Agenda Report

January 28, 2013

TO: Honorable Mayor and City Council

THROUGH: Municipal Services Committee (January 22, 2013)

FROM: Water and Power Department

SUBJECT: **ADOPT ENERGY EFFICIENCY AND DEMAND REDUCTION GOALS FOR FISCAL YEARS 2014 THROUGH 2023**

RECOMMENDATION:

It is recommended that the City Council:

1. Find that the adoption of energy efficiency and demand reduction goals is exempt from the California Environmental Quality Act ("CEQA") pursuant to State CEQA Guidelines Section 15061 (b) (3) (general rule); and,
2. Adopt an energy efficiency goal of 12,750 MWh per year and demand reduction goal of 2.3 MW per year for fiscal years 2014 through 2023 in accordance with Assembly Bill 2021 ("AB-2021"). These proposed annual goals are equivalent to an average of 1% of forecast annual net energy for load (retail electric energy sales plus distribution losses) and approximately 0.7% of average peak demand for the ten-year period.

MUNICIPAL SERVICES COMMITTEE RECOMMENDATION:

On January 22, 2013, the Municipal Services Committee ("MSC") recommended that the City Council adopt the proposed energy efficiency and demand reduction goals.

ENVIRONMENTAL ADVISORY COMMISSION RECOMMENDATION:

On January 18, 2013, the Environmental Advisory Commission ("EAC") recommended that the City Council support the proposed energy efficiency and demand reduction goals, and that staff provide annual progress report updates on these goals to the EAC each January.

EXECUTIVE SUMMARY:

AB-2021(2006) mandates that all utilities invest in energy efficiency and demand reduction programs. The purpose of the bill is to reduce the growth in California's energy use as well as reduce the highest levels of demand for electricity. The peak demand typically occurs during the mid-afternoon to early evening hours on hot summer days and utilities are mandated to provide incentives for customers to shift their electrical use to non-peak times. Another piece of legislation, Senate Bill 1037 ("SB-1037"), created a priority for investments in energy resources, giving energy efficiency and demand response first priority, followed by renewable resources and then fossil fuels like natural gas and coal. This law requires that the utility acquire all 'cost-effective, reliable and feasible' energy efficiency and demand response resources.

Under the law, the City Council is charged with approving ten-year energy efficiency and peak demand reduction goals for Pasadena Water and Power ("PWP"). For investor-owned utilities, these goals are set by the California Public Utility Commission. The City Council has previously adopted such goals in 2007 and 2010, and the next filing is due to the California Energy Commission ("CEC") in March 2013.

Acting in collaboration with other municipal utilities, a consultant was retained to develop a model to determine the market potential for energy efficiency in each participating utility's service territory for 2014 to 2023. The consultant customized the model to produce results appropriate for PWP's service territory. Table I summarizes the average annual energy savings and demand reduction goals that were previously adopted by the City Council alongside the market potential determined by model and the proposed goals recommended in this report. Staff developed the proposed ten-year energy efficiency and demand reduction goals based on the model results, but also with consideration for simplicity of the goals, the City's environmental objectives, available funding for incentive programs, and near-term electric rate impacts.

Table I – Ten-Year Average Energy Efficiency Goal Summary

Energy Efficiency Target	2007 Goal	2010 Goal	2013 Market Potential	Proposed Goal	Change from 2010
Energy Savings* (MWh/year)	18,126	16,600	12,654	**12,750**	**-23%**
Demand Reduction* (MW/year)	2.2	3.8	2.2	**2.3**	**-40%**

** Average annual energy savings and demand reduction goals adopted for the entire ten-year period.*

The proposed goals represent about 1% of annual energy sales and 0.7% of average annual peak demand forecast for the ten-year period, and are roughly equivalent to the market potential determined by the consultant's model.

Compared to the goals adopted in 2010, the market potential for energy efficiency has dropped significantly. As a result, the proposed goal for energy savings is 23% lower and the proposed demand reduction goal is 40% lower on average over the respective ten-year periods. The primary reasons for the reduced market potential include: (1) The adoption of new codes and standards requiring more efficient buildings and appliances; (2) Updated assumptions for the amount of energy and peak demand reduction associated with various energy efficiency program measures that PWP can offer; and, (3) An update to the model that corrects a prior overstatement of the amount of commercial office space in Pasadena.

