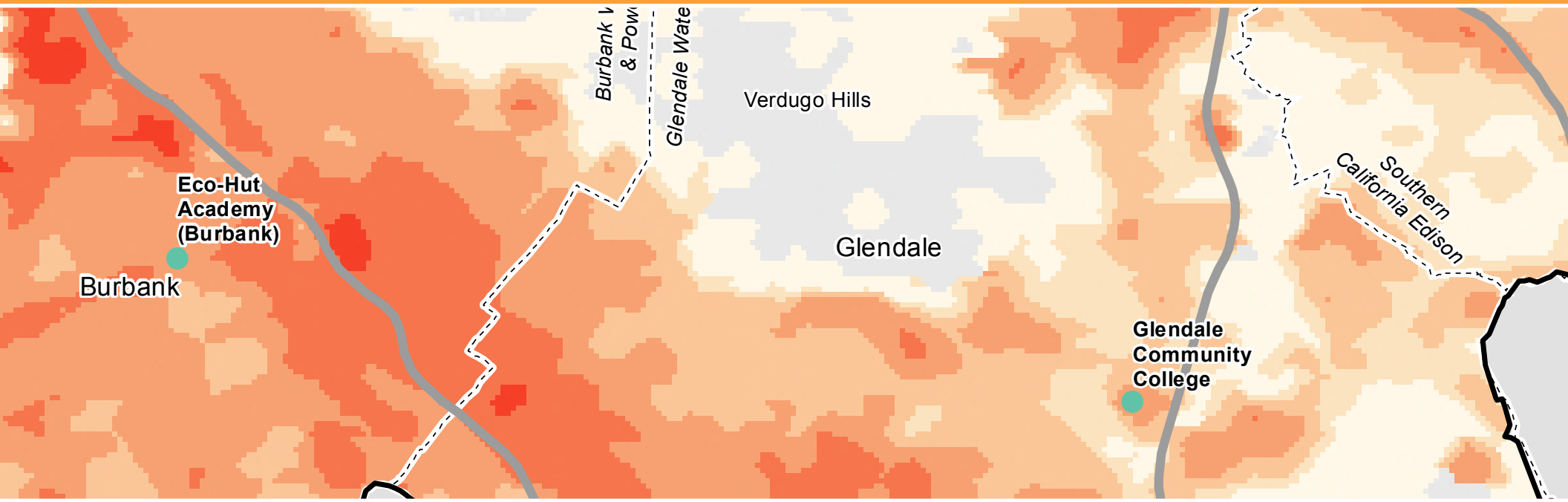
Profile of Clean Energy Investment Potential
ARROYO VERDUGO SUBREGION



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UCLA
Luskin School *of* Public Affairs
Luskin Center for Innovation

Arroyo Verdugo Subregion:
Profile of Clean Energy Investment Potential

Introduction and Objectives

The Environmental Defense Fund commissioned the UCLA Luskin Center for Innovation to profile the potential for clean energy investments in state senatorial districts and sub-regions across Los Angeles County. Each profile is designed to help the legislators and other community stakeholders identify areas of high potential for solar energy and energy efficiency improvements in and on local buildings. The profiles also underscore the benefits of green economic investment. These benefits include capitalizing on incoming state and local funding while creating jobs and community resilience to current environmental health threats that climate change will exacerbate.

Importance of Proposed Project

This project is timely because of new state funding opportunities that could benefit the Arroyo Verdugo Subregion. The maps identify disadvantaged communities that will be prioritized for funding from cap-and-trade auction proceeds per SB 535 (de León), implementing legislation of AB 32 (Pavley), the California Global Warming Solutions Act. In addition, Proposition 39 will result in $2.5 billion to improve energy efficiency and expand clean energy generation. The maps highlight likely recipients of Proposition 39 funding, including schools. Legislators and the Governor are responsible for determining specific allocations of these funds.

Environmental Defense Fund:

Environmental Defense Fund's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems. This has drawn us to areas that span the biosphere: climate, oceans, ecosystems and health. Since these topics are intertwined, our solutions take a multidisciplinary approach.

UCLA Luskin Center for Innovation:

Established with a gift from Meyer and Renee Luskin, the UCLA Luskin Center for Innovation translates world-class research into real-world policy and planning solutions. Organized around initiatives, the Luskin Center addresses pressing issues of energy, transportation and sustainability. The Luskin Center is based in the UCLA Luskin School of Public Affairs.

The following people from UCLA worked on this project:

Principal investigator: J.R. DeShazo

Project manager: Colleen Callahan

GIS analyst: Norman Wong

Design: Susan Woodward

Acknowledgements

The aforementioned authors would like to thank the Environmental Defense Fund for their support of this project, including Derek Walker, vice president, and Lauren Faber, political director. Special appreciation goes to Jorge Madrid, Emily Reyes, and Loni Russell for their vision, thoughtful feedback, and all around help during the entire project.

Contents

A Hotter Region

Adaptation in Los Angeles County is inevitable. [4]

This map illustrates "Mid-Century Warming in the Los Angeles Region." This is the first study to provide specific climate-change predictions for the greater Los Angeles area, with unique predictions down to the neighborhood level.[1]

The study looked at the years 2041–60 to predict the average temperature change by mid-century. Southern Californians should expect slightly warmer winters and springs but much warmer summers and falls, with more frequent heat waves. The map shows that climate change will cause temperatures in the Los Angeles region to rise by an average of 4-5°F by the middle of this century. [2]

All areas across the Los Angeles region will experience warming in the coming mid-century but an important aspect of this study is that it shows where *different* areas will experience *different* degrees of warming. According to the study, coastal areas like Santa Monica and Long Beach are likely to warm an average of 3 to 4 degrees, with other areas experiencing more warming. The study predicts a likely tripling in the number of extremely hot days in the downtown area and quadrupling the number in the valleys and at high elevations.

Adaptation to a changing climate will be inevitable in the Los Angeles region.

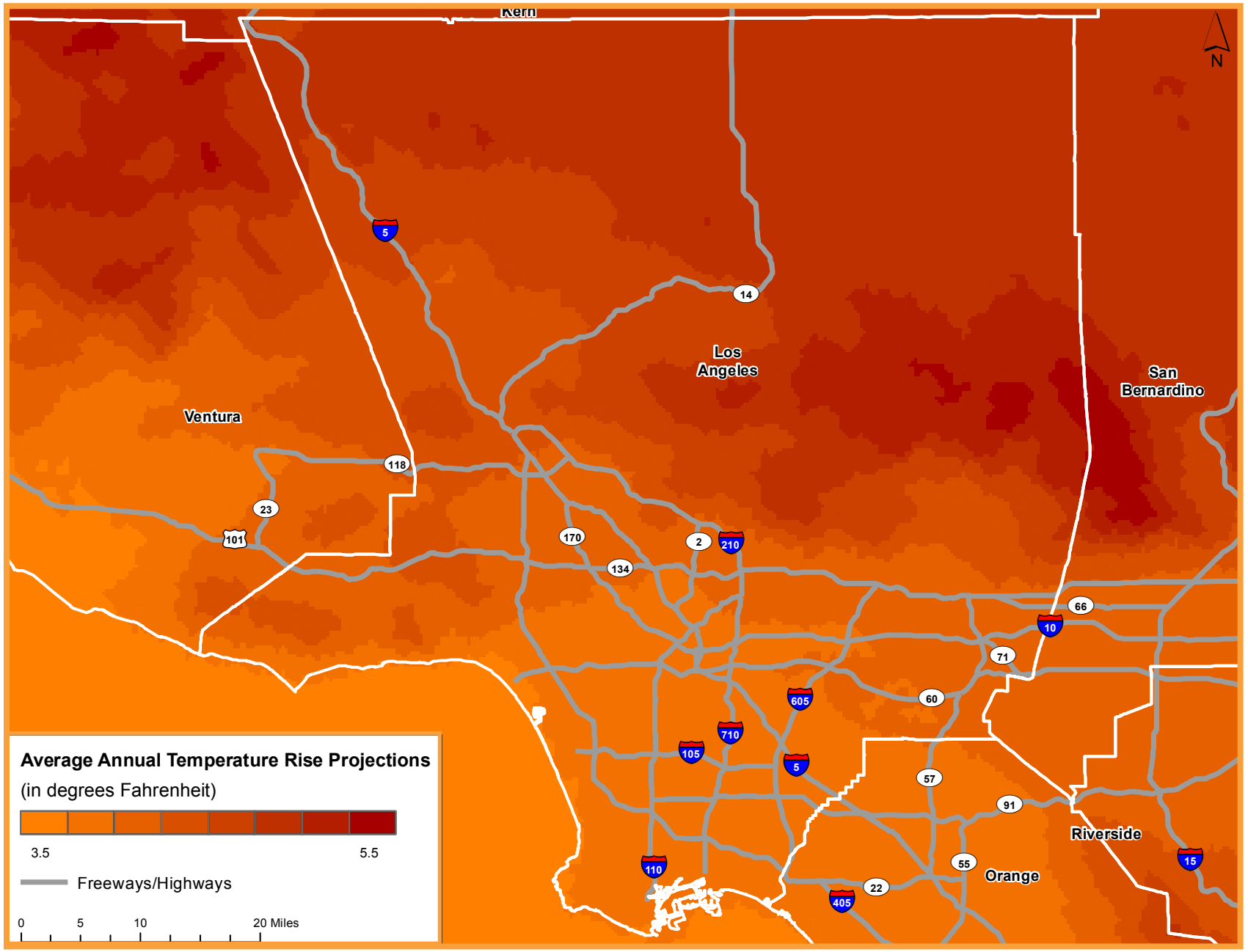
How Arroyo Verdugo Subregion Could Adapt [3]

