Clean Power, Good Jobs
Realizing the Promise of Energy Efficiency in Los Angeles

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By Phaedra Ellis-Lamkins, Chief Executive Officer, Green For All

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Prepared by Cynthia Strathmann for RePower LA
Foreword

By Phaedra Ellis-Lamkins
Chief Executive Officer, Green For All

Economies evolve. Failed and failing markets are inevitably replaced – but never without tension. We’re in just such a moment of tension. Traditional sectors of employment are generating fewer jobs with worse salaries and benefits. At the same time, our old, dirty sources of energy are growing more expensive as we continue to learn about the myriad ways they damage our economy and our environment.

This report establishes a strong new argument for how we move forward. That it comes from Green For All’s long-time partners at LAANE should come as no surprise; their unparalleled work on analyzing trends and advocating for smart economic policy primes them well for the argument made here. We know what the next economy looks like. It’s cleaner, greener, smarter. And we know a place perfectly poised to jumpstart that economy: Los Angeles.

While discussions of pollution in Los Angeles often focus on transportation, a huge amount of energy is consumed by using electricity in buildings – and that energy is usually produced in heavily polluting coal plants. Changing that is important, but it’s also in the hands of the utilities that provide the power. We must challenge them to be at the forefront of addressing our pressing environmental challenges. To do this, they must change the way they do business.

We know how to do this, and the role we can play in easing the transition for LADWP. Building efficiency upgrades such as cool roof installation, lighting swaps, and air conditioning tune-ups will substantially lower power use, decreasing the costs the utility incurs generating energy and the costs customers incur when they buy it. Keeping customer bills low should be a top priority for the LADWP - particularly now. And energy efficiency work can also create quality jobs in hard-hit communities, as shown by RePower LA.

This report outlines how we get there, how we put LA residents to work improving local buildings so that they are more energy efficient, thereby helping the utility meet many of its own needs. It will lower the utility’s power generation expenses and help them comply with new environmental regulations. At the same time, the jobs created by this policy will offer people a career path in the utility sector and support a family and revive our local economy.

LADWP can and should become a model for utilities around the country, demonstrating the value of efficiency work for meeting new challenges and transforming utilities into cleaner, greener entities that will play a crucial role in our energy future.

Transition is hard but inevitable. We know what tomorrow’s economy looks like; we’ve just been trying to figure out how to get there. This report outlines a key path that will position Los Angeles as a leader – while putting its citizens to work.

Executive Summary with Recommendations

Utilities around the country are facing serious challenges, including an aging infrastructure and a need to transition to cleaner energy sources. These challenges are particularly evident at the Los Angeles Department of Water and Power (LADWP), the nation’s largest municipally owned utility.

The LADWP can begin to meet these challenges by adopting an innovative and ambitious energy efficiency policy with new programs that save customers money, reduce greenhouse gas pollution, and create good jobs. In doing so, the LADWP will take a significant step towards modeling a transition all utilities must make, from being entities concerned solely with the rapid acquisition and dispersal of natural resources to agencies proactively engaged with energy planning and management.

Findings:
The Los Angeles Department of Water and Power, like other utilities around the country, faces serious challenges:

- Economic and population growth, technological changes, and climate change will fuel increased energy use. A study recently done for the LADWP predicts that electricity consumption in Los Angeles will rise by more than 10% between 2010 and 2020.
- To meet this demand, the LADWP will have to make substantial investments in building a stronger and more secure infrastructure to generate and distribute power.
- Environmental regulations and rising fossil fuel costs will require utilities to make new investments in clean energy. Los Angeles generates over a third of its electricity by burning coal, a very dirty energy source. New state-level regulations addressing climate change will require the LADWP to get 33% of its electricity from cleaner but more costly renewable sources by 2020.
- Without substantial investments in maintenance and repair, aging infrastructure will lead to decreased reliability in the delivery of power and water. Not only must the LADWP build new infrastructure to produce clean power, its current infrastructure is in dire need of repair and replacement. For example, the typical lifespan of a wooden utility pole is only 40 years, but 75% of the LADWP poles are older than that.
- Los Angeles has many older buildings that do not use energy efficiently. In the United States, 70% of electricity is used in buildings. Building efficiency has improved dramatically with new building codes instituted in the 1970s, but housing stock in Los Angeles is, on average, 45 years old and pre-dates those codes. The electricity generated by new investments in clean power will be squandered in out-of-date buildings unless those buildings can be made more efficient.
- Faced with an aging workforce, utilities around the country are struggling to replace skilled workers. The U.S. Bureau of Labor Statistics reports that 53% of the utility workforce is 45 or older, compared to only 42% of the workforce as a whole. The LADWP must train a new generation of workers with the skills to both maintain the current system and meet the needs of a 21st century utility.
- The LADWP invests less and achieves lower savings through energy efficiency programs than other California utilities. Although the LADWP has an excellent track record of providing reliable power at reasonable prices, the LADWP invests less in energy efficiency and has lower saving goals than other comparable utilities. It recently set a savings goal for the next ten years (8.5% of consumption) that is less than the goal of 10% a year set by state law and saves less energy than neighboring utilities.
Well-designed energy efficiency programs can help utilities save customers money on their bills, decrease utility infrastructure costs and create job pipelines for qualified workers.

