Agenda Report

June 22, 2015

TO: Honorable Mayor and City Council

THROUGH: Municipal Services Committee (June 16, 2015)

FROM: Water and Power Department

SUBJECT: **ADOPT PASADENA WATER AND POWER ("PWP") 2015 UPDATE TO POWER INTEGRATED RESOURCE PLAN ("IRP")**

RECOMMENDATION:

It is recommended that the City Council:

1. Find that the approval and adoption of the PWP 2015 Update to the Power IRP is categorically exempt from the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines sections 15262 and 15271; and

2. Approve and adopt the 2015 Update to the Power IRP.

MUNICIPAL SERVICES COMMITTEE RECOMMENDATION:

At the June 16, 2015 meeting, the Municipal Services Committee ("MSC") approved staff recommendations. As requested by MSC, additional information has been provided regarding the difference in cost between the recommended "Stay-the-Course" Portfolio-1 and Portfolio-2, IPP (coal) Reduction, 40% RPS. (See topic "Cost Difference Between Portfolio 1 and 2" on page 2).

EXECUTIVE SUMMARY:

The PWP 2015 Update to the IRP reviews and builds upon previous IRPs that were approved by the City Council in 2009 and 2012. The 2015 IRP Update considers the twenty-year period from calendar year 2015 through calendar year 2034. It analyzes alternative means of meeting PWP's projected capacity and energy load requirements through various combinations of resources, integrating options on both the demand and supply-side, with renewable and conventional technologies. The IRP must satisfy all legal and/or regulatory requirements, while balancing the objectives of reliability, fiscal responsibility, and environmental stewardship.

Of five resource portfolios (described on pages 8 and 9) selected for detailed analysis, the "Stay-the-Course" portfolio was identified as the preferred portfolio. The preferred portfolio meets or exceeds all of PWP's current legal, regulatory, reliability and environmental requirements, provides flexibility to respond to changing conditions, and is the least costly of the five 2015 IRP portfolios. It preserves many of the objectives established in the 2012 IRP. Most importantly, this portfolio will allow PWP to achieve an impressive 60% reduction in greenhouse gases ("GHG") from 1990 levels by 2030, well ahead of the state-wide target[1] set by Governor Brown of 40% from 1990 levels in 2030.

PWP's 2015 IRP Recommendations include the following goals (see details in Recommendations Section):

1. PWP will target GHG reductions of at least 60% from 1990 levels by 2030[1] (to approx. 367,500 metric tons) through the most cost-effective and expedient means available.
   a. PWP will eliminate coal-fired generation from the PWP power portfolio no later than 2027. Discussions are underway for an Intermountain Power Project ("IPP") amendment that would facilitate a 2025 repowering with natural gas or and/or an alternative. This would provide an earlier exit from coal.
   b. PWP will continue to acquire all cost-effective and viable energy efficiency.
   c. PWP will continue to acquire cost-effective renewable energy with a target of 40% minimum by 2020.
   d. PWP will support local renewable energy resources and community solar efforts.
2. PWP will continue to ensure reliability and flexibility to respond to electric industry changes.

COST DIFFERENCE BETWEEN PORTFOLIO 1 and 2:

Portfolio-2 requires Pasadena to take energy from IPP at the power plant's minimum possible operating level. At this operating level, Pasadena will incur the full "take or pay" contractual cost for IPP, and also purchase the shortfall in energy and capacity from the market. These actions result in an additional reduction of 3.59 million metric tons of carbon emissions over 20 years at the cost of $60 million (net present value) compared to Portfolio-1. This additional cost impacts customer bills over the next 20 years. A comparison of projected monthly electric bills under these portfolios is shown in Table I.

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[1] *California's statewide target is a 40% reduction by 2030 (Executive Order B-30-15, issued 4/29/2015) & 80% by 2050 from 1990 levels (Executive Order S-03-05, issued 6/1/2005).*

TABLE I: ELECTRIC BILL COMPARISON ($/MONTH)

	Residential	Commercial		
	500-1,000 kWh	2,000 -10,000kWh	50,000 kWh	100,000 kWh
Present Average Bill	84.95 – 189.78	327 – 1,664	7,563	14,875
Portfolio-1 (preferred)	96.31 – 216.03	372 – 1,898	8,630	16,965
Portfolio-2	100.77 – 224.93	390 – 1,988	9,081	17,847

The Stakeholder Technical Advisory Group ("TAG"), appointed by the Mayor, consisting of fifteen persons representing the cross section of Pasadena community, elected and appointed officials, and the staff deliberated on all portfolios including Portfolio-2. They did not recommend Portfolio-2. The projected incremental cost to customer bills as a result of this change in energy procurement strategy accounts for 27% of the customer bill and appears relatively small. However, overall cost to the customer will be considerably higher when accounting for future anticipated increases in the other 73% of the customers' electric bill (distribution, transmission, public benefits, and indirect costs).

