Appendix B Energy Efficiency and Demand Side Management

B.1 Overview

This Appendix presents the results of the energy efficiency (EE) and demand response investigation conducted by Black & Veatch Corporation (B&V) and LADWP energy efficiency personnel as part of the 2010 Los Angeles Department of Water and Power (LADWP), Integrated Resources Plan (IRP) project. Topics covered the scope of work and approach, scenario development and methodology, existing forecast, post-2016 conservation options, and results of conservation forecasts. A list of referenced sources is also provided.

LADWP also initiated a comprehensive energy efficiency (EE) Market Potential Study, the results of which will be utilized in the establishment of new EE goals (energy savings and demand reduction) and programmatic approaches to achieve those goals.

B.2 Scope of Work and Approach

Scope of work included the following tasks:

1) Identify the existing programs and the amount of EE and solar energy (collectively referred to as demand side management [DSM]) savings that are assumed in the existing forecast through 2016.

2) Identify the basis for the assumed savings: i.e., the extent to which these assumptions are based on actual participation and evaluations.

3) Consider what other projections exist and what these existing programs could achieve going forward (beyond 2016).

4) Recommend ideas for new programs that should be considered going beyond 2016.

5) Provide a revised forecast of energy savings and demand response impacts for use in the IRP with particular attention to the post 2016 period.

6) Explain how LADWP has or should take into account local, federal, and state EE standards that will be introduced over this time period.

The final product of this investigation is an input stream of DSM effects on a monthly or hourly load shape decrement in kilowatt hours ([kWh] and kilowatts [kW]) and a cost component (cents

per kWh and dollar per kW) to use in the IRP model. LADWP has planning requirements, and reserve requirement data that will ultimately be used as part of an hourly dispatch analysis assuming 8,760 hours over the course of a year.

A review was conducted of the available information and data on the existing energy efficiency assumptions embedded in the April 2009 and October 2009 load forecasts produced by the LADWP forecast group.

Key documents reviewed are listed in Section B.7.

The main sources of data reviewed were:

- April 2009 LADWP Load Forecast
- October 2009 LADWP Load Forecast
- Program activity reports from 2009
- 2006 report entitled "California Energy Efficiency Potential Study (PGE0211.01)-Volume 1
- 2006 LADWP study entitled "Los Angeles Department of Water And Power Energy Efficiency Potential Study"
- 2009 statewide CPUC (California Public Utility Commission) energy forecast provided on Form 1.1--"Statewide California Energy Demand 2010-2020 Staff Revised forecast-electricity consumption by Sector (GWh).

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Finally, the team considered other programs being delivered by utilities, particularly in California, that may be applied in the post-2016 period to enhance the current portfolio. Attention was paid to studies that focused on emerging technologies and leading edge approaches.

B.3 Scenario Development and Methodology

Three EE scenarios were developed for the IRP analyses: 1) High Case (aggressive amounts of energy efficiency achieved); 2) Mostly Likely Case (amounts of energy efficiency reflective of actual experience and current budgets) and 3) Low Case (lower amounts of energy efficiency due to economic conditions and continued pressure of local government budgets).

The following methodology was employed.

Step 1: Gross and Net Sales forecasts were provided by LADWP based upon its April 2009 forecast; 2008-2009 through 2029-2030 Conservation forecasts also were provided by LADWP based upon its April 2009 forecast.

Step 2: LADWP's Conservation forecast for the period 2017-2018 through 2029-2030 was modified for the purpose of providing a revised Conservation forecast.

Step 3: In order to prepare this interim Conservation forecast update, a comprehensive review of LADWP forecast information: a 2006 report entitled "California Energy Efficiency Potential Study (PGE0211.01)-Volume 1; a 2006 LADWP study entitled "Los Angeles Department of Water And Power Energy Efficiency Potential Study" and a 2009 statewide CPUC energy forecast provided on Form 1.1--"Statewide California Energy Demand 2010-2020 Staff Revised Forecast-Electricity Consumption by Sector (gigawatt hours [GWh])".

Step 4: Based upon the document review, it was ascertained that LADWP's April 2009 Conservation forecast corresponds to the Full Market Potential scenario level identified in the PGE0211.01 study previously referenced.

The information relied upon is California-specific with the following scenarios implied for Electric EE potential

- Maximum Technical Potential--21 percent
- Total Economic Potential--17.5 percent
- Full Market Potential--7.9 percent (High Scenario)
- Average Market Potential--6.6 percent (Mid Scenario)
- Current Market Potential--5.3 percent (Low Scenario)

The scenarios were developed for use in the IRP runs. These forecasts rely upon a combination of LADWP's April 2009 projections for "ramp-up" of EE and the terminal saturations of EE Program impacts projected in the "California EE Potential Study (PGE0211.01)-Volume 1.

