, which currently discourages solar providers and property owners from participating in the program. Second is the disconnect between the FiT and workforce development programs that serve disadvantaged communities and workers Third, limited awareness about the existing solar program despite LADWP and Los Angeles Business Council hosting over a dozen FiT technical workshops.

We have market uncertainty and lack of clarity on the program design, especially the fact that the costs of interconnecting to the grid are not always identified or quantified beforehand and that permitting for actual construction and local manufacturing can be difficult and unpredictable.

Connectivity is not just about hooking up solar to the grid –it is about creating direct links between the program and opportunity for the region's unskilled workers. The FiT program needs clear goals and incentives for employment, including credits and/or identified benefits for creating career ladder jobs for the unskilled workforce. While getting that first job is important, firms and workforce developers do recognize that the pathway to the middle class means creating career ladder jobs which allow installers and first-time workers to develop skills which allow them to move up the to employment ladder.

How should Los Angeles move ahead?

Our first recommendation is to scale up the FiT program significantly (from its current 100 MW to 600 MW), as this scale would add certainty as well as greater economic development potential.. We also discuss the need to maintain a mix of small and large projects in that growing portfolio as well as further refine the application process and lottery system.

To increase the job impacts of the program, new types of "solar equity" incentives should be added to the FiT. We specifically suggest that the program should encourage solar job creation in high-need areas, and that disadvantaged worker credits and local business preferences be built into the program.

We also suggest further streamlining of the permitting process. The Los Angeles Department of Building and Safety (LADBS) is changing its policies to more efficiently process and increase the impact of solar projects. Los Angeles Mayor Eric Garcetti recently announced that LADBS is creating online permit processing for small residential solar projects as a part of PermitLA. **We recommend that LADBS adapt its online solar permit processing – which is in the process of rolling out – to include commercial, industrial, warehouse and multifamily residential projects as well.** Online processing will mean an end to long wait times in the application process, which developers cite as a key challenge.

We also recommend that LADBS implement a Priority Plan Check for the DWP FiT carve-out projects (30kW to 150kW systems). This approach is similar to earlier incentive programs for "green" or LEED-certified buildings. This strategy would prioritize smaller FiT projects and put them first in line with the Plan Check engineer, ahead of other projects. As stated before, a notable number of small projects in and around downtown LA can be attributed to the LADWP carve out, which must continue in order for solar developers to be incentivized to continue working with small property owners.

There is more at stake for Los Angeles and the region than just making the best use of the city's abundant sunshine. Many people still think of Los Angeles as a land of suburban sprawl, wrenching inequality and

environmental distress. But over the last decade a new Los Angeles has been emerging: commitments to infill development and public transit, a rising concern for the working poor and a desire to be one of America's greenest cities are pointing the way to a different future. Bridging the gap between the old and new are diverse coalitions and innovative policies. A scaled-up FiT could help pave the pathway to a Los Angeles that merges livability and inclusion, clean air and clean technology, and helps to unite diverse communities of Angelenos across the city.

Introduction: A New Market in Los Angeles

Los Angeles' launch of the nation's largest Feed-in Tariff (FiT) program in 2013 helped to catalyze an emerging market for commercial rooftop solar.[2] From the gleaming solar panels on the 86-year-old California Trophy Company to those atop Oxnard Plaza Apartments in North Hollywood – new solar projects are taking off.

This is just the beginning. The FiT has the potential to transform Los Angeles' commercial solar market at precisely the moment in the wake of the recession when the City needs sustainable and inclusive economic development. Indeed, commercial projects can be a strategic investment for balancing energy prices with equitable job creation: they are less expensive per kW than residential projects, and their rooftop locations are much closer to socioeconomically disadvantaged populations that could, with training and attention to networking and placement, access solar employment.

There is much on which to build. According to the 2013 California Solar Jobs Census, California leads the nation, accounting for about one-third of the nation's total solar industry employment. Within the state, solar job growth (8.1 percent in 2013) outpaced overall job growth (1.7 percent). And this solar job growth is resulting in new hires. Nearly three-fourths (72.2 percent) of solar-related firms with job growth hired new workers in 2013. Assuming the new hire trend continues, this could mean opportunities for disadvantaged and entry-level workers.[3]

This report assesses the FiT 100 program's early impacts on the local solar market and on local employment. Over 40 percent of proposed projects are in the solar equity "hot spots," meaning in neighborhoods with high solar rooftop potential and indicators of high socioeconomic and environmental distress. The majority of proposed projects are in the San Fernando Valley. There are also a notable number of small projects proposed in and around Downtown Los Angeles and a concentration of larger projects near the Port of Los Angeles. While not all are in low-income communities, these opportunities are easily accessible to low-income workers residing in and near those areas.

Of course, since only a select number of proposed projects will ultimately break ground, it is important to maximize the "solar equity" payoff of the program – that is, to insure that the city is achieving equity as well as economic growth and sustainability. One aspect of that, of course, is simply to secure the market. The FiT program has successfully attracted firms to Los Angeles, incentivized individuals to create new small businesses and provided a pathway for existing firms to expand their operations. This creates the foundation for a larger, in-basin solar industry, but the small scale of the program means that even as firms are attracted to Los Angeles, they have to be innovative in their operations in order to maintain a steady stream of projects, suggesting the need for certainty and scale in the FiT program moving forward.

On the other hand, while there is evidence that local solar providers are connecting with disadvantaged workers – and some model solar equity partnerships and projects are underway – more remains to be done. Given the city's fragile and uneven economic recovery, as well as the expressed needs of low-income communities, it is necessary to build upon these examples and make clear the bridge between workers-in-need and the FiT, and codify this connection through policy and programming. This report points to both the promise and challenges of the FiT, and offers a series of policy prescriptions designed to scale solar, link the workforce, and promote inclusive and equitable growth.

[2] Los Angeles Business Council, June 27th, 2013, Largest-In-The-Nation Feed-In-Tariff Solar Program Kicks Off (accessed February 26, 2014 from http://www.labusinesscouncil.org/LargestintheNation-Feedin-Tariff-Solar-Program-Kicks-Off).

[3] The Solar Foundation, February 2014, California Solar Jobs Census 2013 (accessed February 27, 2014 from http://www.thesolarfoundation.org/sites/thesolarfoundation.org/files/California%20Solar%20Jobs%20Census%202013_Web.pdf).

Roadmap and Starting Points for the Report

This is the third report in a series on "solar equity"– the meeting of solar growth potential and inclusion opportunities – in Los Angeles. The two previous reports envisaged the solar and equity benefits a FiT *could* bring to Los Angeles. The first, *Making a Market: Multifamily Rooftop Solar and Social Equity* looks at areas of opportunity within the multifamily market. A follow-up report, *Empowering LA's Solar Workforce: New Policies that Deliver Investments and Jobs,* focuses on the commercial and industrial markets as well as the solar workforce.

In this report, some of the previous analysis is updated, using new data to better illustrate "hot spots" – areas with high potential for achieving solar equity and growth– and analyze the state of training programs. As stated in previous reports, the potential for solar equity definitely exists, along with a ready workforce, but more needs to be done.

We then situate the Los Angeles market in the context of the statewide growing solar job market. Although the market has boomed, uncertainty around the future of Renewables Portfolio Standard (RPS) goals, tax credits, and incentive programs means that a strong Los Angeles FiT is essential in helping to sustain growth. This is followed by a discussion of how the FiT process has provided evidence of strong demand but we also note that the lottery system to select projects may rely too much on the "luck of the draw," which in turn results in lower-quality applications and less-than-viable project proposals.

We suggest that there are three main things standing in the way of realizing a more robust and equitable solar future: *uncertainty* about the FiT's future scale, *disconnection* between the FiT and workforce development programs, and *a limited awareness* about the existing program.

As academics, we recommend a series of solutions that include scaling up the FiT, refining the application process and lottery system, and leveraging other resources, including federal dollars and funds from the state's emerging carbon market to deepen investments in the region's most disadvantaged areas. Perhaps the sharpest call of this report is to create a system that helps to expedite projects that employ higher-need workers and contract with local businesses; it is our belief that such an approach would both maximize solar equity and expand the coalition for the FiT.

To arrive at all these conclusions and admonitions, our team relied on a mix of quantitative and qualitative methods. On the quantitative side, we mapped proposed projects against our solar equity potential at the ZIP code level, using a combination of American Community Survey, CalEnviroscreen (Cal/EPA's environmental health screening tool), modeled rooftop solar potential, and FiT project data.[4] We took the pulse of the labor market using Solar Census and the Current Population Survey data. On the qualitative side, we conducted interviews with those who are creating the market – commercial property owners, developers, solar providers, and workforce providers – to identify the story behind the maps and the data. We thank all of our interviewees for their insights and hope that we have captured their wisdom.

Finally, a few notes on terminology. First, while there have been quite a few reports written on the FiT, we know that for some the topic will be new. For the uninitiated, we have a sidebar below, "*Understanding the Terminology*" which describes some key terms. Next, the FiT 100 incentivizes rooftop solar development in the large multifamily, commercial, and industrial rooftop market. This is often referred to as the as the commercial market. Finally, we characterize "high-need" neighborhoods as areas which face employment, income and educational attainment challenges – and, as a recent addition, also include those bearing environmental injustice. The inclusion of "environmental justice" or "EJ" neighborhoods in our definition of need is essential, particularly as we think about opportunities to further solar equity through SB535, a bill which allocates cap-and-trade auction proceeds to disadvantaged communities.

[4] Data sources: (1) U.S. Census Bureau, American Community Survey, 2007-2011, pooled sample, (2) Cal/EPA, CalEnviroscreen, v1.0 – for more on CalEnviroscreen see the sidebar, "Locating Environmental Injustice," (3) UCLA Luskin Center for Innovation, Rooftop Solar Potential, 2010, (4) LADWP, FiT Project Data, FiT Review Priority List Spreadsheet, 12/19/13, (5) Solar Foundation, 2014, California Solar Job Census 2013, (6) U.S. Census Bureau, Current Population Survey, 2013. Note: The 2013 Current Population Survey data was used to update the 2007-2011 ACS unemployment numbers at the ZIP code level, adjusting for differences by race.

Understanding the Terminology: FiT Basics

Feed-in Tariff (FiT): A policy tool that provides incentives for third-party energy producers to create alternative energy systems and sell the resultant power back to the grid at a predetermined rate (usually at a rate per kWh). In contrast to other solar programs, such as net metering, all of the energy generated is sold directly to the utility and does not affect a property's energy usage or billing. By the end of 2012, 99 countries/states/provinces had enacted FiT programs, nearly twice the amount that had such programs in 2007.

Net Metering: A system where utility customers with energy generation systems only pay for their net electrical usage (on-site consumption-on-site generation); excess power cannot be sold to the utility.

Watt (W): A unit of power that measures the rate of energy conversion or transfer. A kilowatt (kW) is equal to one thousand watts; a megawatt (MW) is equal to one million watts. A kilowatt hour (kWh) is the product of the power in kilowatts and time in hours.

Tranche/ allocation: A group of MW offered at a set price. The FiT 100 is broken into five, 20 MW tranches (16 MW for large projects and 4 MW for small projects), each defined by different rates per kWh.

Technical screening: An assessment of the project dimensions and applicant information on paper as well a preliminary grid impact assessment.