Additionally, state legislation is expected to impose mandates for greater amounts of renewable energy, energy efficiency, and other programs whose costs are not included in this study. The energy IRP is updated every 2 to 3 years to keep the long term plan in tune with the ever changing regulatory and market conditions. Considering reliability, environmental benefits and costs, the Portfolio-1 was considered the most balanced and environmentally forward looking alternative at this time.

BACKGROUND:

On March 5, 2012, the City Council approved an update to the PWP IRP for power resources (the "2012 IRP"), which among other objectives affirmed the commitment of the City of Pasadena ("City") to a goal of obtaining 40% of its energy from renewable resources by 2020, procuring specific amounts of local solar power, reducing its GHG emissions by 40% from 2008 levels, also by 2020, and replacing the Broadway power plant with a comparably sized new combined cycle plant.

PWP has executed several long-term contracts for renewable power supplies, and expects to meet not only the current state-wide mandatory requirement of at least 33% renewable energy by 2020, but the City's voluntary 40% Renewable Portfolio Standard ("RPS") goal by 2020, and its interim RPS goals in the each of the years prior to 2020.

Because of changes in the way GHG emissions are attributed to electric utilities since 2009, and conditions affecting the potential sale of power from the coal-fired IPP, it is highly unlikely that PWP will be able to attain the previous IRP goal of reducing PWP's GHG emissions by 40% from 2008 levels by 2020.

In addition, the rate at which PWP customers have adopted local solar is not as rapid as anticipated in the 2012 IRP. There is a significant technical potential for distributed (i.e.,

local) solar in Pasadena, as indicated in the Black & Veatch Distributed PV Potential report available at www.PWPweb.com/IRP. Local solar (e.g., on rooftops or parking structures) is more than twice as costly as utility scale solar. However, there is strong community interest in some level of utility support for local solar.

For its 2015 update to the Integrated Resource Plan ("2015 IRP"), PWP engaged the consulting firm Black & Veatch to conduct analysis and modeling. The 2015 IRP Update considers the 20-year planning horizon from 2015 through 2034. The Stakeholder Technical Advisory Group recommended a shortlist of five resource portfolios for further analysis, and each of these five resource portfolios was examined under four different "scenarios," or combinations of potential market conditions. The analysis produced scorecards with a number of measurements for comparing each of the alternatives in terms of financial, reliability, and environmental impacts.

The conditions under which PWP operates have undergone considerable change since the 2012 IRP, and many of these conditions are still evolving. Accordingly, it is prudent to choose a plan that is flexible, adaptable, and incorporates a "least regrets" frame of reference.

Portfolio 1 – "Stay the Course" – is the Preferred Resource Portfolio. It includes a continuation of the City of Pasadena's aggressive 40 percent RPS by 2020, with the coal-fired IPP generation reduced or minimized. The Preferred Portfolio most closely resembles PWP's current resource strategy in pursuit of those goals in the 2012 IRP that can reasonably be achieved. It is: (i) the least cost of the five portfolio options, (ii) does not preclude adopting any of the other portfolios at a later date as PWP gains more clarity with respect to a number of variables that have changed or are changing, and (iii) meets or exceeds all of PWP's current legal, regulatory, reliability and environmental requirements, while achieving an impressive 60% GHG reduction by 2030, well ahead of the California statewide target under Executive Order B-30-15.

PWP's Integrated Resource Plan ("IRP") is based on an industry-standard twenty year planning horizon, and is updated every two to three years.

CHANGING CONDITIONS

There are a number of circumstances that have changed or are changing since the 2012 IRP. The IRP Recommendations take these changing circumstances into consideration. For example:

- **CAISO Reliability Requirements** have evolved to include local and flexible resource adequacy capacity allocations. Future flexible resource adequacy capacity ("FRAC") requirements are difficult to predict, because the algorithm is partially based on the actions of other market participants, and the net impact on the CAISO as a whole, not just on the loads and resources of PWP. Black and Veatch conducted analysis for PWP of CAISO Integration Costs. See a copy of the report at www.PWPweb.com/IRP.