Higher temperatures will increase the importance of **energy efficient buildings**. Conservation and improved energy efficiency—with higher performing heating, ventilating and cooling systems, efficient lighting, etc.—will reduce the demand for energy, thus saving money for residents, owners and taxpayers. Producing **solar energy** on rooftops as well as retrofitting roofs to reflect sunlight (**cool roofs**), can also reduce electricity bills, while reducing emissions that contribute to climate change.

Municipal buildings can serve as **cooling centers**. This will be important because without this and other planning measures in place, hospitals will likely see an increase in patients suffering from heat stroke and heat exhaustion, as well as smog-related respiratory effects. Air quality is profoundly affected by higher temperatures because heat increases ozone smog formation. Ozone is a known lung irritant associated with asthma attacks, pneumonia and other respiratory diseases.

Green spaces and trees reduce the heat island effect caused by buildings and streets, and provide a place for people to cool off. Transit provides transportation access to parks, medical care and other services that can improve community resiliency to climate change.

MID-CENTURY WARMING IN THE LA REGION



Source: Alex Hall, Fengpeng Sun, Daniel Walton, et al, 2012. "Mid-Century Warming in the Los Angeles Region." University of California, Los Angeles. *See reference page for more details.* Full report at http://c-change.la/. See Reference page for information about the uncertainty ranges and other details.

Arroyo Verdugo Subregion: Vulnerability to Climate Change

The map can inform spatially-targeted strategies to reduce health risks from climate change.

Knowing what communities are vulnerable to climate change, as identified in the table below, enables policymakers to identify strategies to reduce risk and improve community resiliency. Climate change will increase health issues in many communities.

This map illustrates the extent of vulnerability to climate change in the communities (at the census tract level) of the Arroyo Verdugo Subregion. The data comes from the California Environmental Health Tracking Program (CEHTP) of the California Department of Public Health, which created an index of 7 indicators.[5] These indicators, of climate change impacts and a community's adaptive capacity, included:

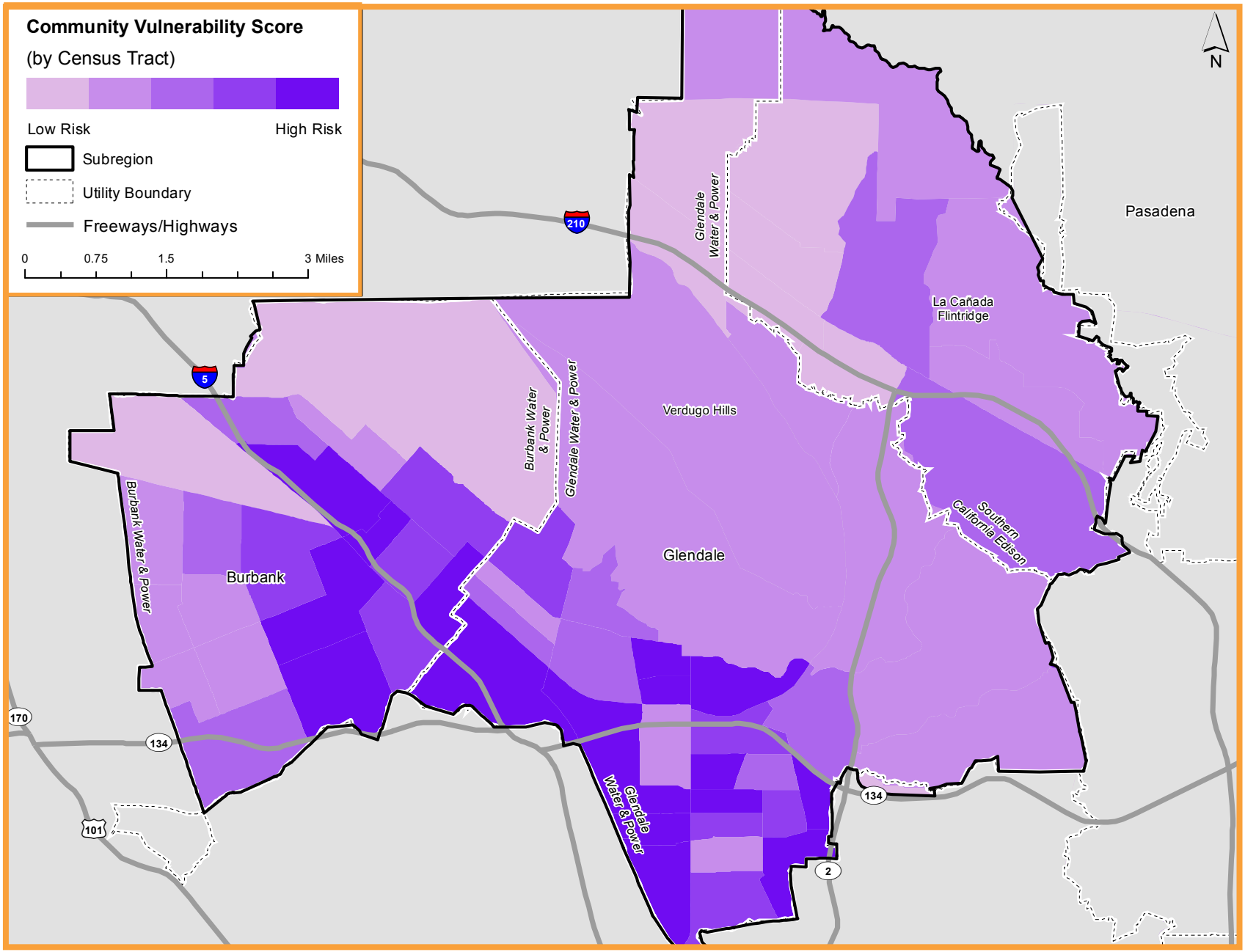
- Air conditioning (AC) ownership;
- Land cover characteristics (tree canopy and impervious surfaces);
- Access to transportation (transit and household car access);
- Social vulnerabilities (elderly living alone);
- Flood risk;
- Wildfire risk; and
- Sea level rise.

Note that the index does not include temperature predication data under climate change. Temperature predictions under climate change are shown in the previous map.