The market potential for demand reduction has dropped significantly more than the potential for energy savings. As the changes in codes in standards require more efficient air conditioning and refrigeration, the remaining portfolio of cost-effective efficiency measures tend to have little or no associated peak demand reduction.

Despite the reduced market potential for energy efficiency, PWP does not anticipate that annual retail energy use will increase faster if the proposed goals are met than they would have under the 2012 Update to the Integrated Resource Plan ("2012 IRP"). This is because the baseline energy forecast has been reduced to reflect slower economic recovery and natural energy efficiency gains from the new codes and standards.

Based on recent program experience, PWP anticipates that total energy efficiency program expenditures will average $3.4 million to $4.5 million per year to achieve these goals, or about 2% to 2.5% of annual retail electric revenues. This represents a savings of approximately $1 million versus the funding that would be required to meet the prior energy efficiency goals adopted in 2010 for FY2014 through FY2017, thereby reducing or potentially deferring future Public Benefits Charge ("PBC") rate increases.

PWP's energy efficiency programs are funded with revenues from the PBC rate that are maintained in a separate fund. Due to increased costs for solar incentives, low income programs, and the expected depletion of the PBC Fund balance, PWP anticipates a potential funding gap of up to $1.1 million for FY2014. As the PBC rate is determined by formula based on the approved PBC budget and forecast energy sales, the need for rate adjustments, if any, won't be determined until the FY2014 PBC budget is developed. Over time, reduced costs for energy procurement and infrastructure investment are expected to more than offset the energy efficiency program expenses.

BACKGROUND:

Legislative Requirements

AB-2021, signed into law in September 2006, requires that the governing bodies of public utilities adopt ten-year energy efficiency and demand reduction goals every three years beginning in 2007. It further requires that utilities report their goals, spending, and progress regularly to the CEC. The City Council must adopt new energy efficiency goals for fiscal years 2014 through 2023 by early March 2013 to remain in compliance with AB-2021 and Assembly Bill 2227 (2012), which has established a new schedule for adopting energy efficiency goals starting in 2017.

Achieving the energy efficiency goals will also help PWP meet the goals of two other state laws, including: Assembly Bill 32 (2006), which lays out statewide goals to reduce California's greenhouse gas emissions to 1990 levels by 2020; and, SB-1037 (2005), which requires each local publicly owned electric utility to acquire all cost effective, reliable, and feasible energy efficiency and demand response prior to other resources.

Municipal Utility Collaborative Process

Since the enactment of AB-2021, the California Municipal Utilities Association ("CMUA"), the Northern California Power Agency ("NCPA") and the Southern California Public Power Authority ("SCPPA") have worked in collaboration to develop and report individual utility energy efficiency and demand reduction targets, spending, and progress of 36 publicly owned utilities. SCPPA and NCPA retained the Rocky Mountain Institute to assist the participating utilities in developing the first set of ten-year goals in 2007, and retained Summit Blue Consulting (now Navigant) in 2010 to develop a new model to support the development of energy efficiency and demand reduction goals for years 2011 through 2020. The same consulting team from Navigant has been retained again to support this process for the third round of energy efficiency goal analysis. In addition to model development, Navigant was responsible for collecting and assessing individual utility data to determine the appropriate model input parameters for each utility. Navigant used the updated model to calculate the energy efficiency and demand reduction potential. The model results are being used by each participating utility to guide the development of their respective energy efficiency goals.

CMUA has requested that participating member utilities adopt their respective targets by January 31 to provide ample time to aggregate the goals and prepare a comprehensive report for submission to the CEC by March 15.

Energy Efficiency Model

The California Publicly Owned Utility Energy Efficiency Resource Assessment Model ("EERAM") developed by Navigant for the 2010 process has been updated and utilized again for the 2013 process. The EERAM is an energy efficiency potential model designed to estimate technical, economic, and market energy efficiency potential for a utility's service area. The model forecasts energy savings and demand reduction potential within the residential, commercial, and industrial sectors through 2023. Using data supplied by each participating CMUA member, Navigant has configured unique versions of the model to reflect each individual service territory.

