

OFFICE OF THE CITY MANAGER

March 16, 2009

**To:** CITY COUNCIL

**From:** CITY MANAGER

**Subject:** ADDENDUM TO THE AGENDA ITEM: ADOPT THE 2009 INTEGRATED RESOURCE PLAN AND REVISED RENEWABLE PORTFOLIO STANDARD

**BACKGROUND:**

At the March 11, 2009 meeting, the Municipal Services Committee requested additional information to quantify the recommendations of the 2009 Integrated Resource Plan ("IRP").

The following Table summarizes the 2009 IRP recommendations indicated in percentages in the Pace report to quantitative data along with current reference data.

	<b>Recommendations</b>	<b>Quantity</b>	<b>Target Date</b>
1	Coal Power Displacement	35 MW	2016
2	New Local Gas-Fired Generation: replace existing 65 MW Broadway 3 unit with a combined cycle unit	65 MW (approx.)	2014
3	Energy Efficiency and Load Management: Reduce electricity consumption (CY 2008 retail sale ~1,261 GWh; Peak ~317 MW)		
a	Energy Savings: Reduce energy sales by 12.5% below expected levels by 2016 (adopted AB-2021 goal is 1.33% annually, to be updated in 2010)	166 GWh	2016
b	Peak Load Savings: Reduce peak load by 10% below expected levels by 2012	33 MW	2012
c	Demand Response: Reduce peak load by an additional	5 MW	2012

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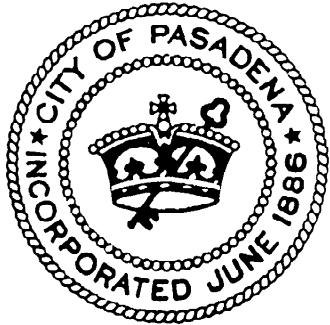
4	Renewable energy in the energy mix served to Pasadena retail customers* (CY 2008 total ~ 8 % from power content label)	15% (187 GWh) 33% (381 GWh) 40% (460 GWh)	2010 2015 2020
5	Solar photovoltaic installations in Pasadena (adopted SB-1 goal is 14 MW by 2017)	3 MW 10 MW 15 MW 19 MW	2010 2015 2020 2024
6	Feed-In Tariff for renewables in Pasadena	10 MW	2020
7	GHG Emissions Reductions (base year 2008 emissions ~ 905,000 Tonne**)	5% (45,250 Tonne) 25% (226,250 Tonne) 40% (362,000 Tonne)	2010 2015 2020

\* Pace's recommendation based on retail sales in Pasadena.

\*\* Based on Pace's projection. The actual data will be available before July 2009)

Respectfully submitted,

MICHAEL J. BECK  
City Manager



# Agenda Report

March 16, 2009

**To:** City Council

**Through:** Municipal Services Committee (March 11, 2009)

**From:** City Manager

**Subject:** ADOPT THE 2009 INTEGRATED RESOURCE PLAN AND REVISED RENEWABLE PORTFOLIO STANDARD

## **RECOMMENDATION:**

It is recommended that the City Council:

1. Find that the 2009 Integrated Resource Plan ("IRP") for Pasadena's power supply resources and revised Renewable Portfolio Standard ("RPS") are exempt from the California Environmental Quality Act pursuant to State CEQA Guidelines Section 15262 (Feasibility and Planning Studies), and 15271 (Early Activities Related to Thermal Power Plants);
2. Adopt the 2009 IRP for Pasadena's power supply resources, included as Exhibit 1, prepared by Pace Global Energy Services, LLC ("Pace"); and
3. Adopt the revised RPS, included as Exhibit 2, to replace the current RPS adopted on October 13, 2003.

## **ENVIRONMENTAL ADVISORY COMMISSION:**

On February 17, 2009, the Environmental Advisory Commission ("EAC") recommended that the City Council adopt the 2009 IRP and the revised RPS.

## **EXECUTIVE SUMMARY**

The Pasadena Water and Power Department ("PWP") 2009 IRP is a 20-year strategic power resource plan that establishes broad objectives and an overall direction for future policy, program, and procurement decisions with respect to PWP's power supply resource portfolio. It was prepared by Pace through an extensive analytic and public stakeholder input process.