Interconnection: The process of connecting to the grid – plugging in the solar system. The cost of interconnection varies by number of factors, including location and project attributes.

Standard Offer Power Purchase Agreement (SOPPA): A contract between the purchaser of electricity (LADWP in this case) and seller (solar providers/developers) that stipulates the terms under which electricity will be purchased/provided.

Solar provider: An entity that specializes in solar system development –and serves as the project coordinator and arranges the overall financing, design, permitting, and construction of the solar system.

Developer: An individual or company which builds real estate; developers can also spearhead solar projects. This is particularly attractive if the developer is also the building/rooftop owner.

Rooftop owner: The individual or company that has legal jurisdiction and ownership of the rooftop space. A building's tenant and rooftop owner may be different parties for commercial real estate properties. Rooftop owners may lease their rooftops to solar providers or own the systems directly.

Soft cost: The non-material, indirect cost of creating a solar system, such as engineering fees, labor, and insurance.

Hard cost: The monetary cost associated with the physical construction of a project; typically hard cost encompasses materials (e.g., solar panels, inverters and racking systems).

Sources: (1) Project interviews, (2) Renewable Energy Policy Network for the 21st Century, 2013, Renewable 2013 Global Status Report (accessed March 19, 2014 from **http://www.ren21.net/Portals/0/documents/Resources/GSR/2013/GSR2013_lowres.pdf)**, (3) DeShazo, J.R. and Alex Turek, UCLA Luskin Center, 2014, FIT 100 in Los Angeles: An Evaluation of Early Progress (accessed March 24, 2014 from **http://innovation.luskin.ucla.edu/content/fit-100-los-angeles-evaluation-early-progress**).

Background: Solar Equity in Los Angeles

An increasing body of research, including from organizations such as the Federal Reserve and the International Monetary Fund, is showing that economic growth strategies that advance social equity can also result in long-term, economic growth.[5] The FiT is an equitable growth policy that has the potential to work well for neighborhoods with abundant commercial solar potential, but also socioeconomic and environmental challenges.

The FiT can take advantage of Los Angeles' rooftop potential – a tremendous resource just waiting to be maximized – and ready workforce, much of which lives in these solar hotspots. Below are the areas that best position the city for strong progress in the solar market:

[5] Berg, Andrew G., and Jonathan D. Ostry. 2011. Inequality and Unsustainable Growth: Two Sides of the Same Coin? Washington, DC: International Monetary Fund (accessed March 28, 2014 from (**http://www.imf.org/external/pubs/cat/longres.aspx?sk=24686**).

Eberts, Randall, George Erickcek, and Jack Kleinhenz. 2006. Dashboard Indicators for the Northeast Ohio Economy: Prepared for the Fund for Our Economic Future, Working Paper 06-05. Cleveland: OH (accessed March 28, 2014 from **http://ideas.repec.org/p/fip/fedcwp/0605.html**).

Training the Next Workforce: LA IBEW 11 / NECA and ELASC

Programs by the Los Angeles International Brotherhood of Electrical Workers Local 11 and National Electrical Contractors Association (LA IBEW 11/NECA) and the East Los Angeles Skills Center (ELASC) provide models for solar-focused workforce development. Graduates of LA IBEW 11/NECA's five-year Apprenticeship Program and Journeyman Training are highly-skilled electricians and often work on complex commercial and industrial solar projects. ELASC offers a series of photovoltaic installer courses to the clients of Homeboy Industries, which serves former gang members, as well as to East Los Angeles residents. In addition to preparing students for the NABCEP entry-level certification exam, ELASC equips students with English and math skills that are essential for the job; similarly, LA IBEW 11/NECA provides access to an online technical math course for applicants who might have difficulty meeting IBEW's algebra requirement.

Sources: UCLA Luskin Center and USC PERE, 2011, Empowering LA's Solar Workforce: New Policies that Deliver Investments and Jobs (accessed March 7, 2014 from http://dornsife.usc.edu/pere/empowering/).

East Los Angeles Service Area, ELASC (accessed March 7, 2014 from **http://www.eastlaservicearea.org/elasc_general_info.html**.)

Homeboy Industries, Solar Panel Installation Training and Certification Program (accessed March 7, 2014 from **http://www.homeboyindustries.org/what-we-do/solar-panel-installation-training-certification-program/).**

1) **Los Angeles is home to a ready workforce.** When it comes to innovative solar workforce training programs, Los Angeles excels in the quality, quantity and geographic diversity of its programs. The number of local programs and students grew in response to the state's Renewables Portfolio Standard (RPS) goals and local targets. Local training programs range from private and community/technical college programs to union apprenticeships. Many of these programs, some nearly a decade old, have weathered the ups and downs of the solar market and adapted their programs to include instruction in solar-related areas, such as energy efficiency and storage. Because of the diverse and plentiful training options, Los Angeles is home to a pool of locally-trained workers with an increasingly varied skillset.[6]

2) **Training programs are connecting with workers from disadvantaged areas, but the need is high.** Training programs are scattered across Los Angeles, and many are located in low-income, struggling areas in the San Fernando Valley, Downtown and East Los Angeles.[7] Several programs specifically target disadvantaged workers and at-risk youth, including Homeboy Industries' Solar Installation Training and Certification Program, which works with ex-offenders and former gang members, and the Los Angeles Conversation Corps' (LACC) Green Job Training Program, which serves low-income

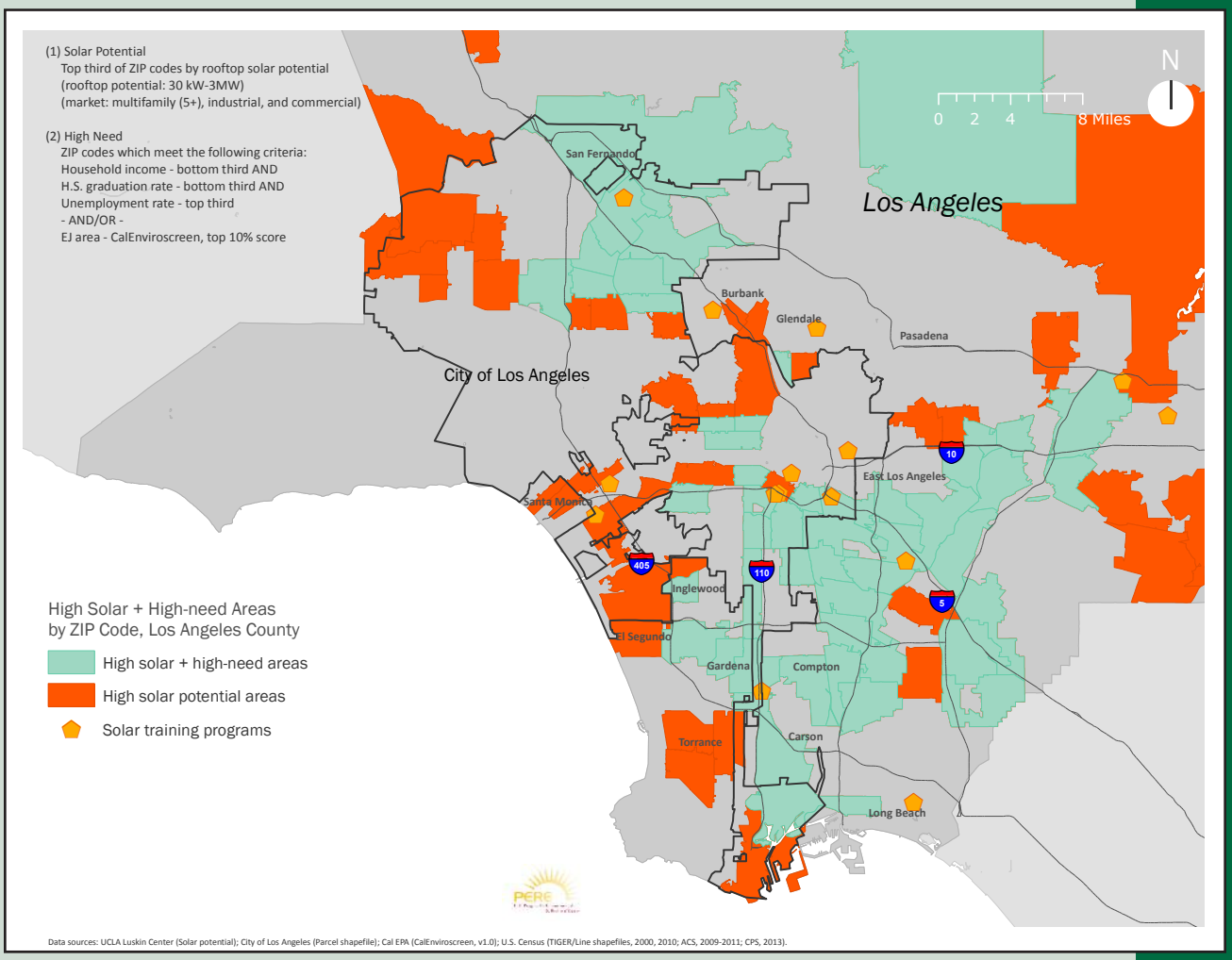
[6] Los Angeles Business Council Institute, 2011, Empowering LA's Solar Workforce: New Policies that Deliver Investments and Jobs (accessed March 22, 2014 from **http://innovation.luskin.ucla.edu/sites/default/files/LABC_Solar_Workforce_Study_2011.pdf**).

[7] Del Chiaro et al., 2011, Building a Clean Energy Workforce: Preparing Californians for Opportunities in the State's Green Economy, Environment California (accessed March 6, 2014 from **http://www.environmentcalifornia.org/sites/environment/files/reports/Building_A_Clean_Energy_Workforce_July2011.pdf**).

and at-risk youth. They focus on recruitment, soft skills development, social service provision and job placement and partner with adult skills centers and technical colleges for hard skills training.[8] (*For information on two local training programs, see "Training the Next Workforce" sidebar.)*

3) **Los Angeles has untapped rooftop potential in high-need areas.** Los Angeles is bathed in sun and brimming with multifamily housing, office, commercial and industrial rooftops. Not surprisingly, this market comprises 69 percent of Los Angeles County's solar potential.[9] Many high-need communities are adjacent to industry, warehouses, and commercial centers – that is, buildings with expansive rooftops. Solar could mean real benefits for these businesses as well as installation jobs for nearby residents.

As the map below shows, high-need communities with high solar potential –defined as rooftops with 30 kW to three MW of potential – are found in the South Bay (Compton, Carson, Torrance, and El Segundo) and to the east (East Los Angeles, Vernon, Commerce, El Monte, and Cerritos). Within the City of Los Angeles, the east San Fernando Valley is a solar hotspot, as well as North Hollywood, Central Los Angeles, and South Los Angeles. There is a concentration of "smaller" rooftops (e.g., apartment and small commercial buildings) within dense urban neighborhoods in Los Angeles while many larger buildings (e.g., large commercial and industrial properties) are near and just beyond the City's boundaries.[10]



[8] For more on Homeboy Industries' Solar Panel Installation Program see: http://www.homeboyindustries.org/what-we-do/solar-panel-installation-training-certification-program/; Los Angeles Conservation Corps' Green Jobs Training: http://www.lacorps.org/young-adult-corps.php#greenjobtraining

[9] UCLA Luskin Center, 2011, Modeled Solar Potential by Parcel, Los Angeles County.