The EERAM is an Excel spreadsheet model based on the integration of energy efficiency measure impacts and costs, utility customer characteristics, utility load forecasts, and utility avoided costs and rate schedules. The model utilizes a "bottoms-up" approach in that the starting points are the study area building stocks and equipment saturation estimates, forecasts of building stock decay and new construction, energy efficiency technology data, past energy efficiency program accomplishments, and decision maker variables that help drive the market scenarios. The model calculates market potential based on a decision maker adoption rate algorithm.

The EERAM estimates energy efficiency resource potential for three perspectives. Each perspective provides "net" estimates of resource potential:

- *Technical energy efficiency potential* represents the amount of energy efficiency savings that could be achieved when not considering economic and market barriers to customers' installing energy efficiency measures.
- *Economic energy efficiency potential* represents the portion of the technical energy efficiency potential that is "cost-effective," from a societal perspective, as defined by the total resource cost test.
- *Market energy efficiency potential* is an estimate of the achievable portion of the economic energy efficiency potential that could be attributed to a utility energy efficiency program, recognizing the effect of a limited set of market barriers. Market potential forms the basis of efficiency goals set by most utilities.

The EERAM estimates a total cost of approximately $4.5 million annually to achieve the forecast market potential for energy efficiency over the next ten years.

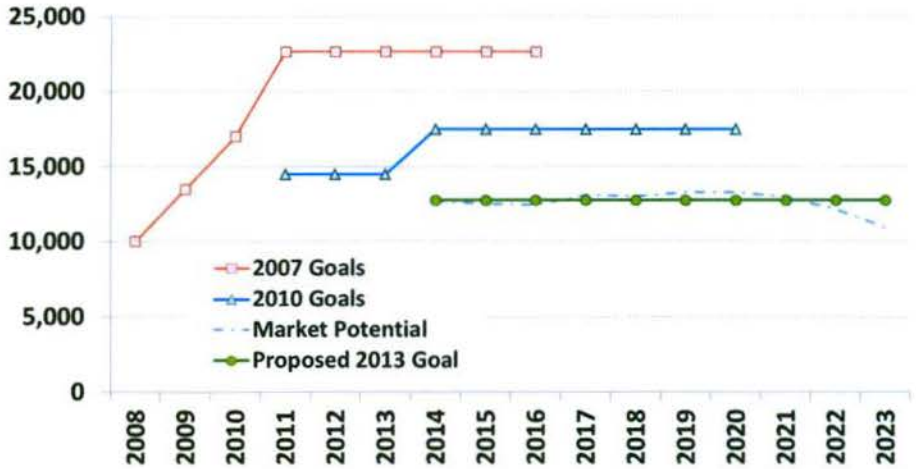
Model Caveats and Limitations

Energy efficiency potential models are invaluable tools for utility program planners to use when establishing efficiency program targets. They provide a credible and technically rigorous approach to estimating the potential energy efficiency savings attributable to a utility's energy efficiency program. However, it is understood that there are many limitations to utilizing a technical model to forecast real world results. In particular, customer willingness and awareness assumptions in potential models do not sufficiently explain consumer behavior, lifestyle, or decision-making styles that ultimately drive the success of voluntary efficiency programs. Such limitations create uncertainty that utility program planners must consider when setting realistic yet aggressive goals for efficiency programs tailored to the communities they serve.

Energy Efficiency Model Results and Recommended Goals

Figure 1 summarizes the average annual energy savings and demand reduction goals that were previously adopted by the City Council alongside the market potential determined by the model and the proposed goals for FY2014-2023. The proposed ten-year energy efficiency and demand reduction goals are based on the model results for market potential, but also with consideration for consistency and simplicity of the annual goals, the City's environmental objectives, available funding for incentive programs, and electric rate impacts.

Figure 1. PWP's Annual Energy Efficiency Goals (MWh per Year)