Step 5: This step required the estimation of a Load Duration Curve distribution modifier for EE-related impacts. Given the absence of a LADWP-specific EE Market Potential Study, it was recommended that the yearly energy related impacts be spread across the 8,760 hour load shape for a Current Market Potential run. Then, a sensitivity test was run using the arithmetic average impact at the midpoint hour of the annual load duration curve, and +/-1.8 times that average for the peak hour and lowest load hour for the Full Market Potential. Finally, for the Average Market Potential, a sensitivity test was run using the arithmetic average impact at the midpoint hour of the annual load duration curve, and +/-1.5 times that average for the peak hour and lowest load hour. From those calculations, the hourly loads should be spread in order to fit three EE hourly impact curves over the 8,760 hours of the year.

B-4 Existing Forecast

The conservation impacts study began with a review of the existing forecast. For the last three or four years, the EE Group has been providing actual impacts for the energy savings. The numbers provided for incorporation into the forecast are therefore consistent with those that are provided to the California Public Utilities Commission (CPUC) following state data reporting requirements.

To develop these estimates, the EE Group uses the CPUC's E3 Calculator tool to determine gross savings on a per measure basis and apply the standard net to gross algorithm to arrive at a set of annualized savings. The EE Group delivers the calculated savings values to the LADWP Forecasting Group, but is not involved in any adjustments that might be made to the numbers as part of the forecasting process.

Table B-1 presents the conservation and other components of the April 2009 sales forecast. The forecast begins in 2008, grows to 2,088 GWh in 2016 and stays steady through the termination point in 2030. The three developed scenarios – High, Mostly Likely and Low – of energy savings were projected beyond 2016.

Table B-1: April 2009 Sales Forecast in GWh and Conservation Components

LADWP APRIL 2009 FORECAST						
Year	Gross Sales Fcst	Conservation	Sales Net Conservation	Conservation percent of Gross	Solar	Net
2008-09	24,591	0	24,591		0	24,591
2009-10	24,016	150	23866	0.62%	6	23,859
2010-11	24,209	440	23769	1.82%	16	23,753
2011-12	24,549	708	23841	2.88%	30	23,811
2012-13	24,850	961	23889	3.87%	48	23,841
2013-14	25,275	1,246	24,029	4.93%	71	23,959
2014-15	25,693	1,563	24,130	6.08%	100	24,030
2015-16	26,044	1,880	24,164	7.22%	138	24,027
2016-17	26,433	2,038	24,395	7.71%	171	24,224
2017-18	26,855	2,038	24,817	7.59%	182	24,635
2018-19	27,280	2,038	25,242	7.47%	181	25,061
2019-20	27,703	2,038	25,665	7.36%	180	25,485
2020-21	28,245	2,038	26,207	7.22%	180	26,028
2021-22	28,740	2,038	26,702	7.09%	179	26,523
2022-23	29,105	2,038	27,067	7.00%	178	26,889
2023-24	29,465	2,038	27,427	6.92%	177	27,250
2024-25	29,827	2,038	27,789	6.83%	176	27,613
2025-26	30,188	2,038	28,150	6.75%	175	27,975
2026-27	30,555	2,038	28,517	6.67%	174	28,343
2027-28	30,927	2,038	28,889	6.59%	173	28,716
2028-29	31,302	2,038	29,264	6.51%	172	29,092
2029-30	31,679	2,038	29,641	6.43%	171	29,470

B.4.1 Existing DSM Program Portfolio

Programs currently being offered to customers and that are contributing savings as assumed in the existing forecast are listed in Tables B-2 and B-3[1]:

