Los Angeles Department of Water and Power

Green Energy and Good Jobs Initiative Presentation for City Council

November 4, 2008

Introduction

- This presentation is in response to the Council Motion introduced on October 28, 2008 which called for the Los Angeles Department of Water and Power (Department or LADWP) to report back on the Green Energy and Good Jobs Initiative (Initiative).

- This Initiative was championed by the Mayor, City Council and Working Californians in their effort to bring good jobs and clean, sustainable energy to the citizens of Los Angeles.

- The Motion requested that the City Attorney, with the assistance of the Department, the City Administrative Officer and Office of the Chief Legislative Analyst, to draft the necessary City Charter amendment, ordinance and/or resolution to place this Initiative before the voters at the March election in support of a new solar measure.

- It is important to note that the proposed solar Initiative is part of a much more comprehensive solar plan currently under development which will be introduced in the coming weeks.

- LADWP's solar plan will include new customer and commercial programs such as Feed in Tariffs, Co-Ops as well as a new solar investment vehicle designed to enable any customer regardless of income level to purchase a "virtual" share in a solar power facility.

- Our solar plans, including this new Initiative, will enable LADWP to nurture and promote a variety of solar energy technologies, contribute to the City's overall economic vitality and bring solar power generated ***IN LA, BY LA, FOR LA!***

What is the Green Energy and Good Jobs Initiative?

- The Initiative represents a multi-year program designed to reduce the City of Los Angeles' reliance on carbon-based electricity resources, generate good, green and blue collar jobs in Los Angeles and alleviate stress on LADWP's electricity distribution infrastructure.

- The Initiative represents an historic change in how LADWP integrates solar power into its resource mix through the construction, ownership and operation of large scale solar power systems.

- The Initiative will enable the City to maximize this abundant energy source that surrounds us which represents some of the best solar resources in the world.

- The Initiative is a key component of the largest, most ambitious solar program of any utility in the nation.

- The Initiative calls for installation of at least 400 megawatts (MW) of solar generating units on LADWP and City-owned properties by 2014. By way of comparison, the entire state of California has only about 280 MW of installed solar energy today.

- These new solar power systems would be installed, owned, operated, and maintained by the Department except as required to take advantage of federal tax subsidies and accelerated depreciation.

Why is the Green Energy and Good Jobs Initiative Important to the City?

The Initiative will help LADWP in achieving the following goal and objectives:

- ✓ *Meeting LADWP's Renewables Portfolio target of 20% by 2010 and 35% by 2020.*
- ✓ *Proactively reducing the City's carbon footprint and greenhouse gas emissions.*
- ✓ *Mitigating the City's vulnerability to natural gas volatility and helping reduce it's historic dependence on fossil fuels.*
- ✓ *Fostering creation of new green and blue collar jobs.*
- ✓ *Contributing to the City's economic vitality by promoting local manufacturing by offering bid preferences and other incentives to encourage green technology and solar manufacturing.*
- ✓ *Encouraging competition and development of emerging solar technologies through a large scale and sustained commitment to solar generation.*

WHAT IS SOLAR POWER?

- Solar power systems convert sunlight directly to electricity based on the amount of sunlight, temperature of the panels, system orientation and time of year.
- Conventional solar systems like photovoltaic (PV) panels use a pure silicon-based or thin-film technology that will produce electricity. Most modules include glass and an aluminum frame but some modules are flexible and can be adhered directly to a roof system.
- PV modules produce electricity in the form of Direct Current (DC) and are expected to last 20 to 25 years.
- PV solar systems use a device called an Inverter to convert the Direct (DC) electricity to Alternating Current (AC) so that the electricity can supply power to the site or feed back into the electrical distribution system.
- O&M costs include, but are not limited to, cleaning of PV panels and replacement of inverters which usually takes place every 10 to 15 years.
- The rest of the components used to complete the system are called the Balance of System and include wire and mounting systems .
- System performance can be estimated by using a variety of solar performance estimation tools.

How Does Solar's Price in Cents/kW hour Compare to Other Technologies?

Typical Energy Resources				
Resource Type	**Generation Type**	**Economic Life (Years)**	**Capacity Factor (%)**	**Energy Cost (cent/kwh)**
Combined Cycle Gas	Intermediate/Base	30	80 - 95	5.5 - 11.0
Simple Cycle - Gas	Peak	30	10 - 90	6.5 – 17.5
Coal	Base	30	85 - 95	2.0 - 4.0
Wind	Intermittent	30	27 - 36	6.0 - 10.5
Geothermal	Intermediate/Base	30	80 - 95	8.0 – 12.0
Landfill	Intermediate/Base	30	80 - 95	6.0 – 11.0
Biomass	Intermediate/Base	30	80 - 95	8.0 - 13.0
Solar/Thermal	Intermediate/Base	30	25 - 35	8.5 - 21.0
Solar Photovoltaic	Peak	30	18 - 25	17.0 – 30.0 *
Fuel Cell	Intermediate/Base	30	80 - 95	8.0 – 35.0

* These price estimates reflect the fully delivered cost of each resource type and assumes availability of tax subsidies, accelerated depreciation, volume discounts, enhanced performance from technological innovations, economies of scale etc. without which solar prices would range from 40 to 70 cents/kwh.