- **An Energy Imbalance Market** is an automated exchange for the purchase, sale and dispatch of energy between the CAISO and other electrical balancing areas to adjust to deviations between forecasted and actual loads and generation on a least cost basis. To maintain reliability, utilities must continuously match the demand for electricity with supply on a second-by-second basis. An Energy Imbalance Market ("EIM") has formed and is growing with a regional footprint outside of the CAISO, including current participants PacifiCorp and NV Energy and prospective participants Puget Sound Energy and Arizona Public Service. Within most of California, the CAISO balances electricity supply and demand by choosing least-cost resources to meet needs. A geographically broader and more diverse system is expected to help with the transformation to a more diverse energy mix and to balance fluctuating loads with greater penetration of variable resources like wind and solar. The modern dispatch technology of the EIM increases the visibility of other interconnected systems and uses automated tools to more accurately perform balancing services on a more frequent timescale than is done outside of the CAISO. The EIM provides additional resources from outside the CAISO footprint to help reduce the cost to balance intermittent renewable energy, but also introduces additional wholesale energy competition for PWP's own plants, which puts downward pressure on market prices, and reduces wholesale revenues during periods when PWP has surplus generation. Wholesale revenues are used to lower rates.

- **The "Duck Curve"** is the result of a changing net load profile[2], and may alter market prices and the timing of "peak" and "off-peak" load periods. Changes in the overall resource mix in California are expected to increasingly result in periods of over-generation during certain periods when there may be significant amounts of renewable energy available, and other periods when there is a tremendous need for fast ramping dispatchable resources. This changing net load profile is sometimes referred to as the "Duck Curve." The net load bottoming out during the middle of the day as a result of solar energy production peaking resembles a duck's belly, while the steep increase in the late afternoon and evening as the sun sets, just as load in increasing (between 3 and 6 pm), resembles the duck's neck. The Duck Curve reflects daily forecast variability resulting from changes in predicted load and non-controllable generation such as wind and solar. The growing risk of over-generation in the middle of the day will likely move the market toward lower and lower prices, and may even result in negative pricing during some periods. Negative pricing means California may be paying other regions to take our power or paying generators, including renewables, to shut down even when they are already at their minimum load.

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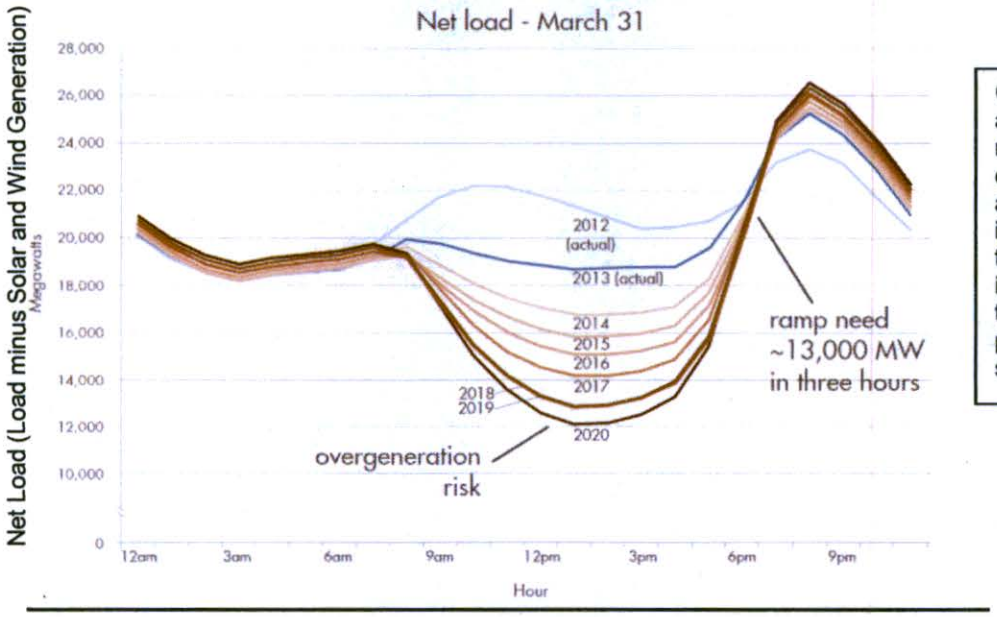
[2] *Net load is the difference between actual load and variable resources (wind and solar) directly connected to the transmission grid. A load profile refers to the shape of the graph of electric demand (in MW) over time (e.g., hourly or seasonally). The Duck Curve is an example of a Net Load profile.*