Table B-2 : Existing Customer Programs

Program	FY09-10 Budget ($1,000s)	LADWP $/kWh	LADWP $/kW
Residential Programs			
Refrigerator Recycling Program	$ 909.10	$ 0.019	$ 717
Refrigerator Exchange Program	$ 30,084.30	$ 0.035	$ 3,827
CFL Distribution Program	$ 728.50	$ 0.013	$ 604
CFL Buydown Program	$ 2,454.10	$ 0.009	$ 430
Consumer Rebate Program	$ 2,483.30	$ 0.128	$ 5,044
Point of Sale (CRP)	$ 3,008.90	$ 0.052	$ 2,562
Residential Audit (On-Line)	$ 171.20	$ 0.072	$ -
AC/Tune-Up & Replacement	$ 2,200.00	$ 0.049	$ 368
UpStream/Midstream Computers/Appl.*	$ 139.90	$ 0.021	$ 514
Subtotal Residential Programs	**$ 42,179.30**	**$ 0.030**	**$ 1,761**
Non-Residential Programs			
Commercial Lighting Efficiency Offer	$ 11,697.70	$ 0.010	$ 653
Chiller Efficiency Program	$ 2,720.00	$ 0.035	$ 1,686
Thermal Energy Storage Program	$ 233.10	N/A	$ 1,335
Refrigeration Program	$ 1,105.10	$ 0.019	$ 1,875
Custom Performance-Based Efficiency	$ 7,834.20	$ 0.017	$ 1,139
Small Business Direct Install	$ 15,976.30	$ 0.046	$ 2,600
New Construction/LEED Incentive	$ 2,118.30	$ 0.022	$ 1,485
Collaborative	$ 1,532.00	N/A	N/A
Statewide Upstream Efficient HVAC	$ 852.57	$ 0.020	$ 1,014
Subtotal Non-Residential Programs	**$ 44,069.27**	**$ 0.020**	**$ 1,239**
General Program Support	**$ 4,153.70**		
TOTAL ENERGY EFFICIENCY PROGRAM	**$ 90,402.27**	**$ 0.025**	**$ 1,519**

Source: Power Systems Fiscal Budget 2009/2010 as presented 5/21/2009

* Program not launched due to funding and/or resource limitations.

[1] Status report for the State; LADWP Existing Programs 2008-2009; CPUC presentation on Big Ideas

Table B-3: LADWP's Existing DSM Programs

COMMERCIAL INDUSTRIAL
• Commercial Lighting Efficiency Offer (rebates)
• Custom Performance Program (incentives)
• Refrigeration Program (rebates)
• Small Business Direct Install
• New Construction Incentive
• Energy Efficiency Loan Program
• On Site Energy Audits
• Technical Assistance for Retrofit
• Thermal Energy Storage Program
RESIDENTIAL
• Consumer Rebates
• Refrigerator Turn-in and Recycle Program
• Manufacturer Buy Down for CFL (pending)
• Home energy saver on-line audit
• Low Income Refrigerator Exchange Program

Forecasts have to make generalizations as to program performance in order to include conservation effects over time. The reality of actual program results can vary significantly year to year. These programs and their predecessors have had a range of success over the time period they have been in place. Figures B-1 shows energy savings from 2006 to 2009, and Figure B-2 shows kW reductions for the same time periods based on LADWP data. While these figures only show savings during this time period, LADWP has been involved in these programs for years prior.