What were LADWP' s assumptions to determine the Estimated Cost of the Proposed Solar Initiative?

- Average total installation cost of conventional photovoltaic (PV) panels today estimated at $7.50 per watt with an anticipated useful life of 25-years.

- LADWP's Power System cost of borrowed funds of 4.85% were applied (note: this was changed from 5.5% resulting in a 6% reduction in costs).

- National Renewable Energy Laboratory PVWATTS Model was used to determine solar energy KW hour (kWh) output with parameters set to the Los Angeles area and tilt of panels at flat or 34-degrees.

- O&M assumed at $.02 per kWh for inverter plus $.005 per kWh for washing panels 1. 5 times per annum. Cost of new inverter changed every 10-yrs est. at $50/Kw.

- Based on these parameters, the cost of a conventional PV installation without application of any savings devices will be approximately $3.0 Billion. However, LADWP's strategy is to structure the program so as to take advantage of tax credits and accelerated depreciation which will lower the cost to about $1.5 Billion. LADWP will aggressively seek to leverage additional saving factors such as economies of scale, optimized siting, volume discounts, and emerging technologies to possibly reduce the cost to as low as $1 Billion.

PROGRAM COST COMPARISONS AND ASSUMPTIONS

TARGET CASE Estimated Program Cost = $1.5 billion	EXPECTANT CASE Estimated Program Cost = $1.0 billion
Larger scale projects over 10 MW assuming maximum economies of size, design and engineering.	Larger scale projects over 10 MW assuming maximum economies of size, design and engineering.
Assumes leveraging benefits of financial structure that would permit LADWP to enjoy federal tax subsidies and accelerated depreciation.	Assumes leveraging benefits of financial structure that would permit LADWP to enjoy federal tax subsidies and accelerated depreciation.
Projects sited on Department and City-owned properties which virtually eliminates transmission and line losses.	Fully optimized project locations and system orientation relative to resource. Projects sited on City-owned properties which virtually eliminates transmission and line losses.
Best available technologies (e.g.. PV and Thin Film) but does not assume full advantages associated with emerging technologies, volume discounts and the like from manufacturers.	Full benefits from emerging technologies and volume discounts from solar manufacturers including “forward” cost benefits associated with recently announced SCE deal.

What is the Rate Impact on Residential Customers?

- Council introduced a motion on October 28, 2008 granting LADWP up to 90 days to develop and submit a thorough and diversified financial plan to the Board of Water and Power Commissioners and the City Council "*which takes into consideration existing resources, cash capital, state and federal grants, tax subsidies and revenue bonds."*

- LADWP will initiate this financial analysis following Council approval including use of sophisticated financial models and rate analysis which will reflect the precise parameters of the proposed Initiative approved by Council.

- LADWP's detailed financial analysis will take into account efforts to maximize cost efficiencies, technological advances, volume discounts, federal tax subsidies and MACRS depreciation schedules wherever possible.

- Based on a high level cursory analysis of the proposed Initiative, LADWP estimates that a typical residential customer with an estimated 500 kilowatt/hour monthly electricity consumption level may experience the following bill increases in fiscal 2011 or 2012:

    - $1.88/month = "Expectant Case"