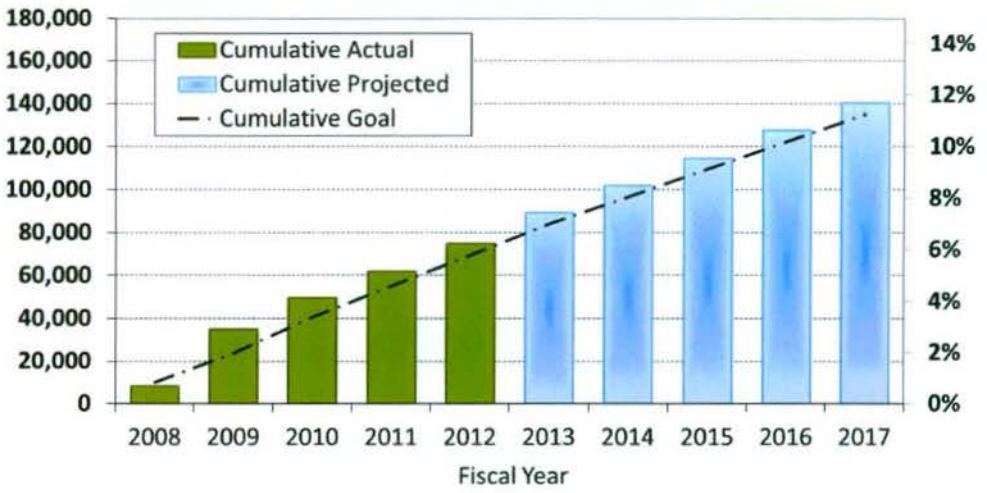


At the end of the ten-year period, the proposed energy efficiency goals will have offset electric energy sales growth by 127,500 MWh per year and peak demand by 23 MW. Based on current gross load forecasts, this would result in a slight decline in annual net energy usage and low (less than 0.5%) peak demand growth over the ten-year period, reducing PWP's need to procure energy resources by approximately 10%. The resulting net retail energy sales are consistent with the 2012 IRP..

Cumulative Progress Implementing Energy Efficiency Goals

Figure 2 depicts the cumulative actual and projected energy efficiency savings through FY2017, assuming PWP meets the adopted FY2013 goal and proposed goals for FY2014 through FY2017. On a cumulative basis from FY2008 through FY2012, PWP's energy efficiency programs have resulted in reducing retail sales by nearly 75,000 MWh, or about 6.5% of retail sales. This success is due to very strong performance in FY2009. On a year-by-year basis, PWP's energy efficiency programs have been slightly underperforming for the last three years. The average results from FY2011 and FY2012 are about the same as the proposed goal of 12,750 MWh, but short of the previously adopted goal. If PWP meets future goals, annual savings will have reached 140,000 MWh per year, or nearly 12% of retail sales.

Figure 2. PWP's Cumulative Energy Efficiency Progress/Goals (MWh/year, % of sales)



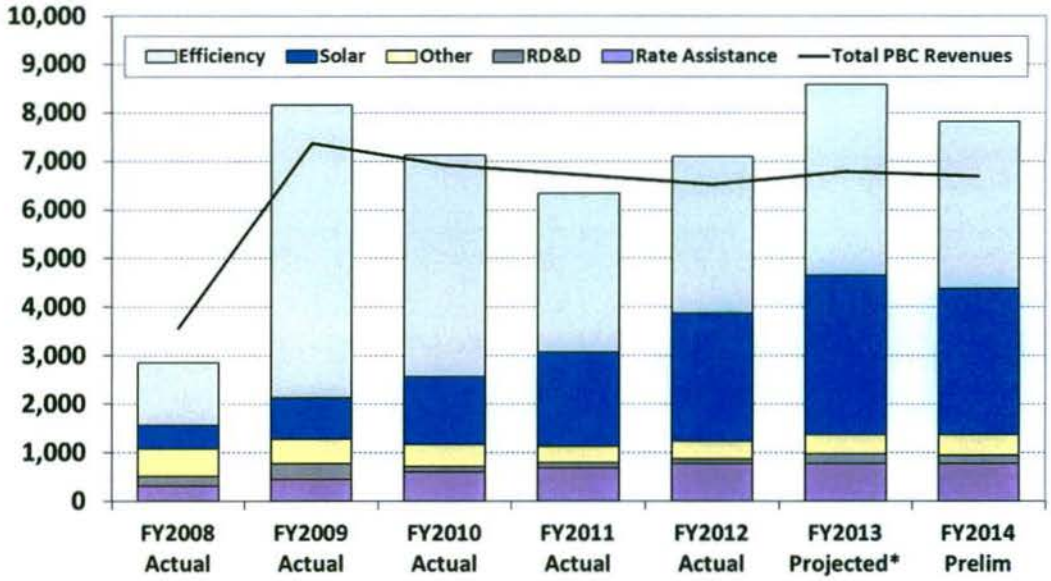
PBC Fund and Budget Considerations

PWP customers pay a PBC rate based on their electric energy usage to fund cost-effective energy efficiency programs; renewable resources, which are currently limited to the Pasadena Solar Initiative program; research, development and demonstration ("RD&D") projects; and, low income rate assistance and energy efficiency programs. PBC revenues are maintained in a separate fund (PBC Fund 410) that is used only for these purposes as authorized under Public Utilities Code 385(a). At the end of each fiscal year, any remaining unspent revenues are carried forward to the next fiscal year. The PBC revenues are the sole source of funding for PWP's energy efficiency and solar energy incentive programs.