[10] In this map we focus on the multifamily (specifically buildings with 5 or more units), commercial, and industrial sector with 30kW to 3MW rooftop potential. This wattage range corresponds to the FiT program requirements as specified by LADWP guidelines. For more on the FiT program, see: LADWP, February 18, 2014, Feed-in Tariff: Set Pricing Program Guidelines.

Statewide Solar Market Context: Strong Growth in Recent Years

Over the past few years, California's solar industry has built a good foundation from which to grow – both in terms of its labor force and solar capacity built.

California leads the nation in solar jobs. According to the 2013 California Solar Jobs Census, the California solar industry employs over 47,000 workers – about one-third of the nation's total. Statewide, industry employment grew by 8.1 percent in 2013 – that is particularly strong when compared to the state's job growth rate of 1.7 percent during the same period. While the industry is relatively small, firms expect continued job growth: when asked about hiring prospects for 2014, nearly half of all firms surveyed anticipated hiring. Should this hiring materialize, it would result in solar job growth of over 20 percent. Several sectors lead solar growth: installation is the largest (26,052 jobs in 2013) and the fastest-growing (29.4 percent growth expected in 2014) segment of the solar workforce. Strong growth is also expected in the smaller sectors of sales, distribution and project management.

An important dimension of the California growth is *new hires*. Although this seems intuitive – job growth *should* lead to new hires – as the most recent recession has shown us, new work can often mean the retention of existing workers or expansion of current workers roles, instead. Nearly three-fourths (72.2 percent) of solar-related firms with job growth hired new workers in 2013. Assuming new hire trend continues, this could mean opportunities for disadvantaged and entry-level workers.[11]

The growth in rooftop and utility-scale solar installations has been driven by government incentives, renewables goals and falling costs. The past year was a banner year for solar in California: the state doubled its rooftop market from 1,000 to over 2,000 MW and large-scale utility projects, such as the 377 MW Ivanpah desert project came online.[12] The residential market has been spurred through a combination of tax credits and net metering policies that channel benefits to consumers through decreased electricity bills. Utility-grade projects also grew as the state's goal of 33 percent renewable energy generation by 2020 encouraged utilities to invest in increasing their share of renewable energy. Across both markets lower panel costs, technological advancements as well as decreases in so-called "soft costs" have helped facilitate growth.[13] [14]

Local Solar Market Context: Lagging, but Ready for the FiT

Although the overall market is growing, there is room for growth in the region, and in Los Angeles in particular.

LADWP has the lion's share of Southern California's rooftop potential, but has lagged behind other utilities in solar production per person, particularly in commercial development.[15] Prior to the FiT, LADWP's solar portfolio was anchored in utility-grade solar and net metering (primarily residential, rooftop solar).[16] The city lags not only in solar MW installed, but also in solar jobs. Although we do not have an exact count of jobs in Los Angeles market *per se*, we know from workforce development practitioners that although this picture is brightening, workers trained in this sector in Los Angeles most often find work outside Los Angeles.

[11] The Solar Foundation, February 2014, California Solar Jobs Census 2013 (accessed February 27. 2014 from http://www.thesolarfoundation.org/sites/thesolarfoundation.org/files/California%20Solar%20Jobs%20Census%202013_Web.pdf).

[12] Bernadette Del Chiaro, December 31, 2013, California More Than Doubles Solar Power Market in 2013 (accessed on February 28. 2013 from http://solarindustrymag.com/e107_plugins/content/content.php?content.13637). The Ivanpah project is a geothermal, utility-scale solar project in Ivanpah Dry Lake, California

[13] Feldman, David, et al. Photovoltaic (PV) pricing trends: historical, recent, and near-term projections. No. DOE/GO-102012-3839. National Renewable Energy Laboratory (NREL), Golden, CO., 2012.

[14] Barbose, Galen, et al., July 2013, Tracking the Sun VI: An Historical Summary of the Installed Price of Photovoltaics in the United States from 1988 to 2012, Lawrence Berkeley National Laboratory (accessed March 30, 2014 from http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf).

[15] Los Angeles Business Council Institute, 2011, Empowering LA's Solar Workforce: New Policies that Deliver Investments and Jobs (accessed March 22, 2014 from http://innovation.luskin.ucla.edu/sites/default/files/LABC_Solar_Workforce_Study_2011.pdf).

[16] LADWP, January 9, 2014, Feed-in Tariff Workshop and Networking Event: LABC and Council District 9 – Presentation (accessed March 6, 2014 from http://cleanlasolar.com/files/LADWP_Presentation_2014.01.09.pdf).

With the implementation of the FiT program, the LADWP sought to add diversity to its renewable profile and stimulate jobs and local development. The FiT has helped to round out the solar market by providing a pathway into a commercial market that was largely unserved by existing programs. Commercial buildings have had more difficulty taking advantage of net metering because of the lack of certainty around energy usage given that most buildings lack permanent tenants and consistent use. The FiT program makes determining the appropriate level of solar generation necessary for offsetting use obsolete. The FiT provides a way for solar developers to benefit by allowing them to capture a fixed rate per kWh of energy generated and sell it to the utility. (*See "Adding Portfolio Diversity, Geographic Balance, and Economic Development" sidebar for more details on the LADWP FiT goals.)*

Commercial rooftops not only offer abundant potential for solar, but their in-basin locations and development benefits complement those offered by the residential and utility markets. To stimulate economic development and tackle climate change, all types of solar – from residential and commercial rooftop to utility –will play a role. In terms of location, each operates in a relatively different space: the residential market is centered in coastal cities with net metering, while the utility market is in outlying areas, distant from the urban core; the commercial market is situated centrally, between the two.[17] When it comes to workforce and economic development impacts, many think of commercial projects as a "sweet spot" in terms of balancing job creation with affordable per kWh prices. Commercial projects are less expensive per kWh than residential projects – and their rooftop locations are much closer to socioeconomically disadvantaged populations that could, with training and attention to networking and placement, access solar employment. Finally, commercial projects are more expensive than utility-grade projects to develop; however, when you take into account the value of local economic development, distributed generation, and avoiding the costs of long-distance transmission – which are estimated at approximately $.03 per kWh – commercial projects are more affordable than meets the eye.[18]

Adding Portfolio Diversity, Geographic Balance, and Economic Development: LADWP's FiT Program Goals

1. Create an additional solar power funding mechanism to complement the Solar Incentive Program
2. Provide a program with set Guiding Principles: reliable, cost effective, dependable, sustainable, and transparent
3. Encourage distributed electrical generation from renewable resources close to load centers
4. Balance renewable portfolio for reliability via geographic and technology diversity
5. Stimulate local economic development
6. Satisfy SB 1332 (successor to SB 32)

Source: LADWP, 100 MW Feed-in Tariff Set Pricing Program, Program Presentation – January 22, 2013.

Initiating Opportunity Locally: California Solar and Southern California Trophy Company

Local, new, and profitable—Los Angeles' first FiT 100 project embodies the City's emerging commercial rooftop solar market's potential benefits for local business owners and local workers. The 134.4 kW solar photovoltaic system is not only profitable for local solar provider California Solar, but also for the business itself, Southern California Trophy Company. The Downtown L.A. project subcontracted all aspects of the project, from development and design to installation to local, small businesses, retaining the economic benefits for the local community.

Commercial rooftop solar can be profitable. The proof is in the numbers:

- **Total Cost:** $365,000
- **Final Cost with Incentives:** $126,000
- **First Year Revenue:** $35,000
- **Expected Revenue from 20-year**
- **LADWP contract:** $673,000
- **Payback Period:** 6 years, 8 months
- **Life Expectancy of Project:** 30 years

Source: California Solar, Projects (accessed from March 7, 2014 from **http://ca-solar.com/).**

[17] DeShazo, J.R. and Alex Turek, UCLA Luskin Center, 2014, FIT 100 in Los Angeles: An Evaluation of Early Progress.

[18] The average cost to ratepayers per kWh arising from the delivery of power generated in remote locations through large RPS utility-scale and Renewable Auction Mechanism (RAM) projects. Clean Coalition, March 7, 2014, CLEAN L.A. Solar is Driving the Deployment of Cost-effective, In-basin Solar Generation.

With the winding down of solar incentives and programs, the FiT can play a strong supporting role in the market. Although we are optimistic about our solar-powered future, we are tempered by some key state and federal challenges ahead. At the federal level, the solar investment tax credit (ITC) offers a 30 percent credit for solar projects across multiple sectors which are *placed into service* by the end of 2016. In 2017, the residential credit will expire and the commercial credit will decrease to 10 percent.[19, 20, 21]

There is growing support for *S. 2003 The Renewable Energy Parity Act of 2014*, a bill that would extend the 30 percent ITC for projects which *begin construction* by January 2017.[2223]

Within California, we are quickly closing in on our RPS goal, and the California Solar Initiative – which incentivized rooftop growth in the investor-owned utility (IOU) market – is winding down.[24] One bright spot is SB 43, a "green tariff" program adopted by the state's three-largest IOUs which give ratepayers the option to "go solar" without purchasing a system. Instead, the utilities will power homes by feeding energy from nearby rooftop systems.[25] The program, which will increase the demand for renewables, is a step in the right direction, but does not entirely fill the gap left by expiring credits and programs.

In such a scaled-down context, the FiT can play an essential and necessary role in supporting future growth. Understanding the limited impacts of a 100 MW FiT, Angelenos have set their sights on a 600 MW FiT to complement an overall 1,200 MW or 20 percent solar goal by 2020.[26] A well-scaled FiT program, which takes into account the lessons from its groundbreaking year, could give the solar market continued fuel and local economies a needed boost.

The New Market Mapped: The FiT 100 to Date

The Los Angeles commercial market is taking root – or roof. FiT-incentivized solar projects are under development and will come online gradually over the next few years. While only three projects have been completed, over 100 are in the pipeline.[27] At this early stage, with just two rounds of development underway, there has been a strong response to the program. Projects are proposed across the city –many in high-need areas, particularly in the Valley. Below we briefly describe the FiT 100, the project applicant pool and their proposed locations. What we know so far:

The first two allocations of Los Angeles FiT 100 are underway. The Los Angeles FiT 100 program kicked off February 1, 2013.[28] Under the FiT 100 program, the LADWP purchases renewable electric energy from the private market. The program incentivizes 100 MW of solar development in-basin and will run from 2013 to 2015.[29] The FiT 100 will be offered in five, equal-sized "tranches" or allocations of 20 MW each.

[19] Solar Energy Industries Association, Solar Investment Credit (ITC) (accessed March 19, 2014 from http://www.seia.org/policy/finance-tax/solar-investment-tax-credit)

[20] Green Tech Media, June 27, 2013, What Happens When California's 33 Percent Renewables Mandate is Met? (accessed March 18, 2014 from http://www.greentechmedia.com/articles/read/What-Happens-When-Californias-33-Percent-Renewables-Mandate-Is-Met)

[21] Database of State Incentive for Renewables and Efficiency – DSIRE, Business Energy Investment Tax Credit (ITC) (accessed April 7, 2014 from http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F).

[22] Los Angeles Business Council Memo - S. 2003 The Renewable Energy Parity Act of 2014.