The recommended portfolio of resources provides a sustainable balance between environmental benefits, reliability, and low cost of electricity to PWP's electric rate payers under a wide variety of market, regulatory, and economic conditions. It would include a reduced reliance on existing coal resources, replacing an aging local power

plant with a comparably sized efficient state-of-the art facility, continued expansion of PWP's energy conservation and demand reduction programs, and substantial increases in local and remote renewable resources. It is consistent with evolving environmental policy and supports the City of Pasadena's ("City") objective to be a leader in environmental stewardship. In particular, it would help the City meet, or exceed, its United Nations Urban Environmental Accords ("Urban Accords") goals related to energy efficiency, renewable energy use, and greenhouse gas emissions.

The estimated power procurement cost impact of the Preferred Resource Plan is approximately 6% above "status quo" portfolio of existing resources. Historically, energy cost accounts for approximately 50% of the total power bill. These added costs are a result of attempting to achieve environmental goals and mitigate a portion of the risks associated with emissions and spot market energy costs while maintaining or improving electric service reliability. The impact on the average monthly residential power bill is shown below in real dollars without inflation adjustment.

Monthly Average Residential Bill For Power Only*	Dollars Per Month
Fiscal Year 2008	72.38
Status Quo leveled 2009-2030	82.57
Preferred Resource Plan leveled 2009-2030	85.19

\*Bill values are for power only and exclude water rates, and assume no changes in other charges.

As one of the first IRP implementation items, PWP proposes to revise the current RPS to reflect the 2009 IRP recommendations. The current RPS calls for meeting 10% of PWP's retail sales with renewable resources, including energy from PWP's share of the Hoover hydroelectric facility, by 2010 and 20% by 2020. The proposed RPS policy excludes energy from Hoover and calls for 15% by 2010, 33% by 2015, and 40% by 2020.

The 2009 IRP goals are challenging and their implementation will take many years. Achieving these goals will depend, in part, on factors outside the City's control, such as availability of new transmission paths for renewable resources. Additionally, power supply commitments have long-term impacts financially and operationally. Therefore, it is prudent to move forward with implementation where possible while keeping the plan as the City's long-term vision. PWP plans to prepare and present a broad plan to implement recommendations of the 2009 IRP before May 31, 2009.

#### **BACKGROUND:**

The IRP was prepared by Pace and included an extensive analytic and stakeholder input process. In the process, Pace evaluated many different options for meeting the City's future electricity demands and the resulting IRP recommends a preferred mix of

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resources that meet multiple objectives in a reliable, cost-competitive, flexible, and environmentally responsible manner under a wide variety of market, regulatory, and economic conditions. As one of the first IRP implementation items, PWP proposes to revise the current RPS to reflect the 2009 IRP recommendations.

### ***Introduction***

PWP prepares an IRP approximately every five years with ongoing mid-term review every two to three years. While the IRP provides definitive direction for the short-term, it provides a long-term vision while retaining flexibility in implementation as regulatory, market or economic conditions or community objectives change.

On July 23, 2007, as recommended by the EAC and concurred by staff, the City Council deferred consideration of the Draft 2007 IRP that had been developed between late 2005 and 2006. The City Council further directed PWP to work with the EAC and stakeholders to develop a new comprehensive 20-year IRP.

Following the City Council's deferral, the EAC and the Electric and Water Committee ("EWC"), a subcommittee of the EAC, held two public meetings through which stakeholders and the EAC sought input to assist PWP in developing the scope and evaluation criteria for a RFP seeking an independent consultant for energy policy and developing the IRP.

An RFP for an IRP was issued on December 05, 2007, and proposals were evaluated by City staff and Dr. Carol Carmichael of the EAC. Pace was determined to best meet the City's needs. On May 20, 2008 the EAC supported PWP's recommendation to select Pace, and on June 9, 2008, the City Council approved a contract with Pace to develop a comprehensive 20-year IRP.