FIGURE 1:
THE DUCK CURVE



Overgeneration and ramping need increases over time as the amount of solar in the middle of the day increases over time (annual projections shown here)

- **Retail Load** is difficult to predict, given the potential for increasing penetration of distributed generation (such as rooftop solar and micro grids), which would reduce load, and the need for electric vehicle charging, which would increase load. These factors could not only change the hourly and seasonal shape of PWP's load, but its load factor (i.e., ratio of average energy requirements to peak demand). Most new energy resources, including renewables, require long-term (i.e., at least 20 year) contractual commitments to obtain financing. PWP must be prudent about the commitment it makes to fixed cost contracts if it is to facilitate customer access to distributed generation and other technology choices that may result in reductions in retail load and potentially higher costs for remaining customers as fixed costs are spread over fewer customers and kWh.

- **California's carbon Cap-and-Trade Program** ("Program") took effect in early 2012. The Program runs through 2020. It is unknown whether the Program will continue past 2020, or will be replaced by a federal carbon tax, or some other program.

- **Greenhouse Gas Emission Levels** in California are targeted at 1990 levels by 2020 under The Global Warming Solutions Act (California AB32), and Governor Schwarzenegger's Executive Order S-3-05 calls for an 80 percent reduction below 1990 GHG emission levels by 2050. In Executive Order B-30-15 issued April 29, 2015, Governor Brown established a new interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 in order to ensure that California meets its 2050 target.

- **California's Renewable Portfolio Standard "RPS"** is currently at least 33% by 2020 under AB32. A renewable portfolio standard ("RPS") is a regulation that

requires the increased production of energy from renewable sources, such as wind, solar, geothermal, and biomethane. The City of Pasadena has established a higher RPS for PWP, ramping up to 40% by 2020. Governor Brown has proposed "Golden State Standards" (aka the "50/50/50" plan) that could have the state headed toward a 50% RPS by 2030, as well as doubling energy-efficiency of existing buildings by 2030, and reducing automobile dependency on oil and gas by 50% by 2030, which could have impacts on the power industry as a result of the shift to electric vehicles. Legislation (e.g., SB350) is pending to implement the Governor's vision.

- **The Costs of Renewable Resources and Energy Storage** are generally expected to continue to decline, but actual costs and technology changes are difficult to predict, especially given the uncertainty of tax incentives, legislative changes, and reliability requirements. In addition, the uncertain cost of integrating increasing levels of variable production renewable energy into the transmission and distribution system presents another planning challenge. Studies performed for PWP by Black and Veatch assessing CAISO level integration costs and distribution level PV integration costs are available at www.PWPweb.com/IRP.

- **The Intermountain Power Project Contract** was originally to terminate in June of 2027, but if amended, the coal contract would be replaced with natural gas in 2025. PWP could "opt out" of the gas-fired project in 2019, but under the proposed amendatory agreement, would receive a reduced amount of power from the natural gas-fired project between 2025 and mid-2027, when the original power sales contract would have terminated. Preserving PWP's valuable rights to transmission from the area around IPP, where renewable energy such as PWP's current Milford Wind project is delivered, is dependent upon participation in the gas-fired repowering project, but PWP would have an option to reduce its participation or "opt out" of the gas project in 2019 under a memorandum of understanding recently negotiated.

PWP's 2015 IRP PROCESS

To prepare the 2015 IRP update, PWP retained the nationally recognized consulting firm of Black & Veatch to advise staff and perform analysis and modeling. The assumptions and other key analytical information are provided in Attachment 1. TAG was formed, including representatives from key customers, environmental groups, educational institutions, government, and others to review the IRP work and advise PWP. The public involvement process also included a series of public meetings, a non-scientific customer/stakeholder survey, website and social media postings, an on-line form to receive comments and for stakeholders to join the electronic distribution list to receive additional information, as well as comments from individuals and groups.