Community Vulnerability to Climate Change in the Arroyo Verdugo Subregion

Zip code(s) for which the census tract (in parentheses) falls within		Level	Scores (on a scale of 1-3.778 with 3.778 being the most vulnerable)
91203 and 91202	(06037301701)	Top tier	3.222
91203 and 91202	(06037301701)	Top tier	3.222
90068, 91505, and 91506	(06037311700)	Top tier	3.222
90068, 91505, and 91506	(06037311700)	Top tier	3.222
90068, 91505, and 91506	(06037311700)	Top tier	3.222
90039	(06037188300)	Top tier	3.222
91501 and 91502	(06037310701)	Top tier	3.111
91501 and 91502	(06037310701)	Top tier	3.111
91203 and 91204	(06037301702)	Top tier	3.111
91203 and 91204	(06037301702)	Top tier	3.111
91202	(06037301204)	Top tier	3.000
91201	(06037301602)	Top tier	3.000

Vulnerability to Climate Change



Source: California Environmental Health Tracking Program, August 2011. "Community Vulnerabilities to Climate Change." Environmental Health Investigations Branch, California Department of Public Health. Final report available at www.cehtp.org/p/climate_population_vulnerabilities.

Arroyo Verdugo Subregion: Environmental Health Risk

The California Environmental Protection Agency (CalEPA) prepared the nation's first comprehensive screening tool to identify California communities that are disproportionately burdened by and vulnerable to multiple sources of pollution.[6] Called the California Communities Environmental Health Screening Tool (CalEnviroTool), it generates scores at the zip code level that are used in the map.

California's greenhouse gas (GHG) cap-and-trade program will generate revenues from credits sold to pollution emitters. These proceeds will go into the Greenhouse Gas Reduction Fund. By law, at least 25 percent of the program funding expended will be directed to projects that benefit disadvantaged communities and at least 10 percent of program funding expended will be directed to projects located in disadvantaged communities, including in the Arroyo Verdugo Subregion.[7]

The map will inform the investment plan for the Greenhouse Gas Reduction Fund, with priority given to disadvantaged communities with environmental health risk.

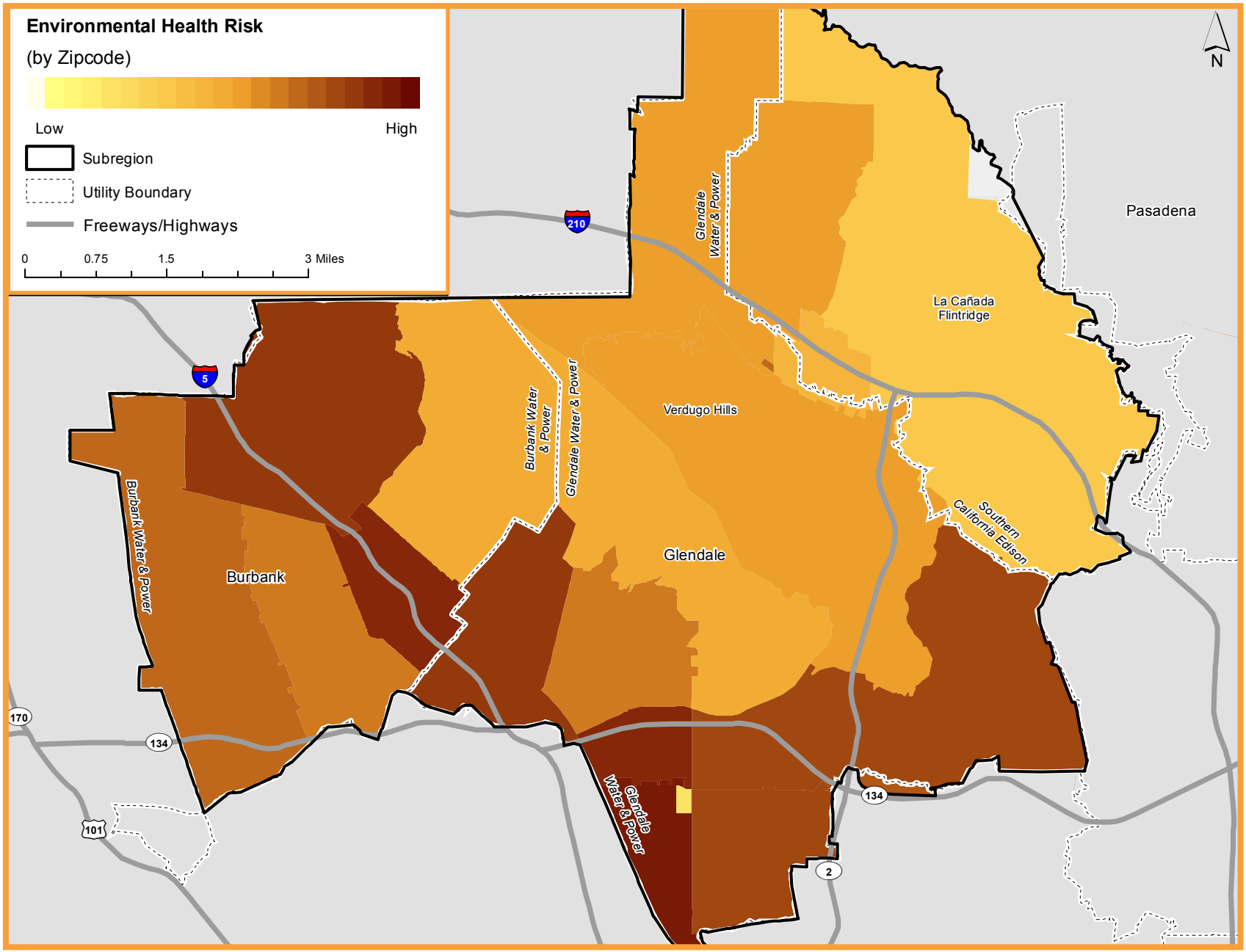
Using the CalEnviroTool, CalEPA identified the top 10 percent of the zip codes in the state as "disadvantaged communities" for the purpose of investing auction proceeds. These communities are shown in the below table and map. The tool incorporates data from 18 indicators within two categories:

- Pollution Burden, Exposure and Environmental Effect Indicators—
  Air quality/ozone, air quality/particulate matter 2.5, diesel particulate matter, pesticide use, toxic releases from facilities, traffic density, cleanup sites, groundwater threats, impaired water bodies, solid waste sites and facilities and hazardous waste facilities.
- Pollution Characteristics, Sensitive Populations and Socioeconomic Factor Indicators—
  Age/children and elderly, asthma, low birth weight infants, educational attainment, linguistic isolation, poverty and race/ethnicity.

Results from the California Communities Environmental Health Screening Tool for Arroyo Verdugo			
Zip code	**Tier**	**Top 10 percent (top and second tiers) identified as disadvantaged communities for purpose of investing auction proceeds**	**Score**
91204	2nd tier	6-10%	40.87
91203	3rd tier	11-15%	39.06
91502	3rd tier	11-15%	36.48
91201	4th tier	16-20%	35.10
91504	4th tier	16-20%	33.92
91206	5th tier	21-25%	30.68
91205	5th tier	21-25%	29.44
91046	7th tier	31-35%	25.11
91505	7th tier	31-35%	24.64
91202	8th tier	36-40%	23.46

**Highest Scores in the Arroyo Verdugo Subregion but Percentage and Tiers Compared to Other Zip Codes in California*

Environmental Health Risk



Source: California Environmental Protection Agency and the Office of Environmental Health Hazard Assessment, April 2013. "California Communities Environmental Health Screening Tool, Version 1." Full report available at http://oehha.ca.gov/ej/ces042313.html.

Arroyo Verdugo Subregion: Solar Capacity

The Arroyo Verdugo Subregion is endowed with both bountiful sunshine and numerous buildings that offer valuable siting opportunities for solar energy generation. This map identifies the rooftop solar opportunities across neighborhoods in the Arroyo Verdugo Subregion.[8] Economic development planners, building owners and anyone interested in expanding solar power can use this map, along other parcel level analyses [9], to identify potential investment opportunities. [10] Because cost-effectiveness increases with the size of a solar installation, the map statistics table presents the number of potential solar projects by size and the total rooftop potential.