[23] GovTrack, S. 2003: Renewable Energy Parity Act of 2014 (accessed April 9, 2014 from https://www.govtrack.us/congress/bills/113/s2003)

[24] Chris Clarke, June 21, 2013, Has Solar Power in California Reached a Tipping Point?, KCET (accessed on March 27, 2014 from http://www.kcet.org/news/rewire/solar/a-tipping-point-for-california-solar.html)

[25] Lois Wolk. California Senate Bill 43. 2013-2014 Legislative Session (accessed February 15, 2014 from http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB43)

[26] Environment California, April 30, 2013, Solar in the Southland: The Benefits of Achieving 20 Percent Local Solar Power in Los Angeles by 2020 (accessed March 1, 2014 from http://www.environmentcalifornia.org/reports/cae/solar-southland)

[27] The FiT 100 project data is from LADWP, FiT Review Priority List Spreadsheet -12/19/13 (accessed February 28, 2014 from https://www.LADWP.com/LADWP/faces/LADWP/commercial/c-gogreen/c-gg-localrenewableenergyprogram?_adf.ctrl-state=t8peht10y_42&_afrLoop=1069764629594342)
One of the completed projects is from the 10 MW pilot FiT program and two projects are from the FiT 100 program. Projects "in the pipeline" represent the "in-progress" projects from the first two allocations of the FiT 100 as noted in the LADWP FiT Review Priority List. For more on recent installations, see the Clean L.A. website: http://cleanlasolar.com/solar-installations

[28] LADWP News, New Solar Feed-in Tariff Program to Open for Applications on February 1 (accessed March 6, 2014 from http://LADWPnews.com).

[29] A 4 MW subset of capacity is set aside for FiT projects in the Owens Valley in the first allocation; there were 29 applications received for these projects – the remaining projects are in-basin.

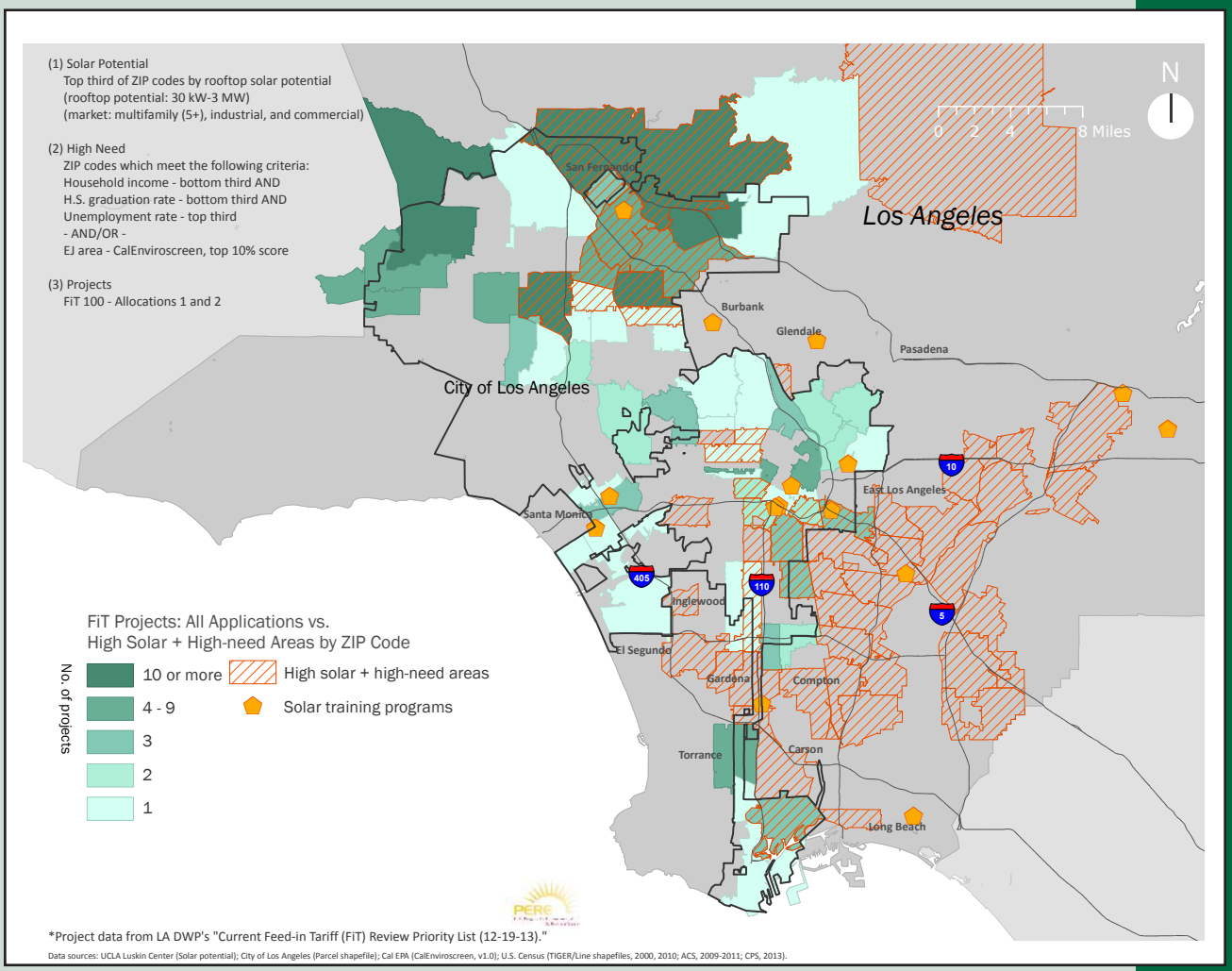
Currently two tranches are underway and a third is rolling out.[30] Selection is determined via a lottery system. Project applications are prioritized on a first-come, first-serve basis. However, applications submitted during the first five business days of the application period will be prioritized equally.[31]

There are two project size categories: small projects – one FiT categorization - are those between 30kW and 150 kW, while the large project category spans the 150 kW to three MW market. In each allocation, four MW are set aside for small projects, while the remaining 16 MW are held for large projects.[32]

The tariff, the base price of energy, is offered on a declining price tier system and steps down a cent in each allocation. For example, while the first allocation was offered at $.17 kWh, the second was offered at a lower rate of $.16 kWh. The logic underlying the step-down tariff is that as the market matures – as more projects come online – less incentive is needed to nurture the market.

There was an enthusiastic response in the first two FiT allocations. Across both allocations, the LADWP received 256 FiT applications which totaled 186.9 MW – exceeding the 40 MW offered. "Oversubscription," or demand in excess of the MW offered, was particularly high in the first allocation.

As the map below shows, there was geographic diversity among potential projects. **Over 40 percent – 43 percent to be exact – of the proposed projects are located in high-need areas.**[33] There is particularly strong overlap between high-need neighborhoods and potential project locations in the San Fernando Valley. The majority of projects are proposed in Valley locations – from Chatsworth in the west to the Sylmar, Pacoima, and Sun Valley area in the east. While not all are low-income communities, they are easily accessible to low-income workers residing in and near those areas. It is not surprising that demand is concentrated in the Valley, given the mix of rooftop sizes and the direct sunlight.



[30] The release of the third 20 MW allocation began 3/17/14 – data for this tranche not yet available.

[31] LADWP, 2014, FiT: Set Pricing Program Guidelines, p.15.

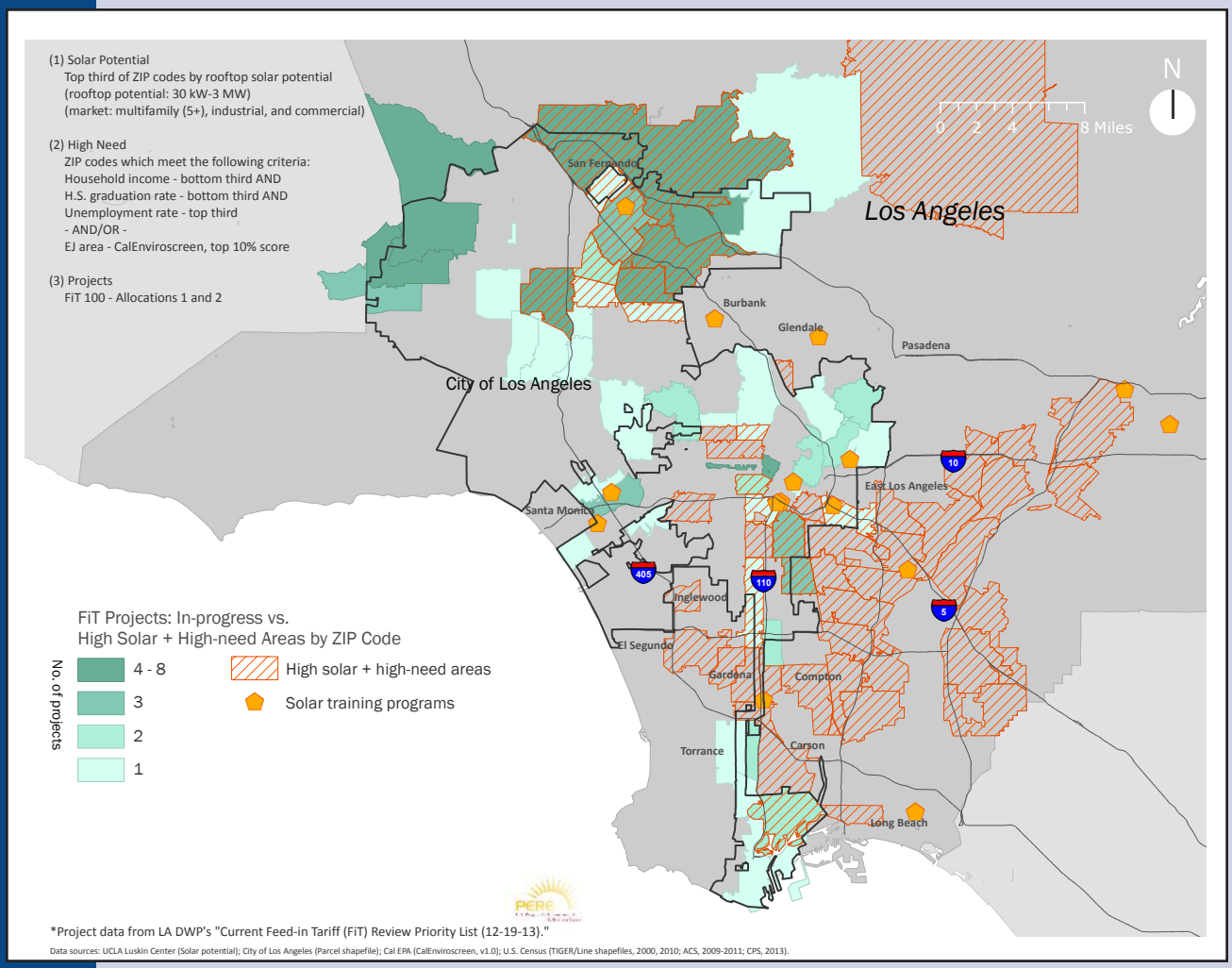
[32] LADWP, 2014, FiT: Set Pricing Program Guidelines.