- Energy efficiency is a cost effective way for utilities to meet electricity demand generation while keeping power generation costs down. The LADWP’s current energy efficiency programs cost the LADWP four cents per kWh⁷, compared to an average cost of over five cents per kWh⁸ for power as a whole. Programs that lower energy use during “peak” periods, like very hot summer days when many people have their air conditioners on, are especially cost effective for the utility.

- Energy efficiency can help utilities transition to clean energy sources. Efficiency is the cleanest source of power available. By increasing efficiency, utilities can reduce their production of “dirty” energy. With aggressive energy efficiency programs, the LADWP could achieve a 15% reduction in power consumption by 2020.

- Energy efficiency programs that improve buildings can boost the local economy by lowering bills for customers. Building upgrades typically help consumers save between 15 and 20% on their bills, and those savings return to the local economy and insulate residents from the effects of rate increases. With energy efficiency measures in place, some small businesses could save hundreds or thousands of dollars each year and use that money to buy new equipment or pay workers more.

- Energy efficiency programs create local jobs. Building upgrades generate three times as many jobs as investments in coal⁹, jobs that are all local.

- Energy efficiency programs can be a vehicle for training future utility workers. LADWP and IBEW Local 18’s new Utility Pre-Craft Trainee position is an 18-month traineeship that, while outside of the civil service, provides a pathway to careers in the utility, where over a third of workers are of retirement age. A pilot building upgrade program is already in place that is putting these trainees to work upgrading homes of low-income customers under the supervision of highly trained journey level workers.

The Los Angeles Department of Water and Power should increase its energy efficiency investment and goals to be at parity with similar utilities and in alignment with state goals. The utility needs a policy that spurs the development of energy efficiency programs that produce verifiable benefits, serve hard-to-reach customers, create a pool of qualified workers, and have mechanisms in place to ensure that ratepayer money is funding quality work. The policy should:

- Set an energy efficiency goal to reduce consumption 15% by 2020. This commitment by the LADWP would put it in alignment with the goal set by state law while spurring it to invest in programs that ramp up over time and that provide customers with certainty about both savings and the availability of energy efficiency services.

- Provide broad benefits. The policy should ensure that energy efficiency services are received by customers who need them the most, and work done under the policy should create good, career-path jobs and improve Los Angeles’ historically inefficient building stock.

- Treat energy efficiency as the power resource it is. The LADWP should develop measurement and verification systems for energy savings that let it count on those savings when planning for the city’s future energy needs and should reinvest those savings into energy efficiency programs.

- Build new capacities that can bring energy efficiency work to scale. The LADWP should develop the ability to do more face-to-face work with customers, and also explore mechanisms that leverage outside financing to encourage building owners to pursue energy efficiency work on their own.

# Table 1

<table>
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<tr>
<th>Benefits from Investing in Energy Efficiency</th>
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<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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</table>

*Over the lifetime of the measures.

Source: Haig Barrett Sustainovation Group (January 2012) The Case for Expanded Energy Efficiency Programs and Workforce Development at the Los Angeles Department of Water and Power
**Introduction: Energy and the Future of Utilities**

The need for vast amounts of energy is a defining feature of modern life, and concerns about securing energy have been a driving force in local and global politics for decades. Energy acquisition will only increase in importance as populations grow and our supplies of primary energy sources like oil and coal diminish. Currently the United States consumes 40% of its energy in the form of electricity, the overwhelming majority of which is delivered by utilities.

Utilities have provided us with energy and water for over 100 years, building a vast infrastructure of transmission wires and pipelines. Sprawled across the landscape or tunneled deep underground these networks have provided the silent underpinnings of prosperity, feeding the growth of our cities and providing the basic fuel for America’s economy.

Now American utilities find themselves at a crossroads as they face new economic, social, and environmental conditions. This is particularly evident at the Los Angeles Department of Water and Power (LADWP) as the Department faces a series of interrelated and serious challenges in the coming years, including an aging infrastructure, pressing environmental issues, and a workforce nearing retirement. These are common problems, shared by utilities around the nation.