CUSTOMER/STAKEHOLDER SURVEY

PWP conducted a non-scientific survey on-line and via hard-copies at various public events to provide customers and other stakeholders another means of providing input to the IRP process. Respondents self-selected whether or not to participate and were allowed to respond multiple times if they wished. Over the course of several months,

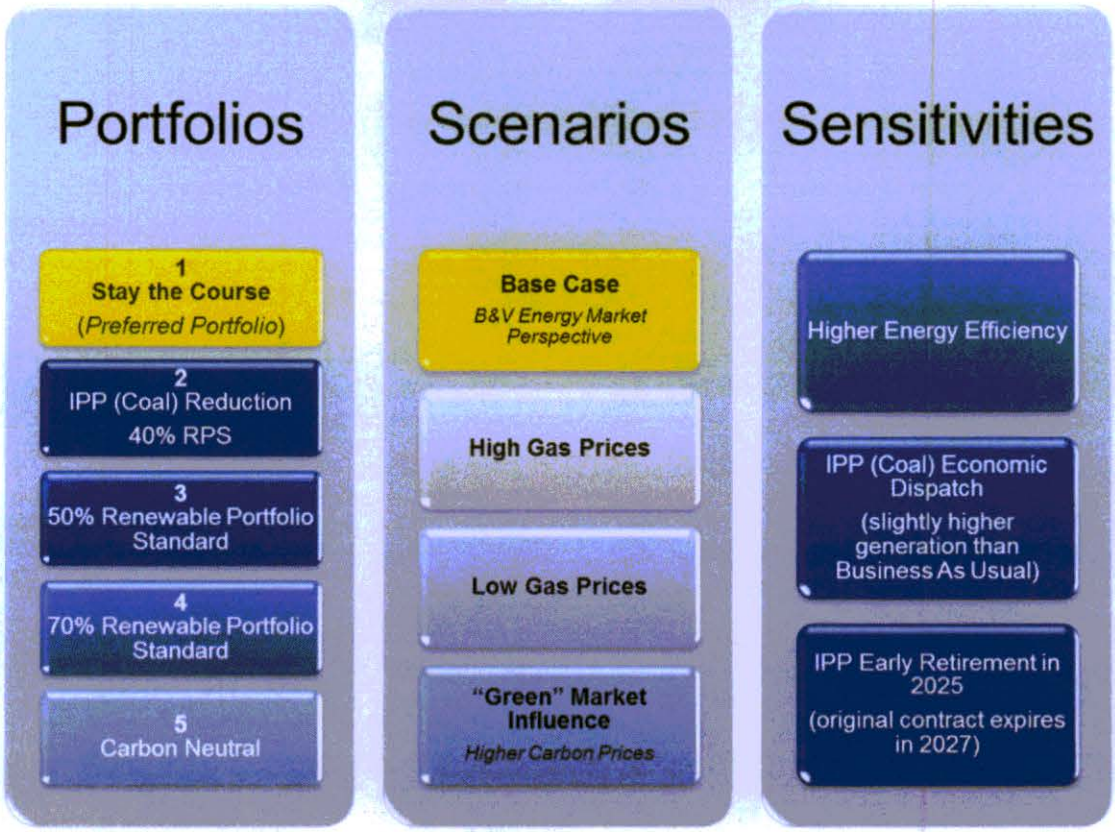
470 responses were received. Of those responding, 83.5% indicated that they live in Pasadena, and 48.1% indicated that they work or own a business in Pasadena. Respondents indicated that 82.8% were answering from a residential customer perspective. The results of this survey, including individual comments, are summarized in a report available at www.PWPweb.com/IRP.

For example, most customers ranked electric reliability and affordable electric rates as top priorities, with minimizing adverse environmental impacts very close behind among the top five. Over 45% of those responding to the survey think that PWP should increase its RPS target to at least 50% by 2020; about 30% think it should remain at 40%. Over 27% don't want to pay any extra for renewables; 12% are willing to pay up to 20% of their bill as the target increases over time. Over 57% expressed interest in owning a share of a local solar/community shared solar project. In terms of overall satisfaction with PWP, where 1 meant "very dissatisfied" and 7 meant "very satisfied," PWP received an average score of 5.27. Out of 463 responses, 100 gave a score of 7, and 132 gave a score of 6. Many of the negative comments were about the rates being too high. The highest scores were for reliability and customer service.