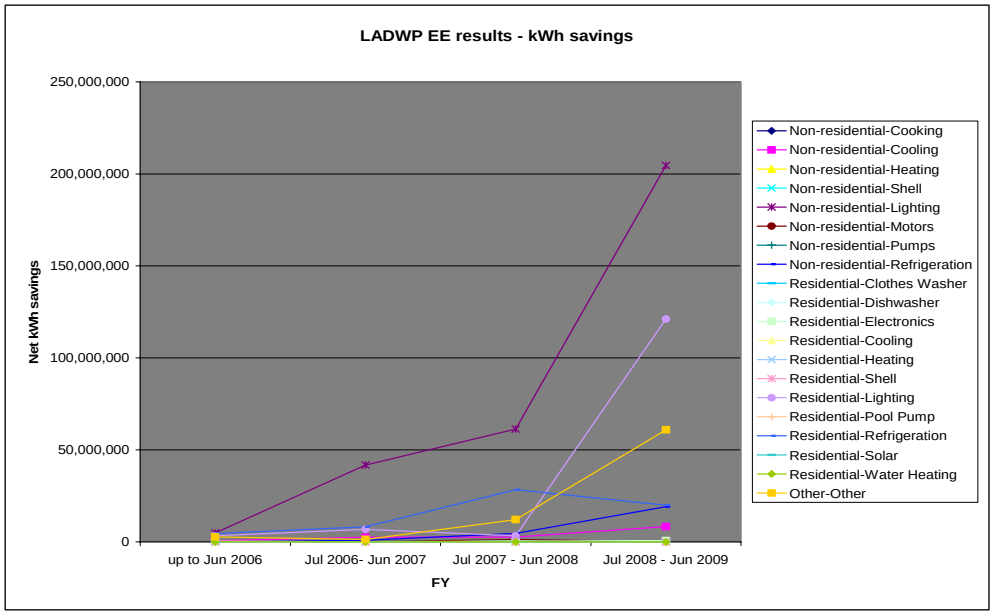

Figure B-1: Energy Savings Results for LADWP

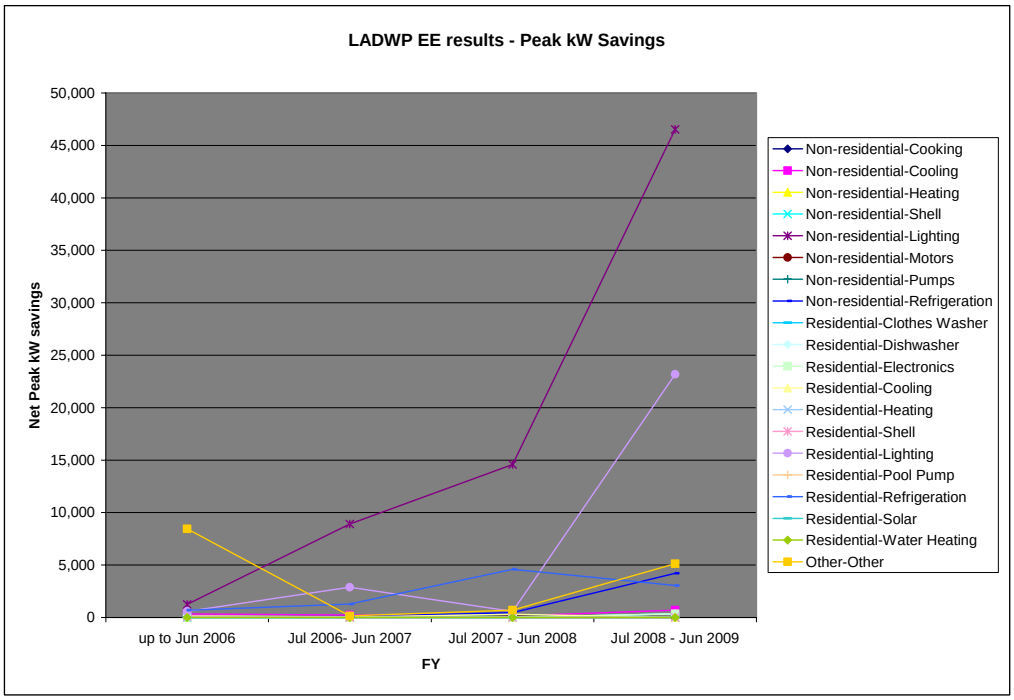

Figure B-2: Demand Reduction Results for LADWP Programs

It is clear from these graphs that the programs virtually exploded in the last time period, 2008-2009. The end of year reporting to the CPUC identified achievements for 2009 from LADWP's portfolio of programs. These are listed in Table B-4.

Table B-4: Energy and Demand Impacts of LADWP Programs 2008-2009

	Gross	Net	MW
Residential kW Savings:	26,548	22,565.60	22.57
Residential kWh Savings:	132,085,606	112,272,764.96	112,272.76
		-	-
Commercial kW Savings:	32,890	27,956.88	27.96
Commercial kWh Savings:	175,418,139	149,105,417.82	149,105.42
		-	-
Low Income kW Savings:	1,655	1,406.99	1.41
Low Income kWh Savings:	10,828,290	9,204,046.50	9,204.05
Total kW	61,093	51,929	52
Total kWh	318,332,034	270,582,229	270,582

Source: ECAF Report for FY 08-09

B.4.2 Program Goals

Improving upon the current forecast assumptions requires consideration of the legislative and regulatory goals established for the achievement of energy efficiency. On the one hand, past performance suggests a conservative goal, whereas on the other hand, goals that have been established are more aggressive.

LADWP has a standing yearly goal of 300 GWh that is established to meet the goals of Assembly Bill 2021. However, 300 GWh is a gross number in that AB 2021 Goals are net 250 GWh. Thus, in order to achieve 250 GWh, LADWP has to exceed 250 GWh by a significant margin, given California net energy savings protocols.

In the 2007-2008 program year, LADWP's EE performance was below targets and expectations. However, LADWP had a record setting year in 2008 and 2009. This was attributable to the Small Business Direct Install initiative and the distribution of 2.4 million compact fluorescent light (CFL) bulbs, two to each residence. Analyses conducted by LADWP revealed that 80 percent of the savings achieved that year was from lighting (120 GWh). While this was a laudable result for one year, those savings opportunities are now diminished, and LADWP is looking at new opportunities in lighting with the decreasing prices of available and Light Emitting Diodes (LED).

There is considerable concern over the 2008-2009 achievements being a poor data point for forecast purposes since it is felt this was a uniquely successful year. Considerable energy savings were achieved that may not be repeatable in subsequent years due to the limited amount of lighting savings still available and the fact that state and federal standards are eliminating large portions of market potential from the mix.