The LADWP differs from most other utilities, however, because it is publicly-owned and because it has enormous financial and logistical influence. Public utilities must be more responsive to the communities they serve than privately held utilities, and the LADWP is unusual even among these because of the control it exerts over its resources and because of its unusually large size. It is in a unique position to explore bold new initiatives that address its challenges. In the future, utilities must move from being entities that procure as many natural resources as they can and then distribute them as cheaply and quickly as possible to organizations that engage in thoughtful planning and management of resource distribution. The LADWP should seize this opportunity to proactively address its own problems and in doing so become a national leader in the re-formation of the utility sector.

**Our Local Utility: Los Angeles Department of Water and Power**

The LADWP is a municipal utility — owned by the citizens of the city — and is a proprietary department of the City of Los Angeles. It is governed by a board of commissioners who are appointed by the mayor and confirmed by the city council for five year terms. It was founded in 1902 to deliver water and began delivering electricity in 1916.

The LADWP serves over four million people through 1.46 million electric and 680,000 water connections. The Department provides Angelenos with 77 million kilowatt-hours of electricity and 450 million gallons of water every day (and two times that amount of electricity on hot summer days). The Department’s 2010–2011 budget was over four billion dollars and they employed over 9,000 people. It has 3,655 miles of transmission lines that comprise 27% of the California grid, and has a profound impact on resources across the west, drawing water from around California and electricity from as far away as Utah and the Washington border.

The LADWP is the largest municipally owned public power system in the country. Municipally owned utilities are utilities that are owned and operated by a city or town. Unlike investor owned utilities (often called IOUs; Southern California Edison is an example) public power systems are not-for-profit organizations that do not pass money on to stockholders or investors. On average, public power systems provide 15% more revenues to state and local governments, through in-lieu-of-tax payments, than privately owned power systems provide through taxes. At the same time, public power systems provide 15% more revenues to state and local governments, through in-lieu-of-tax payments, than privately owned power systems provide through taxes. At the same time, public power systems have rates that are an average of 14% lower than private power suppliers. There are over 2,000 public power systems in the United States serving 46 million people. Historically, the LADWP has been vertically integrated, meaning that it owns and operates most of the generation, distribution, and transmission systems that supply Los Angeles with electricity.

In this report we focus on the LADWP’s challenges. These challenges have often led, directly or
The cost of power interruptions can be significant. One study estimates that, on average, a sustained interruption (defined as an interruption lasting longer than five minutes) costs a commercial customer $1,067 and an industrial customer $4,227.

Indirectly, public criticism of the Department, but at the same time one should remember that the LADWP has successfully supplied the city with power and water at reasonable rates and in a reliable manner for almost a hundred years; in fact it is more reliable and less expensive than many of the surrounding utilities.

### Utility Challenges

#### Aging Infrastructure

Utilities around the country are concerned that aging infrastructure will negatively impact reliability, and in Los Angeles infrastructure issues present the Department with serious and immediate challenges. To illustrate, the Haynes and Scattergood Generating Stations, both of which are fueled by natural gas, have units that are between 43 and 52 years old and must be replaced.

In addition to these types of large projects the LADWP must also attend to basic maintenance issues. For example, the typical lifespan of a wooden utility pole is only 40 years, but 75% of the LADWP poles are older than this; the average age of a LADWP wooden distribution pole is about 55 years. The Department is not currently able to rectify this, at its current pace the Department can only replace power poles once every 149 years.

The water infrastructure also has problems. In recent presentations on their current budget situation LADWP personnel have said that they can only afford to replace water pipelines once every 400 years. The average lifespan of a pipe is 100 years, and in Los Angeles 700,000 feet of pipe are already over 100 years old. The LADWP has argued that this rate of replacement is not sustainable, and while the Department has been attending to the situation, high profile water main breaks have amply illustrated the magnitude of the problem.

#### New Renewable Infrastructure

In addition to replacement and maintenance, the LADWP will have to pay for improvements to the power and water systems that are required by new regulations ensuring clean water and air. The cost of these adds up; the Department has estimated that “water and power combined need to invest $1.5 billion each year over the next five years to provide safe and reliable service, and to pay for legal mandates.”

#### Rising Fossil Fuel Costs

Almost half the electricity in the country comes from coal-fired power plants, and 39% of the electricity used in Los Angeles comes from burning coal at two large power plants, Navajo and Intermountain Power Plant (IPP), located in Arizona and Utah. In an independent review of proposed changes to rates and other customer costs at the LADWP, the outside firm PA Consulting noted that “Coal prices are projected to increase substantially over the next five years, especially at IPP,” a prediction also reported by the U.S. Department of Energy which notes that coal prices are expected to increase in the western and interior states at a rate of 1.1% a year from 2009–2035.
Environmental Issues

Largely because of L.A.’s reliance on coal-fired power plants, electricity generation accounts for about a third of Los Angeles’ CO2 emissions. In Los Angeles over a thousand pounds of CO2 is produced for every MWh hour generated and the city uses about 25 million MWh a year. Carbon dioxide emissions are a large component of greenhouse gases and greenhouse gases are a key cause of climate change.