### ***Public Process***

On July 16, 2008, Pace made its first introductory public presentation at a meeting of the Municipal Services Committee ("MSC"). Given the complexity of preparing an IRP and its impact on all segments of rate payers, an IRP Advisory Group was formed consisting of ten members representing residents, business, non-profit organizations, environmental interests, an EAC representative, a member of the City Council, and City staff. Subsequently, Pace made one presentation to the EAC, held four public meetings and six IRP Advisory Group meetings between August 12, 2008 and January 24, 2009. The members of the IRP Advisory Group contributed their expertise and knowledge, insightful feedback and input, and many hours of participation in the numerous meetings.

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PWP kept the community informed and sought input through various channels such as Councilmembers' town hall meetings, customer group meetings, the Chamber of Commerce, and other community organizations. To make information readily accessible and keep the IRP process transparent, Pace presentations, reports, supporting documentation, and videos of public meetings were posted on PWP's website. Public meetings were aired on KPAS. Several means were used to seek the community's input on priorities and willingness to pay more for environmental stewardship beyond regulatory requirements. They included a phone survey by RKS Research and Consulting (105 residential and 101 businesses), walk-in surveys at grocery stores/farmers' markets (303), and comments sent to the PWP web site (14). To keep stakeholders informed and involved, IRP-related articles were published regularly in City publications such as In-Focus. PWP also purchased advertising space in the local press such as the Pasadena Star-News, Pasadena Journal, and Pasadena Weekly.

In the early meetings, Pace collected input for setting objectives, priorities, parameters and concerns about past IRPs. Pace also described the analytical approach to evaluate different objectives in terms of greenhouse gas (GHG) emission reduction, cost, price risk, market risks, percentage of renewables, and reliability.

### ***Urban Accords Goals***

Implementation of the 2009 IRP and proposed RPS revisions would help the City meet, or exceed in most cases, the following Urban Accords goals:

- (1) **Action 1- Renewable Energy:** Adopt and implement a policy to increase the use of renewable energy to meet 10% of the city's peak load by 2012;
- (2) **Action 2- Energy Efficiency:** Adopt and implement a policy to reduce the City's peak load by 10% by 2012 through energy efficiency, shifting the timing of energy demands, and conservation measures; and
- (3) **Action 3- Climate Change:** Adopt a citywide GHG reduction plan that reduces the jurisdiction's emissions by 25% by 2030.

### ***Summary of 2009 IRP Recommendations***

The key recommendations of the 2009 IRP are summarized below.

- **Coal Power Displacement:** By 2016, reduce purchases of power from the Intermountain Power Project ("IPP") coal plant by at least 35 MW;
- **New Local Gas-Fired Generation:** By 2014, retire the existing 65 MW Broadway 3 ("B3") power plant and replace it with a comparably sized new combined cycle plant at the same site;

- **Upgrades of Existing Generation:** Continue to maintain and upgrade the existing Glenarm 1 and 2 generating units in order to extend their operating lives for next 20 years;
- **Energy Efficiency and Load Management:** Implement programs to achieve significant reductions in electricity consumption in accordance with PWP's current energy conservation and demand reduction goals with the following timeline:
  - **Energy Savings:** Reduce energy sales by 13.3% below expected levels by 2016;
  - **Peak Load Savings:** Reduce peak load by 10% below expected levels by 2012;
  - **Additional Demand Response:** Reduce peak load by an additional 5 MW by 2012 through programs that provide customers with information and economic incentives to reduce their consumption during peak load periods;
- **Renewable Energy:** By 2020, increase the percentage of PWP's energy mix provided by renewable energy sources to 40% according to the following timeline: 15% by 2010; 33% by 2015; and, 40% by 2020;
- **Solar Photovoltaic:** Extend the City's current goal to install 14 MW of customer-owned solar photovoltaic installations in Pasadena by 2017 to achieve 15 MW by 2020 and a total 19 MW by 2024;
- **Feed-In Tariff:** Establish a feed-in tariff program with the goal of procuring 8 MW of qualifying renewable resources located inside the City by 2020 and a total of 10 MW by 2023 at an average price of up to 15 ¢/kWh;
- **GHG Emissions Reductions:** By 2020, achieve CO<sub>2</sub> emission reductions of at least 40% according to the following timeline: 5% by 2010; 25% by 2015; and, 40% by 2020.