The PBC rate is determined by a formula based on the approved PBC budget, less any available carry-forward funds, divided by forecast energy sales. The current PBC rate of 0.573¢/kWh has not changed since 2007, as PWP has worked to manage expenses while drawing down the PBC Fund. The PBC rate currently generates approximately $6.7 million in revenues per year (at current retail electric kWh sales) and costs the average residential customer using 500 kWh of electricity $2.87 per month.

Figure 3 shows annual PBC Fund expenditures since FY2008 by expense categories. Solar program rebate commitments and rate assistance program demand has been steadily climbing. As a result, PBC Fund expenses have exceeded revenues in recent years and the PBC Fund balance has been drawn down. Depending upon the program participation and the timing of project completion by our customers, PWP anticipates the PBC Fund balance may be exhausted by the end of FY2013 or shortly thereafter, and may not be available to cover any future revenue shortfalls. Without carryover funding or reductions to other PBC funded programs, there could be insufficient funding to meet all of the program demands in FY2014.

Figure 3. PBC Fund Expenditures by Category ($000)



PWP anticipates a revenue shortfall of up to $1.1 million for FY2014 if the current PBC rate is not increased or fund expenditures decreased. Prior to adoption of the FY2014 budget, staff will return to MSC with a full discussion of the options and their implications. Any necessary rate adjustments would follow the adoption of the budget.

COUNCIL POLICY CONSIDERATION:

The proposed energy efficiency and demand reduction goals are consistent with the City's Urban Environmental Accords Goals, the General Plan Energy Element, the City Council's Strategic Planning Goals, and the 2012 IRP. PWP anticipates meeting the Urban Environmental Accords 32 MW demand reduction goal by the end of FY2014 through the cumulative impact of energy efficiency programs and the installation of clean, customer-owned generation (e.g., solar photovoltaic and fuel cells) since 2007. Adoption of the proposed goals will also contribute to greenhouse gas reduction goals by effectively eliminating net electric load growth.

ENVIRONMENTAL ANALYSIS:

CEQA only applies to projects that have the potential for causing a significant effect on the environment. These proposed goals will not be detrimental to the public interest, health, safety, convenience, or general welfare of the City nor do they have the potential for causing a significant effect on the environment, do not constitute approval of any construction project, and are therefore exempt from CEQA review pursuant to State CEQA Guidelines Section 15061(b)(3).

FISCAL IMPACT:

The recommended action does not authorize additional expenditures or rate increases.

Energy efficiency program expenditures are expected to average $3.4 to $4.5 million per year over the next ten years to meet the proposed goals. This represents a savings of approximately $1 million versus the funding that would be required to meet the energy efficiency goals adopted in 2010 for FY2014 through FY2017, and adoption of the recommended goals may contribute to deferring or reducing future PBC rate increases.

For FY2014, the total PBC Fund (Fund 410) expenditures necessary to implement the proposed energy efficiency goals, while continuing to fund other PBC programs as needed to meet anticipated demand, are estimated to be $7.8 million. PBC revenues are expected to be approximately $6.7 million. Depending upon the availability of the carryover fund balance, and the expenditure levels authorized in the FY2014 budget, PWP anticipates a potential funding gap of up to $1.1 million, which could result in a PBC rate increase of up to 0.1¢/kWh, or 50¢ per month for a 500 kWh per month residential customer.

Revenues from the PBC are exempt from taxes, surcharges, and the General Fund Transfer calculation, thus any changes to the PBC will not affect the General Fund.

Respectfully submitted,

PHYLLIS E. CURRIE
General Manager
Water and Power Department

Prepared by:

ERIC R. KLINKNER
Assistant General Manager

Approved by:

MICHAEL J. BECK
City Manager