Climate change is expected to have a profound effect on our environment. The California Energy Commission writes that impacts in California include “sea level rise, increasing temperatures, shifting precipitation trends, extreme weather events, increasing size and duration of wildfires, and earlier melting of The Sierra Nevada snowpack.” In Los Angeles we should expect a four to eight fold increase in heat wave days by the end of the century.

Figure 1

LADWP Energy Sources for 2010

- Energy Efficiency: 1%
- Energy Efficiency: 1%
- Nuclear: 10%
- Renewables: 24%
- Natural Gas: 39%
- Hydro: 5%
- Other: 1%

According to the United States Environmental Protection Agency Los Angeles should expect a four to eight fold increase in heat wave days by the end of the century.

The State of California is already acting on concerns about climate change and the Global Warming Solutions Act of 2006 (AB32) includes a requirement that greenhouse gas emissions be reduced to 1990 levels by 2020. The LADWP’s coal-fired plants account for 70% of the utility’s greenhouse gas production. Decreasing the production of greenhouse gases means that the LADWP will have to find different, cleaner sources of energy. This need for clean energy is underlined by separate state requirements that utilities increase their use of renewable energy to 33% by 2020. (Renewable energy sources can be replenished and produce far less greenhouse gases than burning fossil fuels. The five most common are biomass, hydropower, geothermal, wind, and solar.)

The California Global Warming Solutions Act built on the requirements of Senate Bill 1368 which set emission standards for baseload generation at facilities that publicly owned utilities either owned or with which they had long-term contracts. Fines for not meeting these new requirements have not been determined but could be substantial.

Natural gas is the fuel used by the LADWP’s local power plants: Haynes (Long Beach), Harbor, Scattergood (El Segundo), and Valley. Natural gas is a cleaner fuel than coal, but these power plants are also in the Los Angeles basin and any pollution they generate directly affects Los Angeles. In addition, the future availability of natural gas is uncertain due to controversies over the environmental impact of new extraction methods.

Health concerns have also driven government action on emissions. The widely known negative health effects of pollution produced by burning fossil fuels, particularly coal, have been a key driver in trying to move utilities away from a reliance on fossil fuels.

Increasing Consumption

In other parts of the country, per capita electricity consumption has steadily increased. In California, however, growth has been uneven. Per capita power consumption increased at an average annual rate of 7% from 1960-1973, but then slowed down to .29% during 1974-1995 when new building codes and aggressive energy efficiency programs were put into place. In recent years per capita consumption has started to rise and the average annual increase rose to .63%. Existing energy efficiency measures and strong building codes clearly had an impact on electricity consumption, but experts predict that growth in the population and economy will create new challenges in meeting demand in the future. A study done for the LADWP has recently predicted that without energy efficiency measures electricity consumption will rise 10.6% between 2010 and 2020.

Over the long term technological changes are likely to increase consumption, particularly the use of electric vehicles (EVs). Experts warn that “If 25% of all vehicles were EVs today, the current infrastructure in the U.S. would have a difficult time supporting the charging of these EVs — substantial technological, infrastructure and behavioral changes would be required to do so in a scalable and efficient manner.” Concerns about increased...
An Aging Workforce Without New Utility Skills

Utilities around the country are expecting a wave of retirements from linemen, steam-plant operators and other workers in positions essential to the delivery of power and water. The U.S. Bureau of Labor Statistics found that 53% of the utility workforce was 45 or older, compared to only 42% of the workforce as a whole. A 2005 survey of public utilities by the American Public Power Association found that “64 percent of respondents believe that retirements will pose either a moderate or very great challenge to their utility” and that the “most significant challenges created will be the loss of knowledge due to retirements, the difficulty finding replacements, and the lack of bench strength within the organization.” In a recent Energybiz magazine article the author notes that

“As of 2008, about 53% of the utilities industry workforce is age 45 or older. Many of these workers will either retire or prepare to retire within the next ten years. Because on-the-job training is very intensive in many utilities industry occupations, preparing a new workforce will be one of the industry’s highest priorities during the next decade.”


Climate change may prove to be one of the biggest drivers of increased demand for electricity due to the increased need for space cooling as local temperatures rise. A report by the California Energy Commission notes that “By the end of this century, demand is forecasted to increase by 20–50%.”