PORTFOLIO ANALYSIS

PWP and the Stakeholder TAG narrowed the analysis to a shortlist of five "Portfolios," or groups of power supply resources. Each Portfolio was run through four sets of market assumptions, or "Scenarios." There were also three "Sensitivities," or basic model variations that were run as special cases. These concepts are summarized in Figure 2 below:

FIGURE 2: IRP CONSTRUCT



The five Portfolios selected by the Stakeholder TAG for further analysis were as follows:

1: **Stay the Course ("Preferred Portfolio")** – This Portfolio most closely resembles PWP's current resource strategy under the 2012 IRP, with certain modifications. It achieves an impressive 60% reduction in GHG emissions from 1990 levels by 2030 through a combination of retiring the IPP coal-fired generating project, maintaining the aggressive 40% RPS by 2020, and continuing PWP's energy efficiency programs. It also assumes continuing to reduce IPP coal-fired generation prior to retirement, which currently involves adding an additional GHG adder of $5-$6/MWh in addition to PWP's actual cost of carbon to the price PWP uses when offering IPP into the CAISO market to serve PWP load (which reduces the likelihood IPP will be called on to run).

2: **IPP Reduction/40% RPS** – This Portfolio would maintain the 40% RPS by 2020, but would reduce IPP generation by approximately 70 MW from its maximum (below the take-or-pay level) to the operational minimum of approximately 38 MW in order to further reduce PWP's GHG emissions.

3: **50% RPS by 2025** – This Portfolio would maintain the IPP Reduction and the 40% RPS from Portfolio 2, but would increase the RPS to 50% by 2025 (5 years ahead of the current proposal by Governor Brown).

4: **70% RPS by 2030** – This Portfolio would maintain the achievements of Portfolio 3, but increase the RPS to 70% by 2030.

5: **Carbon Neutral by 2030** – This Portfolio would immediately avoid any non-renewable market purchases, procuring carbon credits to offset any purchases that were unavoidable (e.g., due to energy imbalances), and would reduce IPP generation to minimum until the contract expires. All natural gas generation would be fueled with renewable bio-methane in order to meet reliability requirements. By 2030, all coal-fired generation would be eliminated, and all generation would be carbon neutral (e.g., approximately 88% renewable, and the remainder considered non-carbon emitting, such as the existing Hoover large hydro project and the Palo Verde nuclear project).

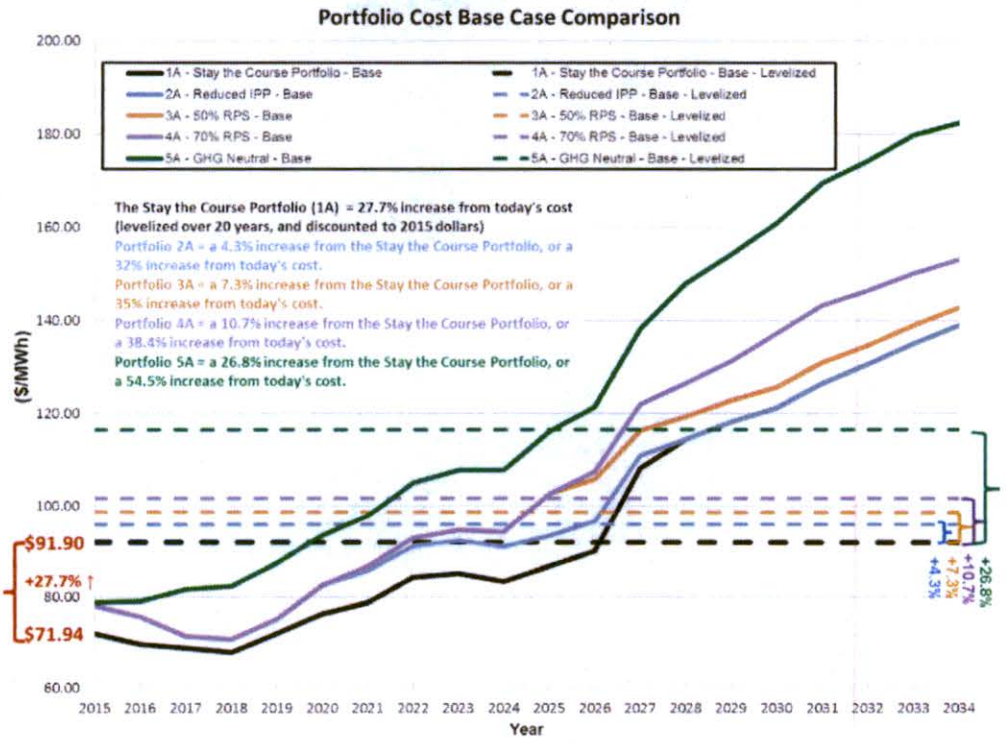
Scorecards were created that compared the five Portfolios across a number of measurements in the areas of reliability, financial and environmental impacts. The results of that analysis are provided at www.PWPweb.com/IRP. Projections were made to estimate the potential impact of each Portfolio on the direct costs of the energy service charge component of PWP operating expenses, in order to compare the potential effect of each Portfolio on future customer bills. A comparison of the estimated impact on customer bills is provided in Attachment 2: "Bill Impact Analysis" and at www.PWPweb.com/IRP. These comparisons are intended to measure the relative impact of each portfolio against each other, and are not necessarily accurate predictors of future rate impacts.