It may be prudent to forecast a lower rate of increase in energy savings over time to be more reflective of identified opportunity and available resources than a higher rate driven by the attainment of goals.

B.4.3 Near-Term Potential Program Enhancements

Near term options are being considered by the EE Group include, both commercial/industrial (C/I) and residential programs, as described below:

Commercial/Industrial Program Options

- C/I AC Tune Ups
- C/I Early Replacement of AC Systems,
- Retro-commissioning Program
- 80+ Energy Star Upstream Program for EE Power Supply for Data Centers and Computers
- Custom Plus for 1 GWh Annual Savings

Residential Program Options

- Residential Pool Pumps
- More Variety of CFL Options (e.g., more bulbs per home, dimmable CFLs)
- AC Tune-ups

Programs suggested by Quantum in their 2006 DSM Potential study were as follows:

a. Residential CFL Program
b. Residential & Non-Res heating, ventilation, and air conditioning (HVAC) Performance Program
c. Non-residential Custom Incentives
d. Non-residential Retro-Commissioning
e. Non-residential New Construction
f. Small Commercial Turnkey

The above group of ideas addresses near-term options for enhancing the current portfolio of programs. This would enhance the LADWP's ability to achieve its conservation targets in the forecast through 2016 and/or provide a cushion of additional potential savings in the event of an underperforming year. Barriers to the achievement of these targets are discussed below.

B.4.4 Barriers to Achievement of Near-Term Options

The EE Group indicated that data showed that there is only a 20 percent penetration of CFLs currently applied to household use. While it is felt that there is still a big opportunity in CFLs for the homes, federal standards will eliminate this opportunity beyond 2013 by the ban of the manufacture and sale of incandescent light bulbs after 2013.

Issues of concern are

- For some LADWP rebate programs, pending applications alone may consume current budget allotments.
- Light Emitting Diodes (LEDs) are very expensive and concerns exist regarding long-term lighting quality and savings persistence, but within a few years are anticipated to take off through the Custom program, which is the vehicle for looking at emerging technologies.
- The EE opportunity is being diminished due to state and federal codes and standards.
- Given the economy and the fact that a major component of opportunity has been diminished (i.e., lighting), the CFL buy-down initiative has been suspended.
- Issues related to the funding sources and other resources for EE programs are causing concerns and limiting the LADWP's ability to implement its current EE plans.

All of these factors suggest that the LADWP may need to consider a modified set of assumptions in its forecasting process to account for the realities of the current economic conditions facing LADWP's customers and LADWP financial considerations that may have an effect on the achievement of EE opportunities in the near-term.

B.5 Post-2016 Conservation Options

In addition to implementation realities, other key factors to consider going forward in improving upon the estimates of EE in the forecast include:

1. **Latest Federal and State Standards.** It is not clear how the Load Forecast or EE groups have taken into account federal standards or other State standards that may take effect over the term of the forecast. This factor will be explicitly addressed in the forthcoming EE Market Potential Study.

2. **Updated RASS.** The earlier source of customer data, the Residential Appliance Saturation Survey (RASS), was deficient in terms of the sampling for LADWP[2]. The new RASS has been completed with more accurate information for LADWP. This will provide much better data to be used as the basis for an updated EE Market Potential Study.

3. **High Avoided Costs**. Due to the very aggressive Renewable Portfolio Standard (RPS) goals, the avoided cost has changed somewhat since the previous IRP, based on 2005 and 2006. The past avoided cost is based upon marginal costs for the next set of generating units. The newer mix of generation will include more renewables based on the RPS, and it is thus highly likely that an Avoided Cost, based on marginal units would be higher. The alternative method being used by many companies is market price. The market price for purchased power in California that would be available to LADWP would therefore offer an alternative value upon which to plan DSM programs as a threshold for costs.

4. **Emerging Technologies**. Another factor affecting the opportunities for increased EE going forward includes the development of new technologies and concepts such as Net Zero Homes[3].

[2] The issue is that the earlier RASS project did not include an adequate number of samples from the LADWP service territory and so the results were not representative of LADWP. Higher sample sizes from LADWP were employed in the recently completed study so that LADWP will be adequately represented and can rely on the results as being statistically valid for their service territory.

[3] Net Zero Homes is the name of the concept where new residential construction produces enough energy to meet its needs, thereby having 'net zero" energy requirements. This is accomplished through a combination of renewable energy systems (such as photovoltaic panels on the roof) plus highly energy efficient construction practices and appliances that lower the demand for electricity in the home.

The 2006 DSM Potential study conducted by Quantum assessed a 10-year period (did not go beyond 2016) and included no technology or program recommendations for options beyond that point.