Old, Inefficient Building Stock

Discussions of energy use frequently focus on transportation and our resulting need for petroleum, but 40% of the energy used in the United States is in the form of electricity, and the U.S. Department of Energy estimates that 70% of that electricity is used in buildings. Building efficiency has improved dramatically with new building codes instituted in the 1970s, a key reason for the general lack of large increases in energy use in California. But in Los Angeles housing is, on average, 45 years old, pre-dating those codes, and substandard housing is common throughout the city. Poorer areas are particularly affected: in South Los Angeles there are over 75,000 housing units that are over 50 years old, in the northwest San Fernando Valley barely over 1,200 are that age.

Around the country electricity rates are rising, and these rate increases will be especially difficult for poor people to bear, not only because they have fewer resources but because they are more likely to live in older, less efficient buildings. The energy needs of inefficient buildings are also an unnecessary drain on utility resources.

“Of the energy used in the United States, 40% is in the form of electricity, and the U.S. Department of Energy estimates that 70% of that electricity is used in buildings. Building efficiency has improved dramatically with new building codes instituted in the 1970s, a key reason for the general lack of large increases in energy use in California.”

– Jennifer Zajac, Energybiz magazine, writing about utility jobs

While a hiring freeze was instituted after the economic downturn, the LADWP — like utilities around the country — needs to replace a staff that is disproportionately nearing retirement age. In 2007 the LADWP was already anticipating that 28% of its employees would be eligible to retire during the next five years, and now management estimates that number has risen to as high as 40% as staff has put off retirement because of the recession.

In addition, new environmental and population pressures will require a change in the skill sets of utility employees, who will have to focus on community relations and customer outreach and not exclusively on resource procurement and distribution. The LADWP, for instance, is currently not staffed or organized to embark on close customer contact. Highly publicized problems with customer billing and service have hurt their relationship with some customers as well as their public image, despite their good track record providing reliable services at a relatively low cost.
Energy Efficiency

The Advantages of Energy Efficiency

Energy efficiency means employing technology so that people can pursue the same activities but use less energy doing so. It is different from energy conservation, which often requires that people change their behavior in order to realize energy savings. For example, if one turns out the lights to save energy one is engaging in conservation, but if one uses a compact fluorescent bulb instead of an incandescent one (because CFLs use much less energy) one is being energy efficient.

Energy efficiency programs are one way that utilities can address their numerous challenges. First, energy efficiency helps utilities cope with demand issues. From the perspective of a utility, there are two ways to meet demand for electricity: supplies can be increased or demand can be decreased. Utilities think of energy efficiency measures as a way to acquire energy because by reducing demand they increase the supplies they have available. Experts in the utility industry often say “the cheapest kilowatt hour is one that is never generated at all.” Utilities can calculate the per kwh cost of energy efficiency work just as they calculate the per kwh cost of energy generation. The LADWP has calculated the per kwh cost of energy efficiency to be around four cents. The generally low cost of energy efficiency prompted the consultancy group McKinsey and Co. to call the lack of interest in it a “puzzle,” asking how “energy-saving opportunities worth more than $130 billion annually to the U.S. economy can go unrealized?”

For this and many other reasons legislation has pushed utilities to pursue energy efficiency, requiring that they invest in energy efficiency before expanding generation and that they establish annual energy savings targets. Recently the legislature also required that the California Energy Commission develop a plan to upgrade existing buildings “to achieve greater energy efficiency in existing residential and nonresidential structures, especially those structures that fall significantly below the efficiency required by the current California Building Energy Efficiency Standard.”

Energy efficiency programs help customers. Electricity and water rates may rise, but if consumption goes down bills will stay relatively low. The money saved by people who are not spending it on electricity or water circulates back into the community as it is spent on other things, helping boost the economy.
Why Reducing Energy Use at Peak Times Saves Utilities Money

Peak demand refers to the times when people are using the most electricity which is usually during the day and, in Los Angeles, is usually during the hottest days of summer (as air conditioning uses a large amount of electricity). For instance, on a typical day in Los Angeles the base load (the minimum amount of energy used by the city) at 4 a.m. might be 2,000 MW. Twelve hours later at 4 p.m. the peak load might be 4,800 MW, more than twice as much.

To prevent blackouts during times of peak demand the department must have the ability — and built infrastructure — to supply the city during these times, even if it is substantially more than the average that the city uses. The city’s highest peak use ever was on September 27, 2010 at 3:45 in the afternoon when the temperature was over 113 degrees F and the city reached a peak demand of 6,177 MW, more than three times the typical day’s baseload. To meet demand like this the utility has an installed capacity of 7,100 MW, which is .7% of the generating capacity of the United States. The LADWP could save significant money if it can keep peak use as low as possible. For instance “peaker plants” in the Los Angeles basin that must be modernized could be taken out of service instead.

Customers Can Save Money with Energy Efficiency Upgrades

The non-profit “Initiating Change in Our Neighborhoods Community Development Corporation” (ICON CDC) surveyed 240 small businesses in the San Fernando Valley, most of which are in premises under 2,200 square feet. Over 80% of the businesses surveyed said that an energy efficiency campaign would be “very helpful” or “extremely helpful.” High utility bills are a financial difficulty for many businesses of this size.