Table II and Figure 3 below compare the Portfolio Costs of the five Portfolios under Base Case market conditions. The solid lines in Figure 3 show how costs would change over time, while the dashed lines illustrate those same costs levelized over 20 years in 2015 dollars. Today, PWP's resource portfolio has direct costs of approximately $71.94/MWh. Over the 20-year planning horizon, the Stay the Course Portfolio Base Case is projected to result in levelized costs of $91.90/MWh, an increase of 27.7% from today's costs. The Reduced IPP Portfolio adds an additional 4.3% increase on top of the Stay the Course Portfolio (a total 32% increase), the 50% RPS would add 7.3% on top of the Stay the Course Portfolio (total 35% increase), the 70% RPS would add 10.7% on top of the Stay the Course Portfolio (a total 38.4% increase), and the Carbon Neutral Portfolio would add 26.8% on top of the Stay the Course Portfolio (a total 56.5% increase). For comparison, in the 2008 IRP, the "Status Quo" would have produced a 20-year levelized increase of 28% (compared to the 27.7% increase projected for "Stay the Course"). The 40% RPS Portfolio, which was selected as the Preferred Portfolio, was projected to result in an increase of 6% above the then Status Quo, for a total of 34% over 20 years. That 2008 Preferred Portfolio is now the Stay the Course Portfolio, and is expected to have remaining cost increases of approximately 27.7% (in $2015) over the next 20 years out of the originally projected 34% increase (in $2008).

TABLE II: PORTFOLIO COST COMPARISON

PORTFOLIO	Expected Increase from Starting (Today's) Cost to 20-Year Levelized	Increase from Status Quo (2008) or Stay the Course (2015)	Total Portfolio Cost Increase
2008 IRP ($2008)	28%	6%	34%
1A – Stay the Course ($2015)	27.7%	N/A	27.7%
2A – Reduce IPP ($2015)	27.7%	4.3%	32.0%
3A – 50% RPS ($2015)	27.7%	7.3%	35.0%
4A – 70% RPS ($2015)	27.7%	10.7%	38.4%
5A – GHG Neutral ($2015)	27.7%	26.8%	54.5%

FIGURE 3: PORTFOLIO COST COMPARISON



GHG REDUCTION

The Intermountain Power Project ("IPP") coal-fired facility produced approximately 46% of PWP's energy in 2014, but almost 90% of its GHG emissions. Reducing or eliminating IPP generation is the most expedient means of reducing PWP's GHG footprint. The California Air Resources Board ("CARB") has provided guidance known as "Resource Shuffling" rules that could effectively prohibit the type of transaction that was envisioned in the last two IRPs for reducing PWP's GHG emissions, i.e., selling 35

MW of generation from IPP outside of California by 2016. In addition, PWP struggled to find willing and qualified buyers, even before the CARB Resource Shuffling rules were issued. PWP has been able to achieve some reduction in GHG levels by adding a financial "carbon penalty" to IPP's economic dispatch (in addition to the actual cost of carbon allowances). In 2014, PWP's GHG emissions were approximately 19.1% lower than in 2008. However, PWP cannot meet its previous IRP goal of reducing GHG emissions by 40% from 2008 levels by 2020 without significant cost impacts.

When the IPP contract expires (2027 in the original power sales contract, or 2025 if the contract is amended), PWP's GHG emissions will be reduced by over 60%. Much of IPP will be replaced with renewable energy. However, in order to meet reliability requirements, some of the IPP power will likely be replaced by flexible gas-fired generation with approximately one half of the carbon emissions of coal, so the reduction in GHG will not be the full 90% produced by IPP today.