There are also a number of projects proposed in North Hollywood, Central, Downtown and East Los Angeles, as well as in the communities neighboring the Port of Los Angeles. These projects could well serve the high-need areas nearby. An analysis of projects by size category reveals some additional trends: beyond the mix of project sizes in the Valley, there are a notable number of small projects in and around Downtown Los Angeles and a concentration of larger projects near the Port.

Only a select number of the proposed projects will ultimately be developed. Among the five key benchmarks in the project development process are the completion of: (1) the application, (2) a technical screening, (3) an interconnection study, (4) a customer contract, and (5) a standard offer power purchasing agreement.[34] A successful progression through all five steps signals that the project is likely to come to fruition.

To date, 109 (or 43 percent) of the projects are *in-progress* – meaning that they are moving through the development process. Of these, 20 have made it to the contracts phase and are near completion. Many of these are smaller projects, less than 150 kW. It is difficult to determine why these projects have made it further along; a new study by the UCLA Luskin Center is looking into issues within the development process.

The overwhelming majority of the remaining 126 projects (or 49 percent) are *waiting*, or on hold. These are typically the projects at the end of the lottery queue, not initially selected for development. To date, 21 projects (or 8 percent) have been cancelled, nearly all of which are first round applicants.[35] The majority of these projects dropped out after the interconnection study phase, which is often attributed to the cost of interconnection and LADWP's delay in executing the SOPPA and interconnection agreement. Many



[33] Owens Valley projects excluded.

[34] LADWP, FiT Review Priority List Spreadsheet -12/19/13.

[35] At the time of our analysis, very few second round projects had advanced beyond the application submission phase, and so, cancellation rates are unknown in this group.

firms decided "to 'move on' from their applied projects as extended periods of uncertainty over cost and time [were] disrupting firm's budget schedules."[36]

As the map below illustrates, in-progress projects are more geographically distributed throughout the City than the general application pool. While project applications are still concentrated in the Valley, no single ZIP code has more than eight projects. This suggests that as the projects move towards construction, there may be somewhat of a geographic evening out of project locations.

In the next two sections we tell the stories of several FiT projects and the local commercial solar market context in which they operate. We identify areas of both opportunity and challenge in utilizing the FiT to help fulfill Los Angeles' solar equity potential.

Opportunities and New Growth

With new projects up and humming, there is an accompanying small but growing market of solar providers, contractors, developers and workers who demonstrate the signs of growth in the new solar market. The most tangible change in the commercial solar market is the appearance of new, relocated or repositioned firms which are working creatively – and often across jurisdictions – to achieve success. On the workforce side, we find some new and hopeful links being built between solar providers and local workforce groups. Finally, there are also signs that segments of the solar manufacturing supply chain could take root here, especially if the market expands.

The FiT has created new firms and repositioned existing ones by opening up the door to the commercial solar market (although many, as we discuss below, argue that the program has created a rather small opening!). Since 2013,[37] the program has attracted firms to Los Angeles, incentivized individuals to create new small businesses and provided a pathway for large firms to expand their operations. For example, Solar Provider Group, an international solar development firm specializing in FiT projects, recently located its U.S. headquarters to Los Angeles. Another example is Absolutely Solar, an existing firm that has diversified its utility-centered solar portfolio by repositioning to take advantage of the FiT.[38]

Given the infancy of the FiT and relative dearth of solar commercial activity in the City of Los Angeles, many firms operate across multiple utility jurisdictions to stay afloat, from Southern California Edison areas to Pasadena, Glendale and beyond. While many work primarily on commercial projects, some firms even span markets, operating in the residential and/or utility markets as well. The FiT has created the foundation for a larger, in-basin solar industry, but the size of the program means that even as firms are attracted to Los Angeles, they must be innovative in their operations in order to maintain a steady stream of projects.

Continuing Local Opportunity: Mega Warehouse Rooftop Solar in the Valley

TRK Development's recent completion of its first FiT project, a 500 kW AC installation atop a 94,000 square foot warehouse in Chatsworth, further demonstrates the potential benefits of FiT for local communities. The project utilized local contractors and vendors for the 50-person installation, bringing solar opportunity to the San Fernando Valley. TRK Development hopes to continue integrating solar with its existing real estate portfolio of office and industrial sites.

Source: CLEAN LA Solar, Installations (accessed March 17, 2014 from **http://cleanlasolar.com/solar-installations).**

Through the creation of small and large project allotments, the FiT has reinforced market niches within the commercial market. Firms such as California Solar, a small operation with fewer than five employees headed by Will Breiholz, operate in the small to mid-size commercial market. They focus on development while contracting out design and labor to local firms. California Solar successfully developed the first FiT 100 project, a 134 kW project in Downtown Los Angeles. Larger commercial projects – those above 150 kW – are often the domain of larger companies. (*For more on California Solar's first project, see sidebar "Initiating Opportunity Locally."*)

[36] DeShazo & Turek, 2014, FiT 100 in Los Angeles: An Evaluation of Early Progress, p. 44.

[37] The FiT 100 began in 2013, but a small demonstration program was approved in April of 2012 – this program laid the groundwork for the 2013 FiT, but given its size did not strongly impact the market.

[38] For more on Solar Provider Group, see: **http://cleanlasolar.com/solar-installations**; **http://www.solarprovidergroup.com/.**
For more on Absolutely Solar see: **http://www.absolutelysolar.us/**

Bringing it All Together: Laborers' Union Local 300

A proposed 70 kW project at the new headquarters of the Laborers' Union Local 300 on Pico Boulevard in Los Angeles creatively links solar, equity and economic development goals, and demonstrates the multi-sector collaboration required for these types of projects.

The project was spearheaded by Empower America, a solar workforce trainer and labor market intermediary, which has linked veterans to solar projects in San Diego and the Inland Empire. Through the activities of the CLEAN LA coalition, Empower America connected with Solar Provider Group, which will oversee the development and engineering. Structured Finance Associates, the project's creative finance partners, will likely utilize PACE (Property Assessed Clean Energy) financing on project. The finance role is especially important given that the project does not qualify for the federal solar investment tax credit due to its nonprofit status.

The group will draw from local labor organizations, veterans and at risk youth on the project. They hope to offer vets a foot-in-the-door to both the solar industry and unions. Not only are solar panels planned to line the rooftop of the Laborers' headquarters, but the building is also considering housing a solar and energy efficiency training center.

Combining the best of the public, nonprofit, and private sectors, the team's work has – not surprisingly– received strong support from Mayor's office and CLEAN LA coalition. Although the project is many steps from completion, the relationship-building groundwork is set — and will likely germinate other fruitful partnerships and benefits for Los Angeles.

Source: Mario Pabon, President/CEO, Empower America; Ernesto Pantoja, Director of Government Affairs, Empower America; Christian Wentzel, President & Co-Founder, Solar Provider Group.

The new market has engaged more than just solar providers. Rather than leasing his rooftop to a solar provider, commercial property owner and developer, Rishi Kapadia of TRK Development quickly pursued the FiT and installed a large array of panels on his Chatsworth warehouse rooftop. (*For more on TRK Development's first project, see sidebar "Continuing Local Opportunity."*)

As construction jobs dried up during the depths of the recession, a number of construction firms pivoted to solar installation to take advantage of government incentives and to stay financially afloat.

FiT projects are starting to tap into our ready workforce. There is evidence that local solar providers are connecting with training programs and disadvantaged workers through local coalitions and networks. We profile two such projects which capture the spirit of collaboration in solar equity. By creating ways to capitalize on the many skills that our veterans already possess, connecting at-risk youth to meaningful career ladders, and utilizing union labor, these programs build for today and tomorrow. While not all projects are utilizing training programs, many firms work with local contractors who do use local labor. *(For model examples of solar equity, see the sidebars "Bringing It All Together" and "Innovation in Action.")*

Solar has "grown up" and the employment picture has improved modestly. The development of the FiT program, and to an extent the development of the solar industry, began during the Great Recession. In the intervening years, the employment picture has begun to brighten and workforce trainers and unions have developed guarded optimism about the potential for growth.

Just a few years ago, the overall unemployment rate stood above 12 percent and the construction industry, the closest proxy for solar, was faring even worse, with an unemployment rate of 19 percent in Los Angeles County. As the recession bottomed out and a slow recovery took hold, the unemployment picture has improved to 9.2 percent overall unemployment and 13.5 percent in the construction industry. Within the construction sector, there is variation in unemployment by skill level, with rates ranging from under nine percent for supervisors and managers to over 17 percent for laborers and helpers. Falling into this latter category are many newly-trained, entry-level installation workers.[39]

[39]PERE data analysis, Unemployment by detailed construction occupations – Los Angeles County, 2007-2011 ACS data updated using 2013 statewide CPS adjustments.

Innovation in Action: The Forever 21 Project

When completed, PermaCity's proposed Forever 21 project will be the largest rooftop solar electric system in Los Angeles County. Like the Laborer's Union project, the project is a forward-looking solar equity project that will help to build a stronger, more equitable Los Angeles.

The project is an ambitious and innovative 5.1 MW project located on clothing giant Forever 21's headquarters and distribution center in Lincoln Heights. Rather than creating a project with only the building's energy needs in mind, the project utilizes a holistic approach, combining net metering and FiT programs in pursuit of the highest and best use of the site. Two MW of the project are part of the FiT program, and the resulting energy will be fed directly to the local grid; the remaining three MW are devoted to net metering, and used to offset the building's use.

Forever 21 is also financing a new roof as part of the project, which will lower the building's energy usage by an estimated 15-20 percent. In addition, the project will utilize Solar Strap, an innovative new solar racking module invented by PermaCity Solar's President, Jonathon Port, and manufactured in LA County by Orion Solar Racking.

The project will employ approximately 35 on-site workers and is seeking up to 15 local hires. PermaCity is actively hiring local workers trained at the East Los Angeles Skills Center and conducting outreach to other local workforce development programs.

This large-scale project is a model for green development for several reasons – it will utilize local manufacturing, innovatively combine two solar incentive programs, and is seeking to connect with nearby locally trained workers. Many projects would do well to follow its lead.

Source: Herb Mendelsohn, Executive Vice President, Sales and Marketing, PermaCity Solar.

To square what seem like two contradictory messages in our data: high unemployment rates in construction and an optimistic solar picture, interviewees suggest that the Solar Census is correct: the number of regional solar jobs is growing and hiring is improving, albeit slowly. They also suggest that although solar growth is positive, the relatively large size of the solar labor force means that there is still some slack in the market.

Much of the local solar growth stems from net metering and utility-grade project work, a large share of which are outside Los Angeles City. LA IBEW 11/NECA notes a shift towards solar in their work portfolio, with the solar share tripling, increasing from five percent to around 15 percent over the past few years.

Solar careers go beyond installation jobs. No longer an insignificant workforce, the solar industry in Southern California employs over 10,000 workers. As the solar industry takes shape, more clearly articulated "green career" pathways and occupations are forming. Although installation occupations comprise over half (55 percent) of the state's solar labor force, manufacturing (22 percent) and sales, distribution and project management (17 percent) play an increasingly strong role.[40] Our interviews with local workforce development practitioners reinforce this point. Career pathways to a number of well-paying jobs in the solar and energy efficiency industries exist. Though solar installation training has served as a focal point of workforce training programs, entry-level installation work, which is often lower-wage, temporary work, best serves as a stepping stone to further training or a non-installation career. Practitioners highlight possible employment opportunities ranging from sales and green legal assistants to landscapers and human resource personnel. Furthermore, additional journeyman training in a related trade, such as certified electrician's training, can lead to income and professional mobility for those interested in transferring installation skills to construction-related careers.