At Birrieria Rosamaria, a small restaurant in Pacoima, the rent is $1,150 a month. Utility bills are an additional $1,100, almost as much as the rent itself. To save money the restaurant washes and dries their dishes by hand. They would like to purchase new equipment and hire additional employees. A program that saves them money on their electricity bills could help them do that.

“I’m interested in learning how to make my business more efficient. We have to figure it out in order to stay in business, be in compliance, and be part of this community.”

– Xotchil Oliveras, Owner

Historic Underinvestment in Energy Efficiency

While the LADWP has an outstanding track record of providing power reliably and inexpensively, historically the utility has not pursued energy efficiency as aggressively as other large utilities in California, including the other municipally owned utilities. The Natural Resources Defense Council has noted that the LADWP has not been setting energy efficiency goals in a timely fashion, and has singled the LADWP out as falling short in its pursuit of energy efficiency.

The Department recently set its energy efficiency goal at 8.5% of baseline forecast over the next ten years, less than the 10% goal set by the state and less than the 10.6% increase in consumption predicted to occur during the same period. In contrast, the Sacramento Municipal Utility District (SMUD), the second largest publicly owned utility in California, has as a goal a 15% reduction in consumption over ten years, the highest target of any publicly owned utility in the state. As one might expect given their higher goals, Sacramento has also achieved twice the energy savings as a percent of sales that Los Angeles has.
Figure 2
LADWP and SMUD Energy Efficiency Savings Goals as a Percentage of Consumption

In recent years the LADWP’s energy efficiency budget has been decreasing. The budget declined from $90 million in the 2010 fiscal year to $50 million in 2012. The June 7, 2011 budget presentation gives the 2011-2012 energy efficiency budget as $50 million. For perspective, the LADWP power system budget is about $3 billion.

In the past the LADWP has focused heavily on rebate and replacement programs as energy efficiency measures. One of the LADWP’s largest programs has been a refrigerator exchange program for low-income customers, through which qualified customers can trade in their old refrigerator for an Energy Star refrigerator. While valuable, programs like these do not include many untapped sources of energy efficiency, such as cool roofs and HVAC (heating, ventilation, and air conditioning) tune-ups. Many experts look to comprehensive building upgrades (usually called “retrofits”) to achieve deeper energy efficiency savings by considering buildings as whole systems and evaluating them as a whole.

Table 4
Energy Efficiency Budget and Expenditures at the LADWP

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<tr>
<th>Fiscal Year</th>
<th>2008-2009</th>
<th>2009-2010</th>
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<tr>
<td>Energy Efficiency Budget (in millions of dollars)</td>
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<tr>
<td>Energy Efficiency Expenditures (in millions of dollars)</td>
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Making Buildings Energy Efficient

Energy efficiency work that focuses on entire buildings, not just specific appliances, makes sense as a way to reduce greenhouse gas production, save money for utilities and consumers, and create jobs. Research scientists, environmental activists, and business analysts all agree that energy efficiency upgrade work in buildings represents an excellent opportunity to help the environment while conserving financial and natural resources. In addition, several recent studies have shown that homes that have energy efficiency certifications may sell faster and fetch higher prices, a not insignificant detail in places like Los Angeles given the distressed housing market. Energy upgrade work can also make buildings more comfortable by making interior temperatures more uniform and ensuring that temperatures are properly set.

Burbank, a close neighbor to Los Angeles that also has a publicly owned utility, recently received a public benefits award from the California Municipal Utilities Association for their “Green Home House Calls” program in which the city pays for qualified energy efficiency measures to be directly installed.

What is building upgrade work?

Energy efficiency building upgrade work changes buildings so they use power more efficiently. The same can be done for water.

Energy efficiency and water conservation work is often discussed in terms of specific measures, pieces of work that—done correctly—will lead to lower energy and water use. Common water conservation measures include low-flow showerheads, waterless urinals, and more efficient irrigation. Common energy efficiency measures include heating, ventilation, and air-conditioning (HVAC) tune-ups and duct sealing, as well as the installation of more efficient lighting.

Many building upgrade advocates support an “audit” model, wherein trained specialists visit customers to assess a building’s need for specific energy efficiency or water conservation measures; this is often called an “energy audit.” Assessments might include things like blower-door tests, when auditors check to see how leaky a building is. Simpler audits may be done by trained experts making more basic observations of a building. Audits need to be done because every building is different and will have different upgrade needs.