### **Alternative Views**

While the Preferred Resource Plan recommended by Pace has garnered general consensus and support of the IRP Advisory Group, the EAC, and the public, many individuals have voiced concerns or alternative views with regard to specific issues. At least one IRP Advisory Group member questioned the need to upgrade local generating and urged public disclosure of this issue to inform the public and decision makers. Some key comments and alternative views expressed by the stakeholders and the public related are listed below:

1. Why invest in a new electric generating unit in the City rather than improving the intra-city sub transmission system so that all required electricity, preferably renewable energy, can be imported? This will reduce overall cost and air emissions within the City and regionally.

Response: Economic analysis by Pace, based on certain well-researched industry assumptions, indicate that adding new local gas-fired generation under the Preferred Resource Plan is the lower cost option compared to portfolios that consider new transmission upgrades. The annualized cost of installing a new generating unit is only marginally higher than maintaining the existing 43 year old B3 unit for 20 more years, if possible. Additionally, Pace concluded qualitatively that portfolios that add new gas-fired local generation were superior from a reliability perspective because they directly addressed PWP's reliability concerns by reducing its dependence on the aging units as well as a single point of entry for importing energy into the City. According to Pace, the current transmission interconnection facilities with their 215 MW import limits at the T M Goodrich Receiving Station permit PWP to meet approximately 90% of its annual energy requirements from remote resources including renewable resources. Therefore, the Preferred Resource Plan is superior from reliability, economic, and risk management perspectives. PWP believes that overdependence on a single point of energy import into the City jeopardizes the reliability of electricity in the City. Therefore, the current arrangement of local power plant capacity of about 200 MW and an import capability provides an acceptable balance for reliability.

2. Given that currently the City has only one transmission connection to import electricity, why is PWP not considering increasing the number of transmission connections to the City, and increasing capacity of the existing transmission connection to be able to reliably increase its electricity import capability?

Response: PWP is currently studying the feasibility of increasing its import capability by participating in transmission projects, analyzing the intra-city sub transmission system, and increasing interconnection capacity at the existing import location; however, past studies have indicated that a second interconnection to the grid is infeasible due to the cost and physical layout of the City and PWP's electrical system. PWP will continue to evaluate long-term transmission solutions to both reliability and resource access needs that can ensure continued reliable service.

3. Isn't it true that the new efficient combined cycle electric generating unit would be operating much more than the existing old B3 unit? If so, would it generate cumulatively higher emissions in the City?

Response: It is true that Pace's analysis indicates that the new unit is expected to operate more hours, generating fewer emissions on a per MWhr basis, but more emissions in aggregate than the status quo; however, the Preferred Resource Plan specifies displacing 35MW of coal-fired generation from IPP with cleaner resources having lower GHG emissions. The new unit would provide power within minutes when needed with lower emissions. This approach results in an overall reduction of the City's GHG emissions and improved reliability.

4. By installing a new natural gas fired combined cycle electric generating unit, isn't PWP discouraging development of renewable energy projects?

**Response:** The short answer is "No". To the contrary, a new energy efficient, state-of-the-art combined cycle unit would most likely help expand the development of certain renewable energy resources. New gas-fired generating units are capable of, and necessary for, providing balancing energy into California and regional transmission grid in real time to compensate for the fluctuating and/or intermittent nature of renewable energy resources such as wind and solar generation.

5. Why doesn't the 2009 IRP include a long-term decision to sell off PWP's ownership share of coal fired IPP power plant or commit to allow the contract to lapse upon expiration in 2027?