740
job years could be created if 5% of rooftop solar potential in Arroyo Verdugo Subregion was realized. [11]

Map Statistics				
Single Family	74%	Total Rooftop Solar Potential	592 megawatts
Multi-unit Residential	16%	Total Potential Sites	51,129 rooftops
Commercial & Industrial	9%	Median Rooftop Availability	550 sq. ft.
Government & Non-profit	<1%	Median Potential of Available Parcels	5.28 kilowatts

Jobs: If just 5% of total rooftop solar potential in the Arroyo Verdugo Subregion was realized, approximately 740 job years would be created. [11]

Pollution Reduction: This would also eliminate 31,577 metric tons of carbon dioxide pollution each year. [12]

Funding Opportunities

State policies that expand opportunities for solar include the potentially billions of dollars from Proposition 39's Clean Energy Job Creation Fund as well as the AB 32 Greenhouse Gas Reduction Fund (cap-and-trade auction proceeds). In order for the Arroyo Verdugo Subregion to benefit, policymakers will have to be vigilant to ensure that residents, businesses and schools have access to these opportunities.

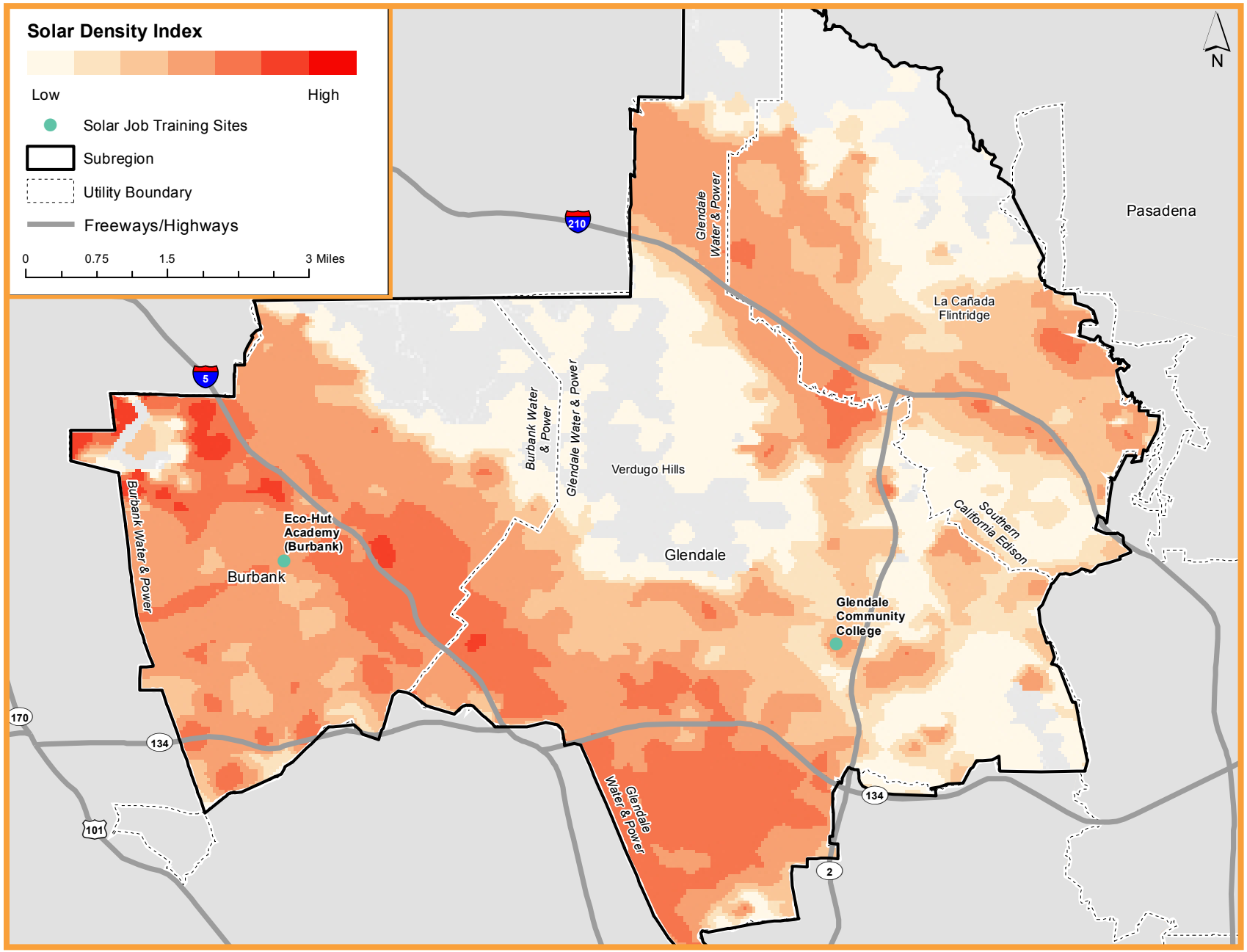
Job training will also be supported by Proposition 39. The map identifies solar job training sites that could be eligible for these resources.

Local policies also provide financial incentives for solar investments. Southern California Edison offers incentives through the California Solar Initiative, including rebates on solar equipment and installation. Residential and commercial customers could also be eligible for Net Energy Metering, which gives you credit for the electricity generated by your solar system. Burbank Water and Power offers a Solar Support Rebate Program that provides rebates for commercial and residential solar systems. At the time this profile went to print, Glendale Water and Power's Residential Solar Solutions Program is oversubscribed but accepting applications for the wait list.

Parcels with the Largest Potential Solar Projects in the Arroyo Verdugo Subregion

Rank	Potential (kW)	Parcel Address	Zip Code	Parcel Use Description
1	3,652	1501 N Victory Pl; Burbank	91502	Shopping Centers (Regional)
2	3,316	500 S Buena Vista St; Burbank	91521	Athletic & Amusement Facilities
3	2,991	3000 W Alameda Ave; Burbank	91523	Motion Picture, Radio, & Television
4	2,102	805 S San Fernando Blvd; Burbank	91502	Heavy Manufacturing
5	1,429	111 S Central Ave; Glendale	91206	Shopping Centers (Regional)

Solar Capacity



Source: Original solar capacity data: Los Angeles County, "Los Angeles County Solar Map." solarmap.lacounty.gov. Data modified by UCLA for the "Los Angeles County Solar Atlas," from which the above map was created. innovation.luskin.ucla.edu. Solar training sites data: USC Program for Environmental and Regional Equity, 2011. "Empowering LA's Solar Workforce." Sponsored by the Los Angeles Business Council. Original data from Environment California Research and Policy Center, 2011. "Building a Clean Energy Workforce: Preparing Californians for New Opportunities in the State's Green Economy."

Arroyo Verdugo Subregion: Energy Efficiency Potential: Residential Buildings/Homes

89% of homes in Arroyo Verdugo were built before the state's energy efficiency building codes.

Simple retrofits can save money and make your home more comfortable year round.

The map highlights neighborhoods where potential for energy efficiency investments might be greatest for residential homes.[13] Buildings constructed before 1978 in general produce greater cost savings when retrofitted than buildings built after 1978.[14] The potential for energy efficiency investments is summarized for the Arroyo Verdugo Subregion in the map statistics table.