There is a niche role for manufacturing in Los Angeles. There is a small, but growing contingent of solar manufacturers in California. In 2013, there were over 300 solar manufacturing firms employing just over 10,000 workers. In contrast to the weak employment forecast for manufacturing overall, solar manufacturers anticipate 7.2 percent growth in the coming year.[41] Locally, there is growth potential in racking systems, which are heavy and expensive to ship, and in other niche segments of the market. Firms

[40]Southern California includes Los Angeles, Orange, and San Diego Counties. Data on employment by solar occupation for Southern California is not available due to small sample size. The Solar Foundation, 2014.

[41] The Solar Foundation, 2014, California Solar Jobs Census 2013.

Building Community Connections: CLEAN LA Coalition

While coalition-building has been instrumental in establishing Los Angeles' solar market, the CLEAN LA Coalition stands out as the leader in driving the market forward. Led by the Los Angeles Business Council, the Coalition is a platform for partnership between over 30 local community organizations and the LADWP. It acts as a unified presence to increase public awareness and support for solar projects and to facilitate meaningful engagement with low-income communities. The CLEAN LA coalition has hosted over a dozen FiT technical workshops to inform and connect solar providers and workforce trainers. These relationships have paved the way for several model solar equity projects.

Source: CLEAN LA Solar (accessed March 7, 2014 from **http://cleanlasolar.com**).

such as PermaCity have developed a solar racking technology that Orion Solar Racking, another local firm, will manufacture. Others, like KB Racking, with manufacturing elsewhere are pursuing local options.

The customization required for smaller parts, such as wire braiding, provides a competitive advantage to local firms, which can easily and quickly respond to changes in specifications. Given Los Angeles' historically strong manufacturing base and solar potential, many are hopeful that the region could play a small but important role in the supply chain. Although the region does not lack in local manufacturing capacity, there are administrative hurdles in the component approval process which have impeded development of the market. The Los Angeles Department of Building and Safety (LADBS) plays a key role in standardizing new technologies and processes and is working on strategies to streamline the approval and permit process. *(For more on recent LADBS projects, see sidebar "Streamlining and Innovating.")*

Market Challenges: Uncertainty, Disconnection and Limited Awareness

The FiT has resulted in new market growth, but is also hitting several snags that are limiting its potential. *Uncertainty,* particularly around the program's future scale, is the biggest obstacle to economic development success, impeding firms from making long-term investments in the labor force and market. *Disconnection* between high-need communities and the FiT results from a lack of codified programs and incentives. Finally, *increased awareness* about the FiT among potential customers and workforce trainers is needed. To unlock the transformative and innovative potential of a FiT, we elaborate on these three challenges, below.

Uncertainty. Successful FiTs are characterized by certainty – the ability to purchase guaranteed solar energy at certain price in a known quantity.[42] This contrasts with how firms feel about the FiT program in Los Angeles. Uncertainty around the program's scale – and if the program will grow from 100 to 600 MW – leaves firms hesitant to make long-term investments as far as workforce or business relocation. In addition, many find the lottery system and the project selection process challenging.

- **The program size is small relative to our capacity**. Los Angeles' 100 MW FiT program may be the largest program of its type in the nation (by MW), but the size of the FiT program relative to Los Angeles' 5,500 MW of rooftop potential is small.[43] A strong commercial market cannot organize around a light anchor. With only a 100 MW program in place, firms are hesitant to make long-term investments in the region, and the limited number of in-basin projects is likely to have a positive, but short-term effect on the local labor force. Moreover, a small program fails to capture cost reductions derived from economies of scale and other cost efficiencies stemming from a robust market.
- **There are challenges in the program design, application and permitting process.** Key program design issues are around pricing – in particular, small projects are more expensive to develop, yet are offered the same price per kWh. Another issue is the estimate of interconnection costs (or the cost of "plugging in"), which varies widely from project-to-project and is unknown until later in the application approval process. This adds unnecessary barriers as firms try to attract and engage building owners.
- **The lottery system is challenging.** The LADWP's lottery system is fair in that projects submitted within the first five days have an equal chance of being selected. However, the "luck of the draw" nature of a lottery means that underdeveloped project proposals receive equal odds of being

[42] J.R. DeShazo and Ryan Matulka, December 2009, Best Practices for Implementing a Feed-in Tariff Program, UCLA Luskin Center for Innovation (accessed March 20, 2014 from http://innovation.luskin.ucla.edu/sites/default/files/Best%20Practices%20for%20Implementing%20a%20Feed%20in%20Tariff%20Program.pdf)

[43] Environment California, April 30, 2013, Solar in the Southland: The Benefits of Achieving 20 Percent Local Solar Power in Los Angeles by 2020.

Streamlining and Innovating: Los Angeles Department of Building and Safety

Like the LADWP, the Los Angeles Department of Building and Safety (LADBS) is adapting its policies and programs to more efficiently process and increase the impact of solar projects.

LADBS is expanding its online permit processing to include small residential solar projects, 3 kW and under, by the end of the summer. They plan to accommodate larger projects, up to 10 kW, by year's end. This will save customers from having to come to LADBS offices in person, thereby saving time and money.

The Department is also improving inspection consistency by developing, and training all residential inspectors on, a standardized solar inspection checklist for residential solar systems. Solar developers will also benefit from LADBS' recently released bulletin, "Guidelines for Plan Check and Permitting Requirements for Solar Energy Devices," which explains the building and electrical permitting process, describes the structural and fire rating code pertaining to solar installations, and highlights required departmental clearances outside of LADBS.

Where national standards do not exist, LADBS is developing testing standards for new electrical equipment used in conjunction with solar systems to accommodate new technology. LADBS is also meeting with members of the solar industry on a regular basis in order to gain feedback and input on improvements.

Through its commitment to innovation, safe and sound structures, and information sharing, LADBS is helping to facilitate solar economic development rather than hinder it – and it is a strong partner in LA's solar future.

Source: Osama Younan, LA DBS. For more on Guidelines for Plan Check and Permitting Requirements for Solar Energy Devices, see: **http://ladbs.org/LADBSWeb/information-bulletins.jsf**

selected as higher-quality applicants. This process, coupled with the limited 20 MW available, has resulted in oversubscription and application submittals of varying quality. Firms may not make the up-front investment to produce a comprehensive project plan and application, thus increasing the likelihood that the program's application will drop out. Likewise, there is no credit or preference given for high-quality projects that offer additional social equity benefits.

- **Building owners and site hosts are wary of the project selection process.** These parties engage with solar providers in the application process but may fail to see the project come to fruition on their rooftop, resulting in lost potential revenues and misspent time. This is especially problematic considering that the benefits accruing to site hosts, most often through a leasing fee, are limited to begin with.

Disconnection. As the FiT opens up the commercial market and the overall employment picture begins to brighten, maximizing economic development and solar equity requires creating stronger and more systematic connections between the two. Since most FiT projects are in the development process, this is a perfect time for creating better connections. The following is the status quo with which they must work:

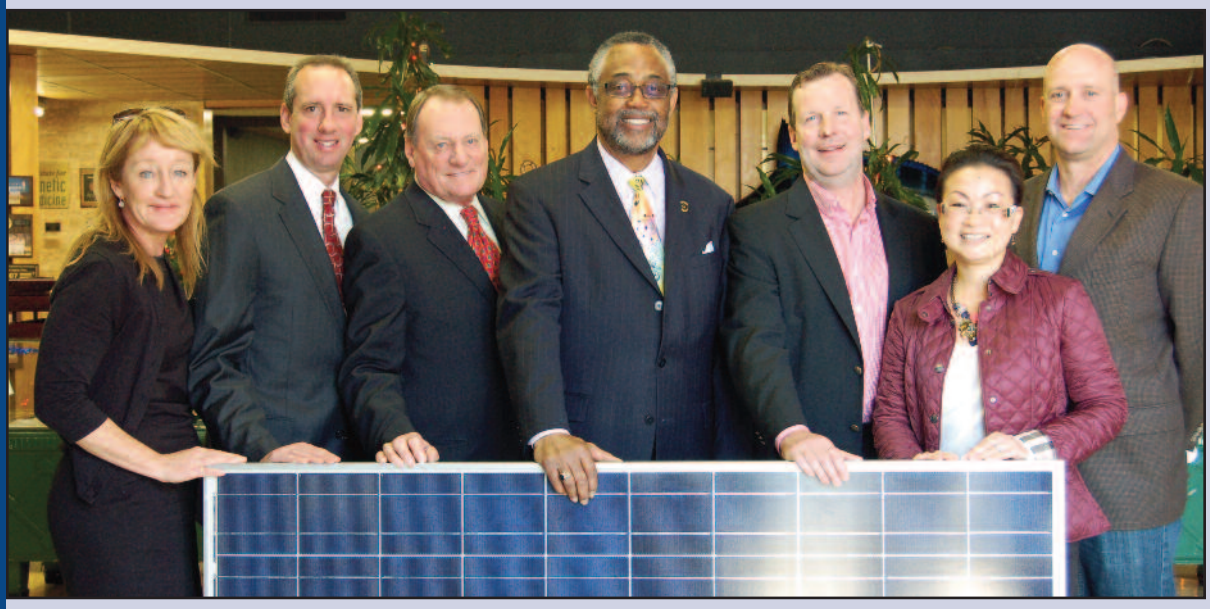
- **A spatial mismatch exists between jobs and job seekers.** Why are these formal links so important? Many workers in the solar industry still have a hard time finding employment within the City of Los Angeles. Many travel to Palmdale, Lancaster and the Inland Empire to work on utility-grade jobs. Workers face a choice between traveling far distances for work or decreased job prospects. While traveling long distances in construction is somewhat an industry norm, even for low-income workers, the additional expenses incurred for transportation and childcare, for example, can make the cost of work particularly high.
- **Installation jobs offer limited advancement opportunities.** Beyond the FiT and in the solar industry in general, an entry-level installation job does not necessarily lead to a career in solar. Temporary, part-time installation jobs are often the starting point for disadvantaged workers. While formal apprenticeship programs, including those offered through building trades unions, offer a pathway to journeyman positions with living wages and benefits: there are often barriers for disadvantaged workers to get on the first rungs of a career ladder and then move up. Support services, career pathways and job ladders are needed, a topic given considerable thought by the Apollo Alliance in their report, "Creating and Keeping Clean Energy Jobs in California."[44]

[44] The California Apollo Program, 2010, Creating and Keeping Clean Energy Jobs in California (accessed March 18, 2014 from **http://www.bluegreenalliance.org/image/TheCaliforniaApolloProgram.pdf**)

- **Small projects that generate local economic development are under-incentivized.** Small projects are more expensive to build, but importantly, are more likely to generate local economic development benefits. They are more likely to have local ownership (rather than just leasing the roof for solar installations) and locally finance – both of which suggest greater local value capture.[45] It is problematic that under the current FiT, small and large projects receive the same tariff rate. Many suggest than the small project carve-out (four MW) will have trouble attracting applications in future allocations. An early analysis of third allocation applications indicates a sharp falloff in the number of small projects.[46]

A Need for Increased Awareness. Workforce development practitioners and commercial rooftop owners have some knowledge of the FiT, but are not as well-versed on the details of the FiT program and how their rooftops or workers might be candidates for projects.