**Response:** Given the fact that nearly 50% of electricity in the country is generated by coal, there is a strong possibility that commercially viable carbon capture and sequestration type GHG reduction technology will be developed in the next 8 to 12 years. The IPP plant retrofitted with such GHG reducing technology would become a valuable low-cost, clean energy asset for PWP once the debt is re-tired. Many alternatives are being studied at IPP to evaluate GHG reduction measures. IPP is owned by numerous utilities from Southern California and Utah. It is extremely difficult, logically and legally, to modify the long-term contracts to relieve PWP of its interest in the plant. Further, even if PWP were to successfully sell its interest in the plant, it is almost assured that the buyer would continue to draw its portion of energy. Thus, the sale of the IPP contract would not result in reduced emissions. By committing to sell energy equivalent to 35 MW of PWP share and not use that energy to serve City's load, the same objective is achieved.

### ***Uncertainties/Risks***

It is important to recognize that the Preferred Resource Plan is based on certain assumptions and forecasts, which are likely to change in future; however, the extent of the changes is unknown and the uncertainties may increase with time. The following main uncertainties are expected to significantly impact PWP's ability to achieve recommended goals and will have impacts on future costs.

- Legislative and Regulatory (California, Western States, and Federal):
  - Environmental: Climate change regulations, carbon credit cost, RPS, CEQA, air permitting and other environmental restrictions;
  - Electric Utility: Resource Adequacy, California Independent System Operator's nodal market, transmission rights and other regulations;

- Availability and connectivity of renewable resources:
  - Unavailability of currently operating renewable resources;
  - Sellers under contract defaulting on commissioning dates or unable to complete projects;
  - Inordinate delays in projects under development due to lack of financing, permitting, inexperienced developers, cost overruns;
  - Inadequate transmission/complexity of transmission contracts;
- Economic:
  - Continually increasing cost of renewable energy;
  - Future market prices of electricity and fuels;
  - Credit crunch and lack of private investor equity;
  - Local and regional economic conditions;
  - Inability of municipal utilities like PWP to take advantage of tax breaks available to private entities;
  - Load shrinkage;
  - Evolving technology (most contracts are for 20 to 30 years);
- Operational:
  - Customer usage patterns affecting citywide electrical demand (smart grid, plug-in hybrid vehicles);
  - Inadequate transmission;
- Community Perspective:
  - Priorities for PWP;
  - Level of willingness to pay for environmental stewardship.

### ***Challenges***

PWP and the EAC support adoption of the 2009 IRP. The goals are challenging, and achieving them will depend, in part, on factors outside the City's control, such as new transmission paths for renewable resources. Nevertheless, the goals reflect the change of direction in energy procurement being advocated/mandated at local, state, and federal levels.

Implementation of most of the goals will take months, if not years, and those commitments have long-term impacts financially and operationally. Therefore, it is prudent to move forward with implementation where possible while keeping the plan as the City's long-term vision. In the short term PWP anticipates the following main challenges:

- Current economic climate and the resulting budgetary impacts;
- Reliable delivery schedule of contracted renewable resources under development (most projects are located outside California);
- Rate impacts due to increasing cost of renewable energy;

- Climate change legislations/regulations and market sale of 35 MW of IPP power; and
- Legal and contractual constraints related to IPP and associated transmission systems.

#### ***IRP Implementation Plan***

PWP plans to prepare and present a broad plan to implement recommendations of the 2009 IRP before May 31, 2009. The implementation will include elements such as:

- Continued procurement of renewable resources through City- and SCPPA-issued RFP's;
- Continued development and implementation of customer programs to incentivize solar, energy efficiency and demand reduction;
- Perform study to evaluate the cost-effective energy efficiency potential. Council adoption of updated energy efficiency and demand reduction goals is required within 12 months consistent with AB-2021 (2006);
- Development of proposed feed-in-tariff over next 12-14 months;
- Establishing a Smart Grid vision, roadmap, and business case for the City within 12 months;
- Prepare approach, timeline, identify major issues, resources and budget for replacement of B3 with a new 65 MW combined cycle unit and life extension of GT1 and GT2 gas turbines;
- Perform legal and financial feasibility studies related to IPP coal displacement alternatives along with timeline;
- Continue reporting and monitoring of PWP's GHG emissions using the Climate Action Registry or similar accepted methodology.

PWP also proposes to update EAC and MSC annually about its progress in achieving revised recommended targets.