It is logical that most market potential studies focus on the near term future, where technologies and programmatic design issues can be predicted with relative certainty and estimates of energy savings potential are fairly robust. Beyond ten years, it is harder to predict what technologies will be available and what program features will appeal to consumers and businesses. Less is known about what external factors will influence conservation behaviors – political, economic and scientific or environmental developments are difficult to predict with any accuracy. Most DSM potential studies therefore make assumptions based on current trends in technology development, public interest, and legislative and market trends.

For LADWP, a vision of conservation beyond 2016 would likely consist of the following enhancements to the current and near-term EE program portfolio currently being considered:

- LED Lighting Products – It is likely that developments in LED technology and its commercial availability and better price points will be available longer term, along with programs encouraging product adoption.
- Net Zero Energy Construction this has already been noted on the horizon by the EE group and it may become the standard within the next planning period.
- Smart Metering – Pilot studies related to providing customers with real time comparative data on energy usage through in-home displays are happening around the country and in California in particular. The heavy federal investment in Smart Grid initiatives may likely push smart metering into households and businesses quickly enough to have a substantial impact on conservation behaviors over the planning horizon.
- Smart Appliances - With smart metering comes the promise of hard-wired efficiency controls on major appliances if consumers accept them and use them as designed.
- Plug Loads[4] – More of a near-term opportunity, it is likely that there will be increased developments in the control of plug loads due to the ever-expanding amount of electronics in households and businesses alike.

These are just a few concepts from other studies that are likely to provide opportunities for increasing the trajectory of conservation behaviors over time, providing more of an increased slope to the post-2017 assumptions on energy savings than are in the current forecast.

[4] Plug loads refers to the balance of electricity using devices in buildings other than the main end uses of lighting, heating and water heating that are plugged into an outlet rather than hard-wired. For example, computers, small kitchen equipment, office equipment, TVs and electronic games and task lighting are all examples of plug loads.

B.6 Results of Conservation Forecasts

Table B-5 presents the results of analysis of the existing (pre-2016) and longer term (2017-2030) forecasts of energy savings or conservation due to programs that LADWP is now implementing and could implement in the future.

Table B-5: Black & Veatch Conservation Forecast Recommendations

	BLACK & VEATCH CONSERVATION FORECAST FOR LADWP (Prepared January 17, 2010)					
Year	LADWP April 2009 EE Fcst Extension-High Case GWH	LADWP April 2009 EE Fcst Extension-High Case %	LADWP April 2009 EE Fcst Extension-Most Likely Case GWH	LADWP April 2009 EE Fcst Extension-Most likely Case %	LADWP April 2009 EE Fcst Extension-Low Case GWH	LADWP April 2009 EE Fcst Extension-Low Case %
Ave cost/kWh per portfolio	5.7 cents/kWh		4 cents/kWh		2.6 cents/kWh	
2009-10	150					
2010-11	440	1.82%	368	1.52%	295	1.22%
2011-12	708	2.88%	591	2.41%	475	1.93%
2012-13	961	3.87%	803	3.23%	645	2.59%
2013-14	1,246	4.93%	1,041	4.12%	836	3.31%
2014-15	1,563	6.08%	1,306	5.08%	1,049	4.08%
2015-16	1,880	7.22%	1,571	6.03%	1,261	4.84%
2016-17	2,038	7.71%	1,703	6.44%	1,367	5.17%
2017-18	2,095	7.80%	1,750	6.52%	1,405	5.23%
2018-19	2,155	7.90%	1,800	6.60%	1,446	5.30%
2019-20	2,189	7.90%	1,828	6.60%	1,468	5.30%
2020-21	2,231	7.90%	1,864	6.60%	1,497	5.30%
2021-22	2,270	7.90%	1,897	6.60%	1,523	5.30%
2022-23	2,299	7.90%	1,921	6.60%	1,543	5.30%
2023-24	2,328	7.90%	1,945	6.60%	1,562	5.30%
2024-25	2,356	7.90%	1,969	6.60%	1,581	5.30%
2025-26	2,385	7.90%	1,992	6.60%	1,600	5.30%
2026-27	2,414	7.90%	2,017	6.60%	1,619	5.30%
2027-28	2,443	7.90%	2,041	6.60%	1,639	5.30%
2028-29	2,473	7.90%	2,066	6.60%	1,659	5.30%
2029-30	2,503	7.90%	2,091	6.60%	1,679	5.30%

The results shown in the table above are graphed on Figure B-3 along with the Market Potential for EE identified in the 2006 study.