Once the audit is complete, crews install appropriate measures. After the installation is complete an inspector returns to ensure that installations have been executed correctly. Multiple sources predict at least 15-20% savings for a properly identified and installed set of energy efficiency measures.
Clean Power, Good Jobs
Realizing the Promise of Energy Efficiency in Los Angeles

and delays that can be introduced when multiple parties are involved has been one reason that other utilities are beginning to do building upgrade work with their own staff108. Second, the utility can also easily identify and contact high users; one problem with some energy efficiency programs has been a lack of awareness by potential participants109. Another obvious appeal of utility-staffed programs is that customers incur no costs, making it more likely that they will do the work.

Utility funded programs that service customers directly can pursue work in small businesses or low-income residences that would otherwise not be done at all, as these types of customers are famously difficult to reach with energy efficiency programs and often lack the capital to do energy efficiency upgrades on their own. Such programs would also solve the “split incentive problem” (see box), which is particularly noteworthy for landlord/tenant situations. Additionally, because there is no direct cost to the recipients, it is in everyone’s best interest to have building upgrade work completed.

Utility Provided Services

There are several advantages to having some types of energy efficiency building improvement work done directly by the utility. First, by locating responsibility for the process with the utility and not a third party the procedure is simple from the customer’s perspective. (Avoiding the confusion...)

Split Incentives: A Barrier to Energy Efficiency Work

The term “split incentive” refers to the financing problem posed when retrofitting a rental building. Tenants generally pay electric bills, so it is in their best interest to lower power use. Any capital improvements, however, stay with the building and ultimately that value accrues to the owner. The owner, however, does not benefit from lowering electric bills. Consequently, it is more difficult to develop programs that require financial contributions from tenants or landlords. Because of this, residents of multi-family rental units and small businesses that rent their premises have historically been difficult for building upgrade or retrofit programs to reach, despite the fact that they are often those most in need of financial help with bill reduction.

Utility Pre-Craft Trainees

Photo Credit: Barbara Grover

Water conservation not only addresses concerns about water supplies, it also leads to electricity savings. The California Energy Commission estimates that 19% of the electricity used in California is used to move water112. Water conservation not only addresses concerns about water supplies, it also leads to electricity savings. The California Energy Commission estimates that 19% of the electricity used in California is used to move water112.

Green Verdugo Reservoir

Courtesy of Los Angeles Dept. of Water & Power

When directly installing energy efficiency measures, it makes sense for workers to also install any appropriate water saving measures. The LADWP has an excellent track record of pursuing water conservation and the city’s per capita water consumption is among the lowest in the state111. In fact, the Department’s reliance on conservation as a core strategy in improving water supply reliability should be a model for their approach to energy efficiency.

the American Recovery and Reinvestment Act and plans to continue this program. The LADWP is also proposing a “Whole-House” program for residential consumers. The program would have three components: building audits, the direct installation of some energy efficiency measures, and workforce training and participation108. A Whole-House Performance Program that follows an ENERGY STAR model was recommended to the Department by consultants who wrote the most recent energy efficiency potential study.
Job Creation and Energy Efficiency Work in Buildings

Energy efficiency building upgrade programs have the potential to create good jobs for residents. The work generates a large number of jobs because it is labor intensive; studies estimate that it generates three times as many jobs as investment in coal. These jobs are also local, whereas investment in fossil fuel sends money elsewhere and other types of jobs can move overseas. There is also job growth potential in manufacturing the materials used to do the work. A conscious effort must be made, however, to ensure that these are not only green jobs but good jobs. A UC Berkeley study that reviewed the energy efficiency workforce in California found in interviews that “the residential retrofit sector seems to provide low wages and few benefits.” Entry level wages for technician installers (a common job description for retrofit work) ranged between $8 and $15 an hour.

The same UC Berkeley study found that “there is clearly a connection between the number of trained workers, the quality of work performed, and the level of energy savings that will be achieved” and noted that, “A key obstacle to achieving energy goals, which was frequently identified in our interviews, is the prevalence of low-quality energy retrofit work, with the improper installation and maintenance of HVAC (heating, ventilation, and air conditioning) equipment being a prime example.” Without quality work, real energy savings are unlikely to be realized, obviating an energy efficiency project. In Illinois a Department of Energy audit of 15 homes weatherized by contractors found that 12 failed inspection due to substandard workmanship, and eight of the fifteen homes audited were either missing key energy efficiency measures or received inappropriate measures.

If the LADWP supports energy efficiency building upgrades, it should ensure that job standards are met so that real energy savings can be realized and that the jobs produced are quality jobs. One way to do this is to staff a program with in-house employees, and the recently created Utility Pre-Craft Trainee (UPCT) classification is an appropriate position for this kind of work.