- **Solar provider search costs are significant.** Solar providers face a difficult time finding commercial customers, both in terms of identifying rooftops and finding owners who are willing to participate.
- **Site host awareness and benefits are lacking.** Solar providers marketing difficulties are compounded by the amount of misinformation that currently exists regarding solar, including costs and hazards. Building owners are also skeptical about leasing their rooftop as they believe that they would receive a relatively limited benefit.
- **Workforce training organizations' knowledge is limited.** Among training programs and workforce development practitioners, there is a basic awareness of the program, but a lack of detailed knowledge and specific strategies for connecting with FiT contractors and the emerging commercial market. On the other hand, where there is awareness, there is uncertainty about the program's future, a topic we take on directly below.



[45] Interview with Wilson Rickerson, Meister Consultant Group.

[46] As noted in a review of projects submitted within the first five days of the application period. LADWP, Feed-in Tariff Program, Program Allocation Status - FiT 3rd Lottery Results 2014 03 28.

Recommendations: Adding Certainty, Connection, and Awareness

Although adjustments and tailoring of the program are needed, the suspension or delay of the FiT could destabilize the growing solar market. All the changes we are recommending are in the spirit of "learning by doing" – that is, identifying existing challenges and addressing them along the way. Adding certainty to the market and increasing awareness among workforce trainers and rooftop owners are all essential components to stabilizing the industry and ensuring that all workers receive equal access to the employment opportunities offered by this program. We suggest three basic strategies:

Add certainty. As one interviewee put it, "the FiT has great potential but no velocity." To reach its full potential, the FiT must offer firms two levels of certainty that allow for sound investment decisions. First, *macrocertainty* can be achieved by scaling up the current FiT program. In doing so, firms can make significant investment decisions, such as local workforce investment and business relocation. Second, design features within the FiT can provide *microcertainty* by increasing the probability of quality applicants being selected. These design features include a tariff price that is reflective of demand and an application process that rewards those firms who performed their due diligence prior to the submitting of application. The goal is to increase the number of fully-prepared applications and allow firms to deepen their engagement with potential site hosts and retain financing for a longer period, thereby increasing expected benefits.

- **Scale up the FiT program to at least 600 MW.** From an economic development and jobs perspective, scale matters. A more robust FiT program would generate additional projects, stabilizing existing firms and incentivizing new firm growth and relocation. For the workforce, it would lead to more and ongoing in-basin work for installers. A larger program will also allow for greater tranche capacities and a greater supply of available FiT contracts to better reflect the high demand seen in the first two tranches of the current program. Additionally, an overall solar program of 1200 MW and a 600 MW FiT would substantially contribute to Los Angeles' local RPS goal of 20 percent by 2020.[47]
- **Continue to streamline the application process.** The LADWP has launched the FiT program with energy, thoughtfulness and an eye on efficiency, and has shown a willingness to refine the program and listen to feedback. The LADWP has recently taken steps to reduce the backlog of applications by hiring additional staff to facilitate the processing of applications, providing sample applications and requiring that firms who submit incomplete applications are responsive to requests for information. We applaud these efforts and encourage the LADWP continue to accommodate the extra demand. The LADWP has already created a simplified re-application form for projects not selected as part of the lottery but willing to be considered in the next tier. Another option is to rollover applicants into future allocations that have a lower tariff rate.
- **Improve selection process.** To increase program efficiency and firm certainty, the lottery system needs refinement. One option is to prioritize projects that generate local benefits, either by providing an additional tariff or advancing them in the queue. Local benefits can include hiring of disadvantaged workers, utilizing local training programs, or being strategically located to benefit the LADWP's grid structure.
- **Expand online permit processing to include commercial, industrial, warehouse and multifamily residential projects.** LADBS is off to a great start with the implementation of its online permit processing for small residential projects. As the process is regularized, LADBS should include non-residential solar as well. Online processing will become of particular importance as the FiT program scales and applications increase. Additionally, the LADWP and LADBS should continue to look to examples in other cities, such as Chicago's expedited solar processing and Lancaster's solar mandate on new construction.[48] [49]

For additional creative and detailed solutions around several issues of the current FiT program, such as interconnection and contracting, please see UCLA's evaluation report of the FiT 100.[50]

[47] Environment California, 2013, Solar in the Southland: The Benefits of Achieving 20 Percent Local Solar Power in Los Angeles by 2020; Eric Garcetti Website, Record and Agenda: Creating Jobs, (access March 7, 2014 from http://www.ericgarcetti.com/issue_jobs).

[48] City of Chicago, Solar Express, http://www.cityofchicago.org/city/en/progs/env/solar_in_chicago.html

[49] Solar Lancaster, http://www.solarlancaster.org/

[50] UCLA, 2014, FIT 100 in Los Angeles: An Evaluation of Early Progress. Note: a job year is the equivalent of one full-time job for one year.

Connect projects to high-need communities. The highest and best use of the FiT results from achieving a nexus between solar production, business development and improved outcomes for disadvantaged communities. For the FiT to better address equity, specific goals and strategies to link solar jobs with high-need communities and workers must proactively be incorporated into the program.

- **Measure jobs created**. To understand if the program is effective in generating employment in the solar industry, it is necessary to collect information on job creation in a systematic way. The LADWP is best positioned to capture and disseminate this information by (1) asking firms participating in the FiT to report on the number of job years created, and (2) sharing that information through the Mayor's Dashboard tool on the FiT website.
- **Give priority to Solar Equity projects**. Firms with a well-developed plan for hiring disadvantaged workers, workers residing in high-need ZIP codes, and/or graduates of local training programs could be given priority in the lottery system and "lock in" the highest tariff rate, regardless of the allocation in which they apply. The FiT 100 could adapt elements of the policy framework from the bundled FiT program. Under the bundled FiT, firms are required to submit local economic development plans as part of the bidding process, developing a "bundled" package of commercial and utility-grade solar projects.[51]

  When defining what constitutes a "high-need area" or "disadvantaged worker," there are several effective definitions that emphasize multiple barriers to employment, address several types of need and reach across multiple neighborhoods. We recommend the following:

  *High-need area*s are ZIP codes with:

  (1) Median household income in the bottom third of all ZIP codes in Los Angeles County, and

  (2) High school graduation rate in the bottom third, and

  (3) Unemployment rate in the top third,[52] and/or

  (4) A Cal Enviroscreen (CES) score in the top 10 percent of all ZIP codes in California

  A *disadvantaged worker* is an individual facing one or more barriers to employment, including:

  (1) Being a Disabled Worker;

  (2) Being a current recipient of Supplemental Nutrition Assistance Program (SNAP) benefits or Temporary Assistance for Needy Families (TANF) benefits because of extreme poverty;

[51] LADWP, 2013, Beacon Bundled FiT RFP No. 90135, Addendum 7.

[52] This corresponds to a median household income of $52,035 or lower, a high school graduation rate of 90 percent or below, and an unemployment rate of 11 percent or higher. Calculated using 2007-2011 pooled ACS data for Los Angeles County. Unemployment data updated using the 2013 CPS.

[53] Adapted from the Jobs to Move America Policy, US Employment Plan, USEP Price Adjustment Framework.

(3) Having a past record with the US criminal justice system that includes a felony conviction;

(4) Being a Disabled Veteran; or

(5) An individual who (a) prior to commencing work on a project, has a household income of less than 50 percent of the Area Median Income (AMI) *and* (b) lives in a high-need ZIP code.[53]

- **Offer disadvantaged worker hiring credits.** Companies hiring disadvantaged workers and/or graduates of training programs located in disadvantaged areas could receive a credit equal to the additional labor costs of employing these workers. Recent research puts this cost at 20 percent, which includes the additional training and outreach involved in hiring workers with barriers to employment.[54] The Los Angeles County Metropolitan Transit Authority has recently adopted a policy that allows transit firms to receive employment cost credits on bids for hiring and training.[55]
- **Establish goals for projects in high-need and high-solar neighborhoods.** The San Fernando Valley is a major solar hotspot, and a large percentage of proposed FiT projects are located there. However, attention should be given to nurturing the growth of projects across the city, in particular bringing solar economic and workforce development to Downtown and South Los Angeles.
- **Amend the Local Business Preference Program (LBPP) to include the FiT.** City ordinance No. 181910 requires that for projects $150,000 or greater, the LADWP must provide an eight percent preference for Local Prime Contractors or up to a five percent preference for local subcontractors. These preferences for local businesses help to capture ripple effects on the local economy. Currently, the LBPP program does not apply to the FiT program because it does not have an RFP process and the contract sizes exceed the LBPP limit. Amending the LBPP to apply to the FiT could help ensure has the greatest possible benefit for local communities.
- **Implement a Priority Plan Check for Small Solar Progam**. Many small commercial projects, such as apartment rooftops, are located in dense urban neighborhoods and offer local economic development advantages. The small project pool has been instrumental in allowing small firms to tap into the commercial market and should be maintained in subsequent FiTs. However, penciling out small projects is relatively more costly. One strategy to help small projects is to adjust the tariff rate. **Another approach is to lower the costs of small projects through expedited application processing**. We recommend that LADBS implement a Priority Plan Check for Small Solar program, and adopt an approach similar to their Priority Plan Check for Green Buildings, which successfully expedited green projects prior to the passage of statewide standards.[5657] A Priority Plan Check process would provide small projects an advantage by putting them ahead of other projects with a plan check engineer. Other departments that process permits and approvals could adopt a similar approach. Implementing priority processing will help retain developer's interest in multifamily solar projects, which is a critical in-basin market *and* more prevalent in lower-income areas.[58]

Secure additional resources. Utilizing additional resources could help maintain reasonable local energy rates and make it easier for solar providers to connect with disadvantaged workers across Los Angeles. In order to accomplish this, the FiT program could:

- **Leverage Promise Zone resources.** The Promise Zone Initiative has the potential to creatively link workers to FiT projects. The Initiative's neighborhood revitalization strategy identifies and prioritizes federal assistance for community development for distressed communities. The Los Angeles Promise Zone consists of the Pico Union, Westlake, Koreatown, Hollywood and East Hollywood

[54] Adapted from the Jobs to Move America Policy, US Employment Plan, USEP Price Adjustment Framework.

[55] Matt Bevilacqua, Next City, February 21, 2013, In Bid for New Buses, L.A. Demands American-Made (accessed on March 23, 2014 from http://nextcity.org/daily/entry/In-Bid-for-New-Buses-L.A.-Demands-American-Made).

[56] LADBS, Priority Plan Check for Green Buildings (accessed April 9, 2014 from http://ladbs.org/LADBSWeb/LADBS_Forms/PlanCheck/PC-STR.Aff39-GreenBuildingDeclaration.pdf).