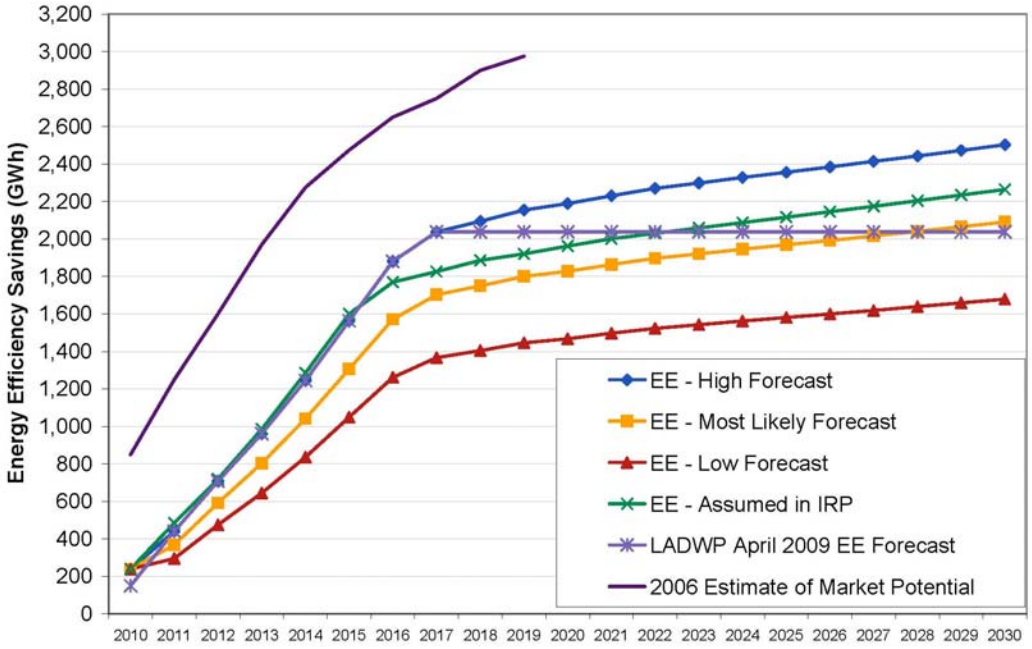

Figure B-3: EE Forecast

B.6.1 Portfolio Costs

An important consideration in applying EE resources in an IRP is at what cost those resources are brought into the analysis. For the purposes of this brief review the average cost per kWh of savings is presented for each portfolio in the three scenarios. The results of applying these costs to the EE supply curves are shown on Figure B-4.