#### ***Revised Renewable Portfolio Standard***

The City Council adopted the current RPS on October 13, 2003 in order to reflect the goals established in the 2001 Strategic Power Resource Plan and comply with Senate Bill 1078 ("SB1078"). SB1078, which became law January 1, 2003, requires local publicly owned utilities to establish and implement a renewable portfolio standard that "recognizes the intent of the Legislature to encourage renewable resources, while taking into consideration the effect on rates, reliability, financial resources, and the goal of environmental improvement." While the law did not require local publicly owned utilities to adopt a specific target or qualifications, state policy clearly indicated a preference to meet a 20% RPS by 2017, or sooner. Additional laws have been subsequently passed that accelerate the RPS goals for investor owned utilities. Laws have also been proposed to increase the targets for local publicly owned utilities

to 20% by 2010 and 33% by 2020. As a result of the IRP process, it has been determined that a new RPS, more aggressive than the current RPS and proposed legislation, should be adopted by the City Council to clearly signal the City's commitment to the environment and meet the resource portfolio mix recommended by this IRP.

The revised RPS policy incorporates the following IRP recommendations and other changes:

- Consistent with the IRP recommendations, establish new RPS targets at 15% by 2010, 33% by 2015, and 40% by 2020;
- Clarify that the targets represent the percentage of energy used to meet PWP's retail electric sales plus distribution losses (to be consistent with Power Content Label accounting methods);
- Consistent with statewide policy, eliminate the inclusion of energy from the City's existing large hydroelectric plant, Hoover Dam;
- Further clarify the eligibility of tradable renewable energy credits (formerly referred to as "Green Tickets") to meet RPS goals;
- Clearly indicate that RPS objectives include reducing GHG emissions, meeting or exceeding state mandates, and encouraging local renewable resources; and
- Eliminate the "Background" Section of the October 13, 2003 RPS Policy statement that related to SB1078, as much of this information is obsolete and unnecessary to support or understand the revised policy.

#### **ENVIRONMENTAL ANALYSIS:**

CEQA exempts from its application those projects that involve "only feasibility or planning studies for possible future actions, which the agency, board or commission has not approved, adopted, or funded..." and, which do not have a legally binding effect on later activities. (State CEA Guidelines §15262). To fall under this exemption, however, the lead agency is required to consider environmental factors.

The 2009 IRP and RPS are guidance documents, which do not commit the City to undertaking any particular project. Further, they do not serve as legally binding plans with which subsequent activities must be consistent or adhere.

The 2009 IRP and RPS are drafted, in part, with environmental considerations. In any event, any project undertaken pursuant to the 2009 IRP and RPS will be subject to full CEQA review at the appropriate time.

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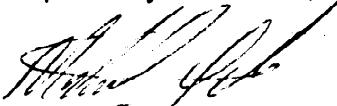
**FISCAL IMPACT:**

While approval of the 2009 IRP and RPS will have no immediate fiscal impact, the IRP recommendations will establish the policy guidance and framework to evaluate power resource and program choices with substantial cost implications for PWP and its electric ratepayers. Pace estimates that implementation of the Preferred Resource Plan, when measured over the entire 20-year planning horizon covered by the 2009 IRP, would lead to approximately 34% increase in PWP's average levelized energy procurement cost versus 2008 procurement costs. Pace further estimates this increase would be approximately 28%, if PWP made no incremental changes to its existing portfolio. Therefore, the estimated cost impact of Preferred Resource Plan is approximately 6% above "status quo" operations. These projected cost increases for the Preferred Resource Plan and the Status Quo portfolio are expressed in real, 2008 dollars that are not adjusted for future inflation.

Historically, the energy cost accounts for approximately 50% of the total power bill. Therefore, a 6% increase in energy cost without inflation adjustment would lead to an overall 3% increase in the total customer bill assuming no change in other charges.

Staff will return to the City Council with an implementation plan that includes projected capital and operating budgeting and funding information by May 31, 2009.

Respectfully submitted,



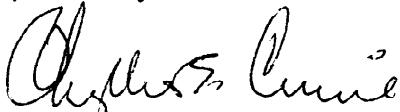
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