MAP STATISTICS

	Residential Buildings in the Arroyo Verdugo Subregion		All Buildings in the Arroyo Verdugo Subregion	
	# of single-family homes	37,789	# of total buildings	51,022
	% built before 1978	89%	% built before 1978	87%
	Average square footage of pre-1978 buildings	2,911	Average square footage of pre-1978 buildings	3,754
	% built in or after 1978	11%	% built in or after 1978	13%
	Average square footage of post-1978 buildings	4,835	Average square footage post-1978 buildings	7,235

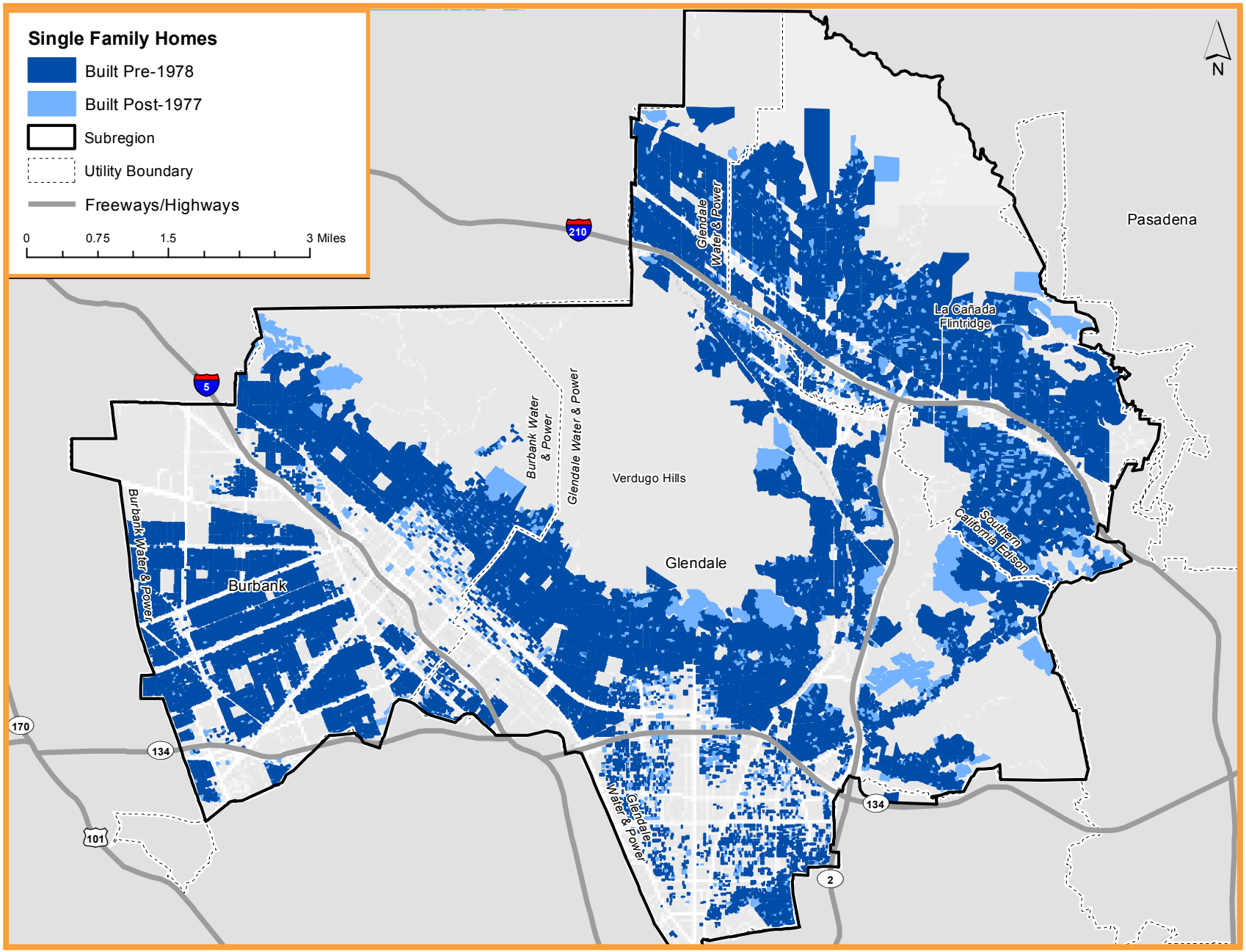
Funding Opportunities

State policies such as Proposition 39 will distribute billions of dollars to support energy efficiency improvements. The Arroyo Verdugo Subregion could benefit from state funds for rebates, grants and loans to finance energy efficiency investments, which would help consumers save money on their electricity bills, support local green jobs and reduce pollution.

Local policies provide financial incentives to homeowners for energy efficiency investments. This includes:

- Burbank Water and Power—
  Offers rebates for energy efficiency upgrades through the Home Rewards Rebate Program as well as a Green Home House Call program that provides free expert evaluation and installation of energy efficiency products, among other residential programs.
- Glendale Water and Power—
  Offers a Smart Home Energy and Water Savings Rebate Program, which provides rebates for various energy efficiency upgrades, and a Tree Power Program that provides up to three shade trees per residential customer.
- Southern California Edison—
  Offers a Residential Energy Efficiency Rebate Program that provides rebates for a wide range of energy efficiency upgrades including up to $1,100 to help with A/C installation, maintenance and repair.
- Southern California Gas Company—
  Also provides rebates for a wide range of energy efficiency upgrades.

Energy Efficiency Potential: Residential



Source: 2009 Assessors/Solar Potential Data: UCLA modified from County of Los Angeles eGIS, specifically from Mark Greninger.

Arroyo Verdugo Subregion: Energy Efficiency Potential: Multi-unit Residential Buildings

The map highlights neighborhoods where potential for energy efficiency investments might be greatest for multi-unit residential buildings.[13] Buildings constructed before 1978 in general produce greater cost savings with building retrofits than buildings built after 1978,[14] as illustrated in the map. The potential for energy efficiency investments is summarized for the Arroyo Verdugo Subregion in the map statistics table.

83% of apartments and other multi-unit residential buildings in Arroyo Verdugo Subregion were built before the state's energy efficiency building codes.

The cheapest energy is the energy not used in the first place.

MAP STATISTICS

	Multi-unit Residential Buildings in the Arroyo Verdugo Subregion		All Buildings in the Arroyo Verdugo Subregion	
	# of multi-unit residential buildings	8,281	# of total buildings	51,022
	% built before 1978	83%	% built before 1978	87%
	Average square footage of pre-1978 buildings	4,596	Average square footage of pre-1978 buildings	3,754
	% built in or after 1978	17%	% built in or after 1978	13%
	Average square footage of post-1978 buildings	8,134	Average square footage post-1978 buildings	7,235