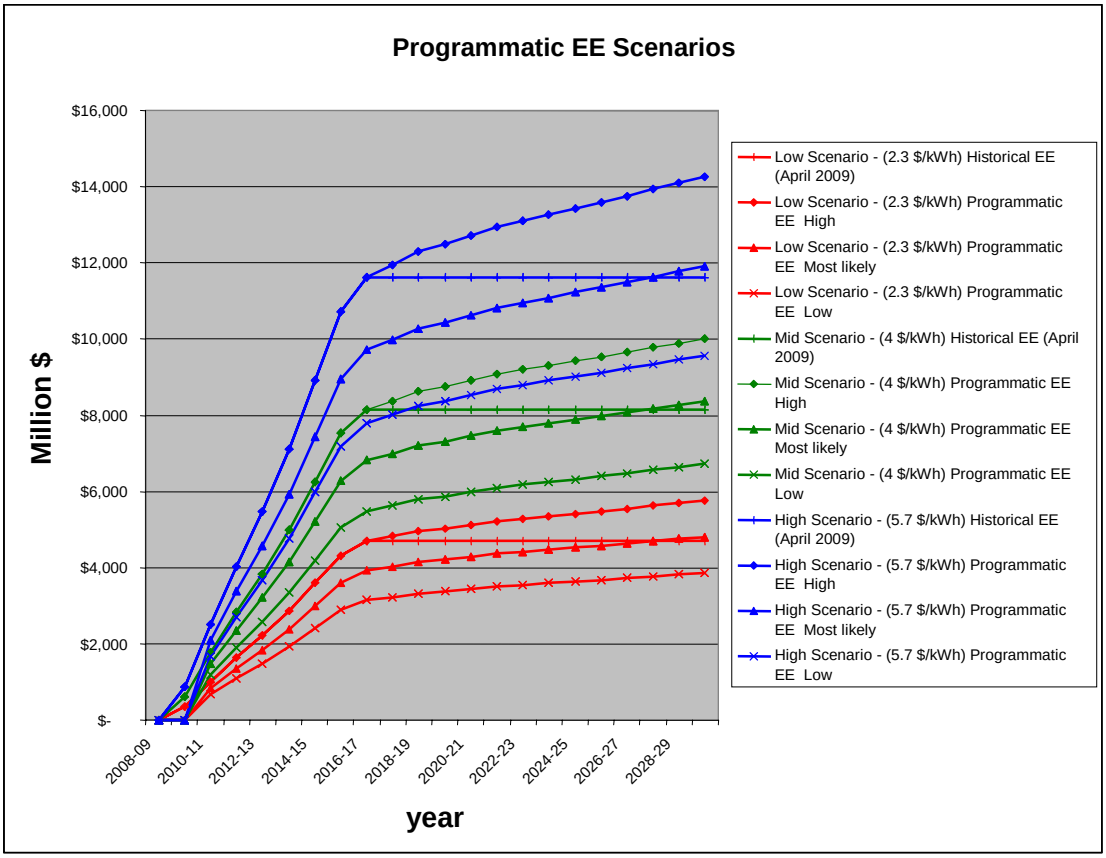

Figure B-4 : Cost of Programmatic EE Scenarios

B.6.2 Conclusions

It is concluded that the Load Forecast and IRP for this cycle will reflect the currently assumed amount of EE used in the base Load Forecast, plus the recommended high case from 2017 and beyond.

In future, the recommendation is that:

1. The LADWP Load Forecast should reflect reality as best as possible and base EE projections on historical performance combined with committed energy efficiency program budgets.
2. The Load Forecast should not incorporate the achievement of any legislative goals (aka 1 percent per year, 10 percent over ten years, etc.) - that is the purview of the IRP.
3. The IRP should be the place where LADWP considers different levels of EE
4. Energy Efficiency is included in the IRP process in two ways:

a) “Historical EE” in the Load Forecast (which includes historical trends forecasted in to the future

b) “Programmatic” or Resource EE where EE is considered a way to reduce energy demand compared against other capacity expansion options. EE in this realm considers the remaining market potential not already captured by Historical EE and the cost per kWh and per kW as compared to other options. It should be recognized that the amount of EE determined through the IRP process is related to the avoided cost of other supply options. If more renewables are included in LADWP's future plans, the resultant higher avoided costs would make a greater quantity of EE programs cost effective.

B.7 Documents Consulted

1. "CPUC and Energy Efficiency: Utility Programs & Strategic Planning Process (2009-2020)" Presentation by Cathy Fogel, Senior Analyst & Staff Coordinator of the California Public Utilities Commission. Presented during a: CAT-CARB-CPUC-CEC Workshop on Non-market Based GHG Reduction Measures.
2. "CALIFORNIA STATEWIDE RESIDENTIAL APPLIANCE SATURATION STUDY FINAL REPORT EXECUTIVE SUMMARY" Prepared by: KEMA-XENERGY, Itron, Roper, ASW on June 2004.
3. "CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER APRIL 2009 RETAIL ELECTRIC SALES AND DEMAND FORECAST."
4. "LOS ANGELES DEPARTMENT OF WATER AND POWER ENERGY EFFICIENCY POTENTIAL STUDY FINAL" Prepared by: QUANTUM CONSULTING INC. February 8, 2006.
5. *Assembly Bill: "*BILL NUMBER: A.B. No. 32, AUTHOR : Nunez, TOPIC : Air pollution: greenhouse gases: California Global Warming, Solutions Act of 2006." "Assembly Bill No. 32, CHAPTER 488, An act to add Division 25.5 (commencing with Section 38500) to the Health and Safety Code, relating to air pollution."
6. Assembly Bill: "BILL NUMBER: A.B. No. 2021, AUTHOR : Levine, TOPIC : Public utilities: energy efficiency." - "Assembly Bill No. 2021, CHAPTER 734, An act to add Section 25310 to the Public Resources Code, and to amend Section 9615 of the Public Utilities Code, relating to energy efficiency."
7. "Implementation of the AB 32 Scoping Plan" website: http://www.arb.ca.gov/cc/implementation/implementation.htm
8. Senate Bill: "BILL NUMBER:S.B. No. 1037, AUTHOR: Kehoe, TOPIC : Energy efficiency." – “Senate Bill No. 1037, CHAPTER 366, An act to amend and repeal Section 454.5 of, and to add Sections 454.55, 454.56, 1002.3, and 9615 to, the Public Utilities Code, relating to public utilities."

9. “Energy Efficiency in California’s Public Power Sector" Status Report March 2008 California Municipal Utilities Association.
10. " Energy Efficiency in California’s Public Power Sector" Status Report December 2006 California Municipal Utilities Association.
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