[57] The California Energy Code, Title 24 set statewide standards for green building. For more see: http://www.bsc.ca.gov/codes.aspx

[58] Los Angeles Business Institute, 2011, Making a Market: Multifamily Rooftop Solar and Social Equity (accessed April 9, 2014 from http://www.labusinesscouncil.org/files/Reports/LABC-Exec-Summary-Brochure-2011-Final-r-1.pdf

neighborhoods. The Los Angeles Promise Zone specifies goals for expanding high quality career opportunities. One goal commits to "[ensuring] youth and adult residents have access to high-quality career and technical training opportunities that prepare them for careers in high-growth industries through partnerships with career and technical training schools and the Los Angeles Community College District."[59] Channeling funding to existing resources – such as the Los Angeles Trade Technical College's Renewable Energy Programs – to further support job placement services could help institutionalize links between training programs and FiT projects.

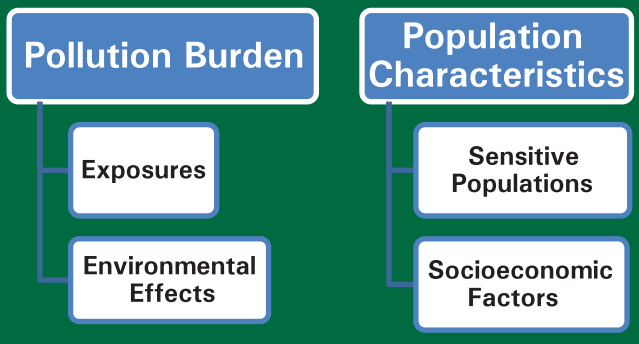
- **Utilize cap-and-trade auction proceeds**. The state's Greenhouse Gas Reduction Fund will likely generate tens of billions of dollars this decade and could potentially be used to incentivize hiring workers from high-need areas for FiT projects. Per AB 32, the Global Warming Solutions Act, these revenues from the cap-and- trade program will result in economic development and jobs. Two companion bills, AB 1532 and SB 535, specified that a share of revenues from the cap-and-trade auction be used to create benefits for disadvantaged communities by "reducing GHG emissions while maximizing job creation, public health and other so-called co-benefits." At least 25 percent of auction revenues are set aside for projects which benefit disadvantaged communities, while at least ten percent are set aside for projects directly located in in these neighborhoods.[60]

  Clean energy and energy efficiency is a priority funding area, and the state is currently in the early stages of targeting and administering funds. The current three-year plan, "Cap-and-Trade Auction Proceeds Investment Plan: Fiscal Years 2013-14 through 2015-16," sets a preliminary goal of directing half of program funds within the Energy Efficiency and Clean Energy investment sector to target disadvantaged communities.

  To help expedite the rollout of investments, this initial investment plan focused on existing programs. In 2014-2015, two CSI solar programs targeting low-income households, MASH (Multifamily Affordable Solar Homes Program and SASH (Single Family Affordable Solar Homes Program), were among the recommended projects. Both were selected based upon feedback gathered in local

A Tool for Targeting Cap-and-Trade Proceeds: Cal/EPA's CalEnviroscreen

The California Communities Environmental Health Screening Tool (CalEnviroscreen) was developed by the California Environmental Protection Agency (Cal/EPA) and the Office of Environmental Health Hazard Assessment. The place-based tool identifies California communities at the ZIP code level which suffer disproportionately from environmental hazards. Scores are based on two factors: pollution burden and community characteristics. Pollution burden measures exposure to pollutants and poor existing environmental conditions. By including community characteristics, CalEnviroscreen takes into account vulnerability to pollution burden. This measure includes indicators of socioeconomic status and underlying health status. CalEnviroscreen identifies opportunities for targeting funds in communities that suffer most from environmental impacts.



Source: Cal / EPA OEHHA, CalEnvirscreen v1.0 (accessed March 7, 2014 from **http://oehha.ca.gov/ej/pdf/042313CalEnviroscreen1.pdf**).

[59] White House, Fact Sheet: President Obama's Promise Zones Initiative (accessed March 7, 2014 from **http://www.whitehouse.gov/the-press-office/2014/01/08/fact-sheet-president-obama-s-promise-zones-initiative**).

[60] Public Advocates, Cap and Trade Revenues under AB32, **http://www.publicadvocates.org/cap-and-trade-revenues-under-ab-32**

investment plan-related outreach and workshops. In the same way, local leaders, advocates and community members could propose the FiT for inclusion in future plans. The CalEnviroscreen, which scores every ZIP code in the state on environmental health (and which will soon be available at the census tract level), is the tool that the state is using to identify disadvantaged communities for the purpose of prioritizing investments from the auction revenues. It is also incorporated into our high-need index.[61] *(See sidebar "A Tool for Targeting Cap-and-Trade Proceeds" for more on CalEnviroscreen.)*

Communicate success and raise awareness.

Given the early stages of the FiT, increasing awareness of the program, recruiting participants and partners and sharing best practices with other utilities in the region will help grow the regional market – which will, in turn, help the local Los Angeles market.

- **Continue coalition building.** The CLEAN LA Coalition has played a critical role in helping rooftop owners, solar developers and workforce development groups make connections with each other and better understand the program. In the future, looping manufacturers, a broader array of workforce development practitioners and building owners into the conversation would build further awareness. (*See "Building Community Connection" sidebar to read more about what the CLEAN LA Coalition has already accomplished.)*
- **Refine FiT program materials and online tools.** There is a need for continued development of the LADWP FiT informational resources and related online tools. To help solar development firms connect with local resources, solar workforce training programs, finance experts and manufacturers could be listed on the LADWP FiT web pages. In addition, the Los Angeles County Solar Map tool could be refined to allow users to search by land use and rooftop potential, which would help solar firms and building owners determine if properties are candidates for the FiT.
- **Tell the story of the emerging market – and focus on the collective regional opportunities.** Proponents of the FiT program should continue to tell the story of new, in-basin projects – their location, size, and payback – as well as development successes and challenges. The focus should not only on stimulating conversation among local stakeholders, but also sharing information and generating information with other nearby utilities, many of whom work closely with Los Angeles solar firms and contractors.

[61] State of California, May 2013, Cap-and-Trade Auction Proceeds Investment Plan: Fiscal Years 2013-2014 through 2015-2016, (accessed March 14, 2014 from http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf).

Conclusion

The FiT was developed and launched during economically challenging times through the efforts of a diverse coalition. It was remarkably farsighted in its attempt to look beyond the immediate financial crisis to the long-term economic future. The FiT has the potential to create the sort of robust, in-basin energy market that can help to move Los Angeles forward into a 21st century that will be marked by an increasing embrace of strategies that marry growth imperatives and equity concerns, emerging technologies and long-standing needs.

However, potential and reality can be far apart. We see progress in the local solar market in new firms and some innovative workforce development partnerships. However, uncertainty about the market's future and its relative disconnection from those who most need to access its employment opportunities could limit full progress in achieving solar equity in Los Angeles.

Moving forward, we need to scale solar and solidify connections to the workforce. The commercial market is at a critical point: in order to have a lasting impact on the local job market and to achieve economies of scale, the FiT must expand beyond its humble 100 MW beginnings and be scaled to a 600 MW or larger program. A program this size would better secure Southern California as a regional solar hub and solidify careers in this sector for disadvantaged workers, particularly if the incentives and credits discussed in this report are built into the program.

We are hopeful. The most critical ingredients for securing Los Angeles' solar future are already in place: solar rooftop potential, new and expanding firms, innovative training programs, a trained and ready workforce a growing consensus about the need to have a mix of project sizes and streamline the application and permitting process –and a municipal utility whose primary goal is not just bottom line of today, but also the public benefit of the future.

Equally important, Los Angeles has a committed coalition of business leaders, policymakers, environmental advocates and academics that is committed to "solar equity" – achieving benefits for the environment, creating in-basin solar jobs and spurring economic development in struggling neighborhoods. Los Angeles's local leadership has shown an ability to innovate and to adapt: the Mayor, LADWP, LADBS, local firms and organizations have already started addressing some of these issues we raise in this report.

The challenge for the coming years is ensuring that all these moving parts work together. Because the stakes are so high, the potential gains are significant. After all, what is at issue for the City and the region is much more than an arcane discussion of energy efficiency and proper pricing. An old Los Angeles – notorious for sprawl, inequality and environmental distresses – is slowly becoming a new Los Angeles, a city hoping to be at the cutting edge of innovation and inclusion, clean air and green jobs, livability and economic vitality.

Bridging the gap between the old and new are innovative policies that can connect the imperatives of economic growth with long-standing concerns about social equity and the environment. Behind those policies, in turn, are a new set of diverse coalitions insisting that an economy in which we grow apart needs to be reworked into an economy where we can grow together. The FiT is one of these bridges to both a new future and new set of conversations about our shared future.

LABC Institute
LOS ANGELES BUSINESS COUNCIL

About Us

The LABC Institute is a forward-thinking research and education organization dedicated to strengthening the sustainable economy of California, particularly the Southern California region. Founded in 2010, the LABC Institute provides a bridge between businesses, government, environmental, labor and nonprofit communities of Southern California to develop policies and programs that promote investment, jobs and business development. We are the research and education arm of the Los Angeles Business Council, one of the most respected business advocacy organizations in Southern California.

A Coordinated Approach

The LABC Institute collaborates with diverse community stakeholders and world-class institutions – USC, UCLA, CalTech and others – to conduct research leading to policies and programs that help build healthy communities. Our research focuses on environmental and sustainability best practices that also promote investment and economic development in Southern California.

The results of our research influence a broad range of leaders – including governmental officials, business executives, journalists and directors of community-based organizations – who engage with our work in informal settings and at Institute-sponsored summits, conferences and forums that help shape the public policy agenda.

Achieving Measureable Results

The LABC Institute's groundbreaking research on new energy policies has earned national recognition. Our innovative work on rooftop solar energy options led directly to the implementation of the CLEAN LA Solar Program, adopted in the spring of 2012 by the City of Los Angeles and the Los Angeles Department of Water and Power. This program is the largest of its kind to be adopted by a major city. Besides generating clean energy, the CLEAN LA Solar Program will spur new investment and create a significant number of high-quality jobs in Los Angeles.

Our Partners

The LABC Institute works with national experts and scholars, many based in Southern California, who contribute significantly to our research efforts. These partners include many of the region's leading research institutions, including the University of Southern California; University of California, Los Angeles; Loyola Marymount University; and the California Institute of Technology. Subject area expertise is provided by government leaders at such agencies as the Departments of Energy and Housing and Urban Development, as well as key committee members in Congress and the California legislature.

Our ongoing educational partners include the California Governor's Office, the Los Angeles Mayor's Office, the California Air Resources Board, and the California Public Utilities Commission.

For nearly every policy area, the LABC Institute, working with the Los Angeles Business Council, forms a coalition of business, academic, environmental, labor, social justice and nonprofit stakeholders to help raise visibility for the research and drive recommended policies forward.

Our Supporters

The LABC Institute depends on the generosity of our supporters, which include a range of institutions, foundations and individuals, including the William and Flora Hewlett Foundation, the 11th Hour Project, Bank of America, Rockefeller Brothers Fund, JP Morgan Chase, Wells Fargo, Bank of America and the Gilbert Foundation.

The LABC Institute is a tax-exempt 501c3 organization, and is strictly nonpartisan. For more information, please visit **www.labcinstitute.org.**

LABC Institute
LOS ANGELES BUSINESS COUNCIL

2029 Century Park East
Suite 1240
Los Angeles, CA 90067
310.226.7460

www.labusinesscouncil.org
labcinstitute.org