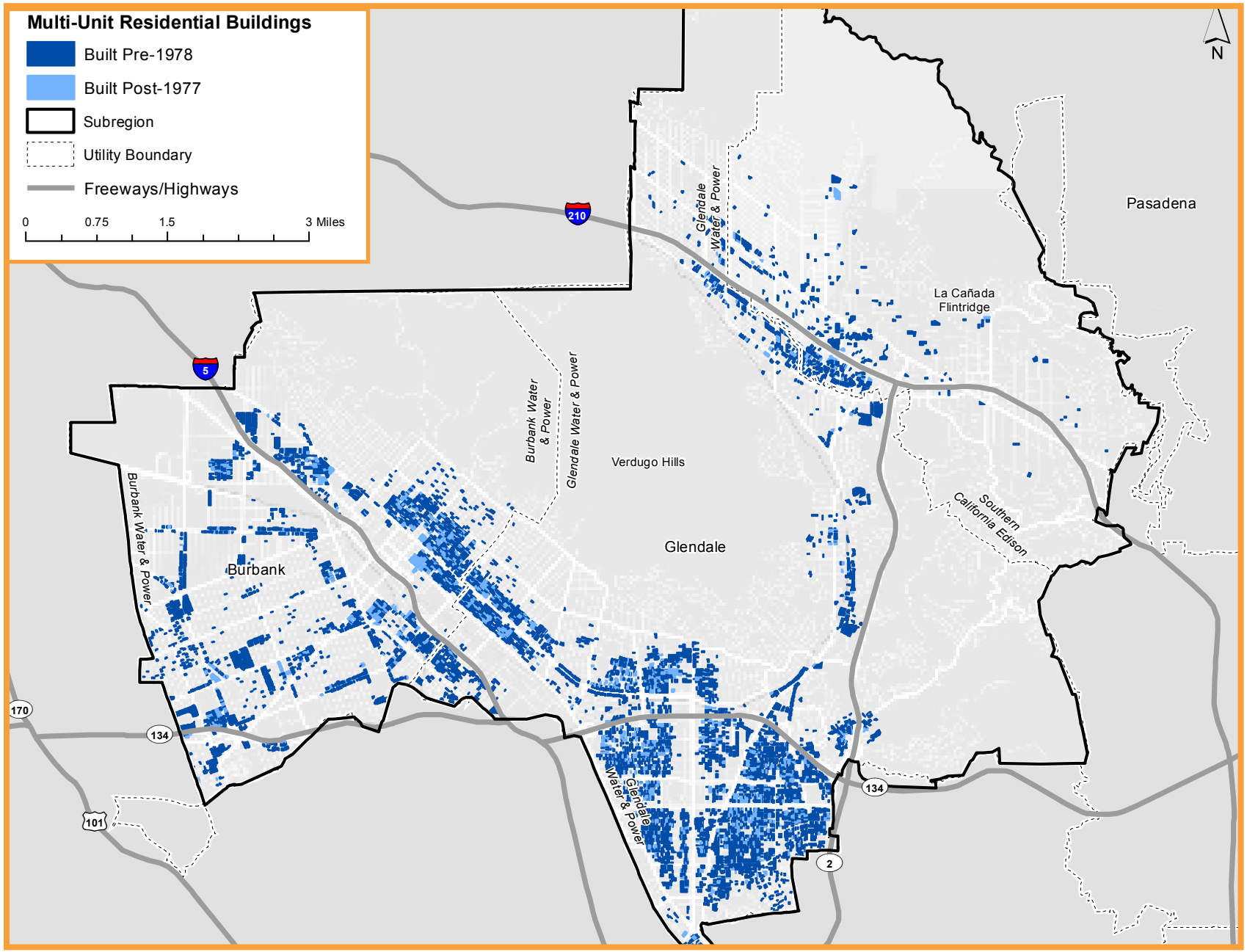
Funding Opportunities

State policies such as Proposition 39 will distribute billions of dollars to support energy efficiency improvements. The Arroyo Verdugo Subregion could benefit from state funds for rebates, grants and loans to finance energy efficiency investments, which would help consumers and property owners save money on their electricity bills, support local green jobs and reduce pollution.

Local policies also provide financial incentives for energy efficiency investments in multi-unit residential buildings. Examples of incentives provided by local utilities include:

- Burbank Water and Power—
  Offers rebates to property owners and low-income residential customers for energy efficiency upgrades through the Home Rewards Rebate Program.
- Glendale Water and Power—
  Offers technical assistance for installing water saving equipment in multi-unit housing.
- Southern California Edison—
  Offers a multi-family residential energy efficiency rebate program that provides rebates for lighting, HVAC, window insulation and more.
- Southern California Gas Company—
  Offers a multi-family residential energy program that provides rebates for energy efficiency upgrades to property managers and owners of multi-unit residences.

Energy Efficiency Potential: Multi-unit Residential



Source: 2009 Assessors/Solar Potential Data: UCLA modified from County of Los Angeles eGIS, specifically from Mark Greninger.

Arroyo Verdugo Subregion: Energy Efficiency Potential: Commercial and Industrial Buildings

The map highlights neighborhoods where potential for energy efficiency investments might be greatest for commercial and industrial buildings.[13] Buildings constructed before 1978 in general produce greater cost savings with building retrofits than buildings built after 1978,[14] as illustrated in the map. The potential for energy efficiency investments is summarized for the Arroyo Verdugo Subregion in the statistics table, below.

30%
on average of the energy used in commercial buildings is wasted, according to the U.S. Environmental Protection Agency.

Energy efficiency upgrades save money and create jobs.

MAP STATISTICS

	Commercial and Industrial Buildings in the Arroyo Verdugo Subregion		All Buildings in the Arroyo Verdugo Subregion	
	# of commercial and industrial buildings	4,683	# of total buildings	51,022
	% built before 1978	77%	% built before 1978	87%
	Average square footage of pre-1978 buildings	8,864	Average square footage of pre-1978 buildings	3,754
	% built in or after 1978	23%	% built in or after 1978	13%
	Average square footage of post-1978 buildings	14,897	Average square footage post-1978 buildings	7,235

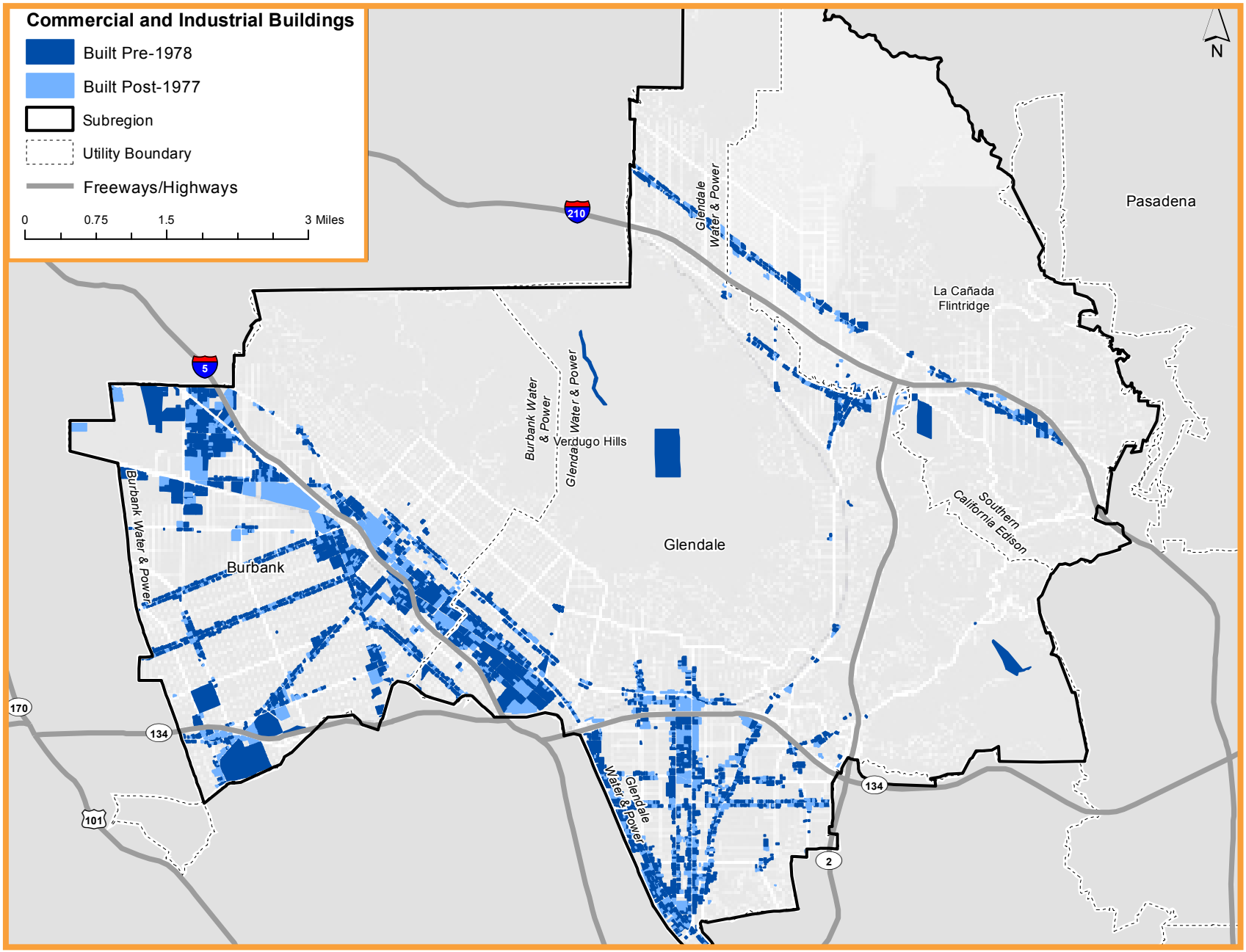
Funding Opportunities

State policies such as Proposition 39 will distribute billions of dollars to support energy efficiency improvements. The Arroyo Verdugo Subregion could benefit from state funds for rebates, grants and loans to finance energy efficiency investments, which would help businesses save money on their electricity bills, support local green jobs and reduce pollution.