Utility Pre-Craft Trainees

The Utility Pre-Craft Traineeship is an 18 month long position at the LADWP that pays a living wage — $16 per hour — and has health benefits. Hiring these trainees is a way to both staff energy efficiency work and create a pool of workers with basic utility training that could replace the large numbers of LADWP staff nearing retirement. Trainees are members of IBEW Local 18, the union that represents most LADWP employees, but are not part of the regular civil service. While in the program, trainees can take the city’s civil service exam and, if they pass it, have the opportunity to stay with the Department. During their tenure with the Department, trainees receive general training in LADWP procedures as well as training specific to the work in which they are currently engaged. Their training includes extensive instruction on safety, appropriate work procedures, and relevant policies. UPCTs finish the traineeship with a certification and, if they do not stay with the Department, they will leave with a new skill set and augmented job experience that can help them secure an energy sector or utility job elsewhere.

Utility work is dangerous as well as being crucial to the functioning of the city. The UPCT position allows prospects to see what utility work is like, and have the option to leave, before the department has made a significant investment in their training, thus reducing training costs. IBEW Local 18 is working with RePower LA to ensure that those in line for future jobs come from the Los Angeles communities hardest hit by unemployment and poverty.

Support and Prospects for Energy Efficiency Work at the LADWP

To bring building upgrade programs to scale, the LADWP will need to include private contractors and energy savings experts. This would increase the reach of the programs, leverage non-departmental funding and expertise, and create even more jobs in the private sector.

Energy efficiency is popular locally; in June 2011 the non-profit group Strategic Concepts in Organizing and Policy Education (SCOPE) polled over 9,000 Los Angeles voters. Of those surveyed, 93% said they supported LA Department of Water and Power investments in energy efficiency to lower energy bills and create good jobs.

In sum, energy efficiency work addresses many of the challenges utilities face today. It decreases greenhouse gas production, saves the utility money, reduces customer bills, and creates good jobs.

“I enjoy this work. A big part of what I like about the UPCT position is that I’ve been able to work with customers who wouldn’t otherwise be able to afford to have some of these things done – like insulation – because the houses are cold in the winter and hot in the summer. And when we tell them they’ll see savings on their bills they’re grateful. In this economy right now everybody likes to save a dollar.”

– L.J. Davis

“I got offered a job from a different company, but it was part time and provided no benefits, so I turned it down. I was so excited when I got into the LADWP and IBEW Local 18’s Utility Pre-Craft Trainee program. To me it’s not just a job, but a good, lasting career. It’s where I want to be.”

– Ernie Vigil
Recommendations

The Los Angeles Department of Water and Power should increase its energy efficiency investment and goals to be at parity with similar utilities and in alignment with state goals. The utility needs a policy that spurs the development of energy efficiency programs that produce verifiable benefits, serve hard-to-reach customers, create a pool of qualified workers, and have mechanisms in place to ensure that ratepayer money is funding quality work. The policy should:

Set an energy efficiency goal to reduce consumption 15% by 2020.

This commitment by the LADWP would put it in alignment with the goals set by state law while spurring it to invest in programs that ramp up over time and provide customers with certainty about both savings and the availability of energy efficiency services.

Provide broad benefits.

The policy should ensure that energy efficiency services are received by customers who need them the most. The LADWP should not only try to reach high users but low-income residents, multi-family residences, and small businesses, all customers that have been difficult to reach with energy efficiency programs. The work should improve Los Angeles' inefficient building stock, and create good, face-to-face work with customers, and also explore mechanisms that leverage outside financing to encourage building owners to pursue energy efficiency work on their own.

Build new capacities that can bring energy efficiency work to scale.

The LADWP should develop the ability to do more energy-related work on their own. It should reinvest those savings into energy efficiency programs. The work should improve Los Angeles' inefficient building stock, and create good, face-to-face work with customers, and also explore mechanisms that leverage outside financing to encourage building owners to pursue energy efficiency work on their own.

Treat energy efficiency as the power resource it is.

As well as reducing overall power use, the LADWP should work to lower peak demand. Such programs are especially cost effective for utilities and produce more savings that can be invested in energy efficiency. The LADWP should develop measurement and verification systems for energy savings that let it count on those savings when planning for the city’s future energy needs and should reinvest those savings into energy efficiency programs.

References

1. Los Angeles Department of Water and Power. (December 6, 2011). 2010-11 Energy Efficiency Potential Study Board Presentation. Pg. 16


81. Assembly Bill 758 authored by Assembly member Skinner is available at: http://www.leginfo.ca.gov/pub/09-10/bill/asm_ab_0751-0800/ab_758_bill_20090101_chaptered.pdf?6


90. The Investor Owned Utilities devote substantial funds to energy efficiency because they are required by to the California Public Utilities Commission (CPUC). The CPUC does not have a similar say in POU energy efficiency expenditures.


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464 Lucas Ave. Suite 202, Los Angeles, CA 90017
www.laane.org