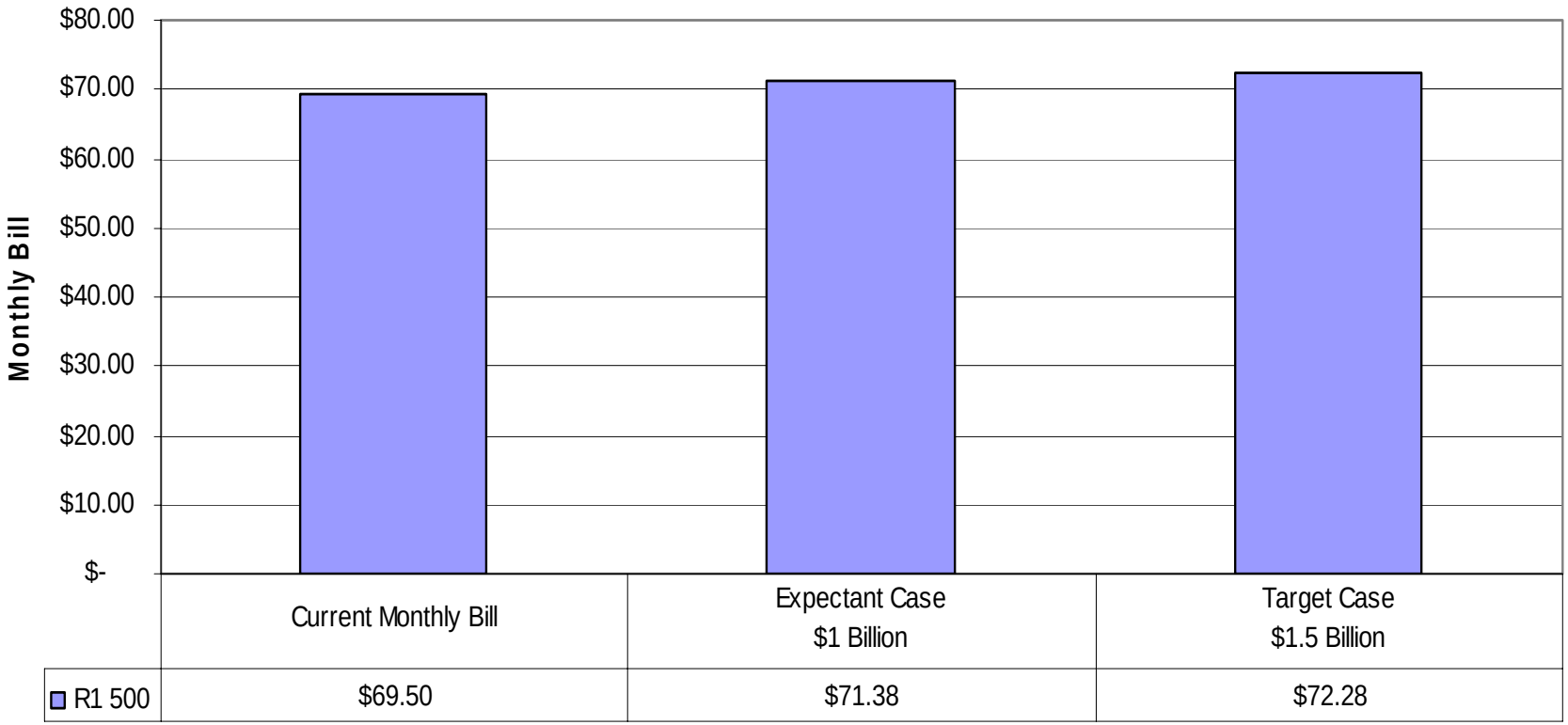
    - $2.78/month = "Target Case"

Summary of Rate Impacts on Residential Customers

Increase as a Result of Solar Program

Residential Customers with an Average 500 kWh Monthly Consumption

(Projected Increase Shown is Equally Allocated in Energy)



	Current Monthly Bill	Expectant Case $1 Billion	Target Case $1.5 Billion
R1 500	$69.50	$71.38	$72.28

What is the proposed timing of the Initiative?

Following approval of the Initiative, LADWP staff will immediately initiate a roll-out program with initial focus on installing solar systems on City-owned properties. Staff has already identified 50 major LADWP facilities that could host solar installations. At present, LADWP intends to ramp up the program over what amounts to a 6-year period in order to achieve the targeted 400 MW of installed solar capacity by 2014 according to the following schedule:

(i) At least 50 MW by December 31, 2010

(ii) At least 125 MW by December 31, 2011

(iii) At least 200 MW by December 31, 2012

(iv) At least 300 MW by December 31, 2013

(v) At least 400 MW by December 31, 2014

WHY SUPPORT THIS NEW SOLAR INITIATIVE?

- The City must take proactive steps to reduce it's carbon footprint by permanently eliminating greenhouse gas emissions attributed to fossil fuel power generation to avoid imposition of punitive legislative or regulatory measures (e.g. AB 32).

- The City must ensure its future energy security and independence by maintaining a diversified energy resource portfolio and identifying new clean and sustainable electricity resources today.

- The City can affirmatively impact the cost of solar power through a sustained commitment to developing utility scale power projects that will:

  – *Promote technological innovation and competition among solar providers*

  – *Emphasize economies of scale*

  – *Foster economic development and local job creation*

  – *Reduce transmission costs and line losses associated with imported power.*

  – *Mitigate risk and lower cost through application of tax subsidies, accelerated depreciation and other creative financial approaches*

Next Steps….

- Immediately following Council approval, LADWP will initiate a detailed financial analysis as set forth in the motion introduced on October 28, 2008 which will be provided as part of a formal outreach plan targeting all customer classes and City stakeholders including Neighborhood Councils.

- This detailed analysis will include use of sophisticated financial models and rates impact analysis which will reflect the precise Solar Initiative parameters approved by Council.

- Analysis will take into account LADWP efforts to maximize cost efficiencies, technological advances, volume discounts, federal tax subsidies and MACRS depreciation schedules wherever possible.

- Analysis of the Initiative will also include a reprioritization of LADWP's wind, geothermal and hydroelectric projects under negotiation in order to mitigate the overall cost of both the Initiative and RPS programs.

- LADWP will also propose federal legislation seeking parity with Investor Owned Utilities like SCE relative to tax subsidies and other such benefits currently not available directly to Municipal Utilities.