Local policies also provide financial incentives for energy efficiency investments.

- Burbank Water and Power—
  Provides rebates to business customers to install energy efficiency upgrades such as to lighting, HVAC and heat pumps.
- Glendale Water and Power—
  Offers incentives for energy efficiency improvements tailored to small and mid-sized businesses as well as large businesses.
- Southern California Edison—
  Programs offered include: Demand Response, Energy Efficiency Customized Solutions, and Energy Efficiency Express Solutions.
- Southern California Gas Company—
  Offers a range of services including: Energy Efficiency Calculated Incentive Program, Energy Efficiency Rebates for Business Program, and Non-residential On-bill Financing.

Energy Efficiency Potential: Commercial and Industrial



Source: 2009 Assessors/Solar Potential Data: UCLA modified from County of Los Angeles eGIS, specifically from Mark Greninger.

Arroyo Verdugo Subregion: Energy Efficiency Potential: Government and Non-Profit Buildings

The map highlights neighborhoods where potential for energy efficiency investments might be greatest for government and non-profit owned buildings.[13] Buildings constructed before 1978 in general produce greater cost savings with building retrofits than buildings built after 1978, [14] as illustrated in the map. The potential for energy efficiency investments is summarized for the Arroyo Verdugo Subregion in the statistics table, below.

Billions of $
are on the table for energy efficiency and clean energy investments in California.

MAP STATISTICS

	Government and Non-profit Buildings in the Arroyo Verdugo Subregion		All Buildings in the Arroyo Verdugo Subregion	
	# of government and non-profit buildings	269	# of total buildings in the Arroyo Verdugo Subregion	51,022
	% built before 1978	91%	% built before 1978	87%
	Average square footage of pre-1978 buildings	21,343	Average square footage of pre-1978 buildings	3,754
	% built in or after 1978	9%	% built in or after 1978	13%
	Average square footage of post-1978 buildings	12,582	Average square footage post-1978 buildings	7,235

Funding Opportunities

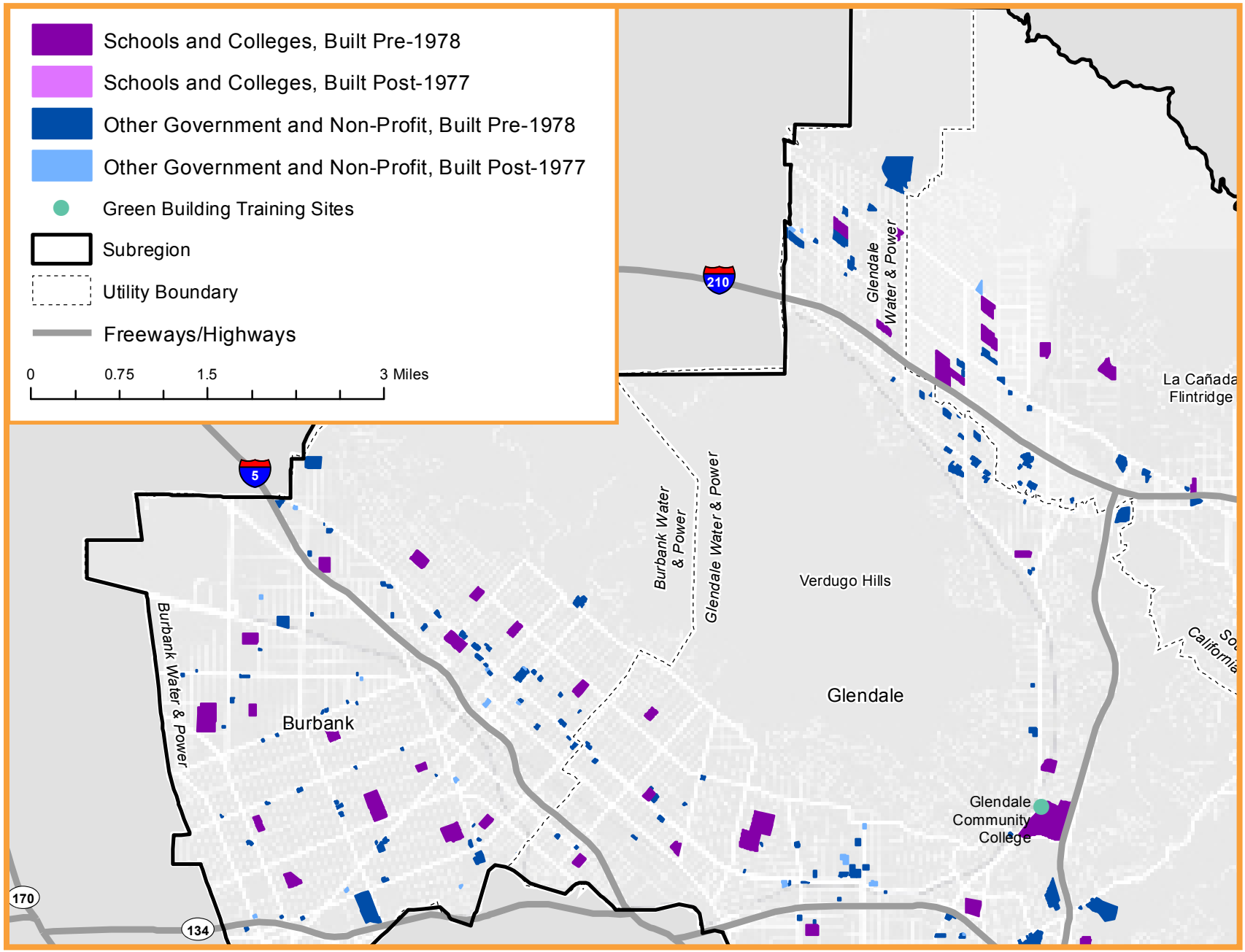
State policies such as Proposition 39 will distribute billions of dollars to support energy efficiency improvements. The Arroyo Verdugo Subregion could benefit from state funds for rebates, grants and loans to finance energy efficiency investments, which would save taxpayers' money while supporting local green jobs and reducing pollution.

Municipal buildings will be eligible recipients for Proposition 39 funds. The map identifies the municipal buildings constructed before 1978, an indication of likely cost effectiveness for a retrofit.

Schools are pulled out because schools will be prime recipients of Proposition 39 funds. As the map indicates, numerous schools were constructed pre-1978, before energy efficiency building codes were in effect.

Green job training sites will also be supported by Proposition 39 funds. The map identifies green buildings training sites that could be eligible for these funds.

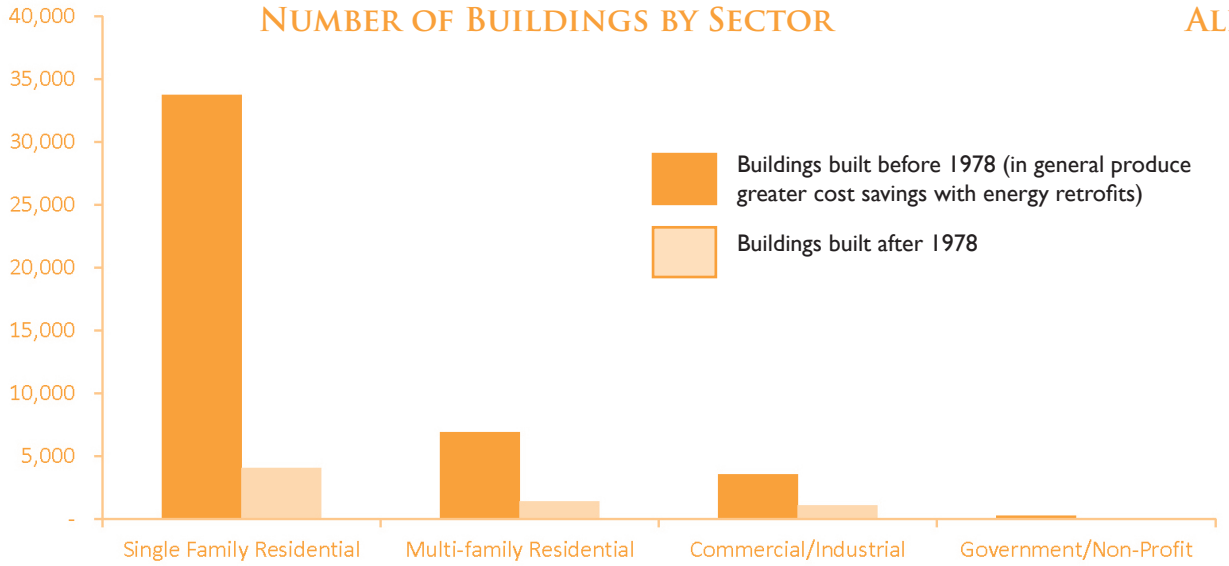
Energy Efficiency Potential: Government and Non-Profit



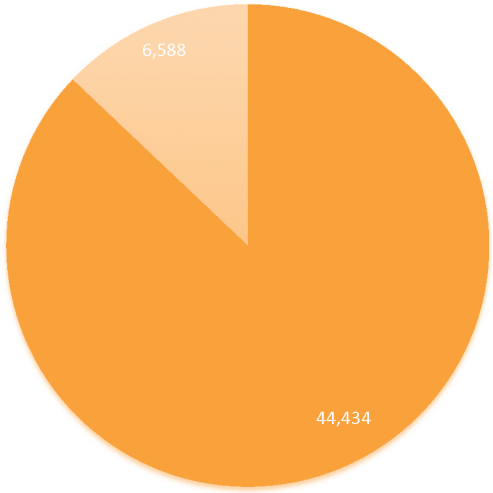
Source: Building age data: Los Angeles County Assessor; Schools: Extracted from Points of Interest (LMS Data) from LA County GIS Portal; Green building training site data: USC Program for Environmental and Regional Equity. Original data from Environment California Research and Policy Center, 2011. "Building a Clean Energy Workforce: Preparing Californians for New Opportunities in the State's Green Economy."

Arroyo Verdugo: Energy Efficiency Potential Summary

Number of Buildings by Sector



All Buildings in Arroyo Verdugo



Linking investments in workforce training to sustainable jobs

"Sustainable jobs" pay prevailing wages and provide healthcare and access to opportunities for wage growth.[15] To effectively link Proposition 39's funding for worker training with sustainable jobs, policymakers should consider best practices for a strong pipeline between training programs and careers. For example, the Los Angeles Community College District and the City of Los Angeles have approved project labor/stabilization agreements, or contracts with labor unions, that include goals for local hires and apprentices workers. Apprenticeship programs can create a strong pipeline between education and sustainable jobs and careers.

The Truth about Job Creation

Energy efficiency investments create costs savings for the customer and jobs for the region. Invest $1 million in the following industries, you get this many jobs. [16]

References

Data sources are listed immediately below the respective map except for the data sources repeated throughout the map listed here:

County map layer: 2000 Census Tracts, 2010 Senate District, 2010 ZCTA: US Census (http://www.census.gov/geo/reference/zctas.html)

Utility map layer: UCLA self-generated from city and SCE boundaries.

Cities, Freeways, gray basemap: ESRI Online

1. Alex Hall, Fengpeng Sun, Daniel Walton, et al. (2012) "Mid-Century Warming in the Los Angeles Region." Part of the Climate Change in the Los Angeles project. Produced by UCLA with funding and support from the City of Los Angeles, in partnership with the Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC). http://c-change.la/
2. There is a 95% confidence that the warming will be between 1.7 and 7.5°F. To account for uncertainty associated with the trajectory of future greenhouse gas emissions and other factors affecting the planet's energy balance, the researchers inputted projections for both the standard "business-as-usual " (RCP8.5) and "mitigation" (RCP2.6) emission scenarios. In the map we illustrate the average annual temperate increases modeled under the business-as-usual scenario. Yet the study found that even the best case scenario will lead to significant warming due to emissions that are already moving through the Earth's atmosphere.
3. Adapted from C-Change-LA. Written and published by Climate Resolve and hosted by the Los Angeles Regional Collaborative for Climate Action and Sustainability, housed at the UCLA Institute for the Environment and Sustainability. http://c-change.la/los-angeles/
4. Alex Hall, lead researcher of the "Mid-Century Warning in the Los Angeles Region" study and UCLA professor of Atmospheric Sciences.
5. California Environmental Health Tracking Program. Community Vulnerabilities to Climate Change. August 2011. Environmental Health Investigations Branch, California Department of Public Health. Final report available at www.cehtp.org/p/climate_population_vulnerabilities.
6. California Environmental Protection Agency (Cal/EPA) and the Office of Environmental Health Hazard Assessment (OEHHA), California Communities Environmental Health Screening Tool, Version 1 (CalEnviroScreen 1.0). http://oehha.ca.gov/ej/ces042313.html
7. SB 535 (de León) and AB 1532 (Pérez) provide direction on the process for allocating cap-and-trade auction proceeds, including the requirements outlined above concerning disadvantaged communities.
8. Map based on aerial photography of the solar-usable rooftop space, utilizing data from the Los Angeles County Solar Map tool at http://solarmap.lacounty.gov/. UCLA modified the data for a regional analysis.
9. UCLA Luskin Center, 2011 "Los Angeles County Solar Atlas." http://innovation.luskin.ucla.edu/content/los-angeles-solar-atlas.
10. The map is not intended to be a complete tool for investigating individual sites, but rather highlights overall spatial trends and opportunities. The map assumes that roofs that have solar potential but cannot currently support solar because of old age or poor quality will be replaced in 10 to 15 years under a standard capital maintenance program, but the map does not contain information about building age or condition.

References

11. U.S. Department of Energy, 2012 "SunShot Vision Study." Study estimated that the job intensities for photovoltacis were roughly 25 jobs per megawatt in manufacturing/distribution and 25 jobs per megawatt in installation. These 2010 U.S. PV job intensity estimates are considerably higher than one would expect in a mature manufacturing/distribution supply chain and installation infrastructure, which is not surprising given that the U.S. PV industry in 2010 was in a scale-up phase, where a significant fraction of FTE jobs were likely focused on business development, research and development (R&D), regulatory issues, and production scale-up. Future numbers could be lower.

12. U.S. Environmental Protection Agency, using the Emissions & Generation Resource Integrated Database (eGRID), 2012. http://www.epa.gov/cleanenergy/energy-resources/refs.html.

13. This map is best used to identify overall spatial patterns of energy efficiency investment potential. It is an incomplete tool for investigating individual sites. The map does not contain information about energy retrofits, LEED or EnergyStar certification, nor electricity usage.

14. California Energy Commission. Title 24 Building Codes, state green building standards, went into effect in 1978 in California, and are regularly updated. http://www.energy.ca.gov/title24/ .

15. UCLA Labor Center (2008). Construction Careers for Our Communities. http://labor.ucla.edu/publications/pdf/ConstructionCareersForOurCommunities.pdf.

16. Employment estimates include direct, indirect, and induced jobs (where induced jobs =.4(direct + induced)) and were derived from an input-output model, using the IMPLAN 2.0 software and IMPLAN 2007 data set constructed by the Minnesota IMPLAN Group, Inc. This data provides 440-industry level detail and is based on the Bureau of Economic Analysis input-output tables. A number of factors create variability in published employment estimates; it is not an exact science. Here, calculations were done by the Political Economy Research Institute at the University of Massachusetts and the Center for the American Progress, 2009 "The Economic Benefits of Investing in Clean Energy." Page 29.

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