CONCLUSIONS

Having met and surpassed its 2014 goal with 28% renewable energy, PWP is on track to meet the aggressive 40% RPS target established in the 2009 and 2012 IRPs. Construction on GT-5 is well underway, and expected to be completed by June of 2016. New energy efficiency goals were adopted by the City Council in 2013, and PWP expects to present an updated study, with new recommendations to the City Council for consideration in FY 2017. However, some of the other 2012 IRP goals appear less achievable in light of developments in the last couple of years.

The objective of the IRP process is to identify the optimal portfolio to achieve a sustainable balance of system reliability, fiscal responsibility, and environmental stewardship. Based on the 2015 IRP analysis, PWP's Preferred Portfolio at this point in time is Portfolio #1 – Stay the Course, which continues many of the objectives established in the 2012 IRP, and lays the groundwork for the other Portfolios. Most importantly, this Portfolio will allow PWP to achieve an impressive 60% reduction in GHG from 1990 levels by 2030, well ahead of the state-wide target set by Governor Brown of 40% from 1990 levels in 2030.

The Preferred Portfolio meets or exceeds all of PWP's current legal, regulatory, reliability and environmental requirements, and is the least cost of the five 2015 IRP Portfolios. Furthermore, with the exception of the Carbon Neutral Portfolio, PWP's procurement action plan over the next two to three years would likely be the same for all Portfolios as with the Preferred Portfolio, since material changes among the portfolios do not occur until 2025. The key short-term difference is in the operational dispatch of the IPP coal plant. For the Carbon Neutral Portfolio, the other difference would be in the procurement of bio-methane, a decision that may well be better deferred to a later date when availability may be improved, prices may be lower, or when energy storage may provide a viable alternative. If the state of California adopts a more aggressive RPS

before the next IRP Update, PWP can address it in its annual procurement plan, since it is highly unlikely that the higher target will be before 2020.

RECOMMENDATIONS:

1. PWP will target GHG reductions of at least 60% from 1990 levels by 2030[3] (to approx. 367,500 metric tons) through the most cost-effective and expedient means available.
   a. PWP will eliminate coal-fired generation from the PWP power portfolio no later than 2027. Discussions are underway for an IPP amendment that would facilitate a 2025 repowering with natural gas or and/or an alternative. This would provide an earlier exit from coal. The proposed amendment of the power sales agreement requires the consent of all existing 36 participants. In addition, each participant can choose to participate in the proposed repowering project or not. Pasadena's participation should be conditioned on satisfactory resolution of key issues:
      i. Pasadena should preserve its IPP-related transmission rights.
      ii. Pasadena should have an option to reduce or opt out of any IPP repowering in 2019.
      iii. Until IPP is repowered, PWP should reduce IPP generation when operationally and economically practicable.
   b. PWP will continue to acquire all cost-effective and viable energy efficiency.
      i. PWP will target energy efficiency equal to at least 1% of annual net energy load (retail electric energy plus distribution losses) and 0.7% of average peak demand. For Fiscal Years 2015 through 2023, this amounts to 12,750 MWh/year of energy efficiency, and 2.3 MW/year of demand reduction, as approved by the City Council in 2013.
   c. PWP will continue to acquire cost-effective renewable energy.
      i. PWP will procure renewables pursuant to the Renewable Portfolio Standard Policy provided at www.PWPweb.com/IRP and the annual Procurement Plan approved by the City Council to meet or exceed state-wide and local renewable energy targets and to achieve the GHG emission reduction goal. Pasadena's renewable energy target is currently 40% of retail load by 2020. The state-wide goal is currently at least 33% of retail load by 2020, but is proposed to increase to 50% by 2030.
   d. PWP will support local renewable energy resources and community solar efforts.
      i. PWP will establish a Feed-in Tariff by the end of 2016[4].
      ii. PWP will launch a Community Solar pilot project by the end of 2016.

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[3] *California's statewide target is a 40% reduction by 2030 (Executive Order B-30-15, issued 4/29/2015) & 80% by 2050 from 1990 levels (Executive Order S-03-05, issued 6/1/2005).*

2. PWP will continue to ensure reliability and flexibility to respond to electric industry changes.
   a. PWP will explore and procure viable, cost-effective new technologies (including distributed generation resources and energy storage) and efficient conventional technologies as needed to meet reliability and flexibility requirements.
   b. PWP will preserve existing local generation.
      iii. PWP will evaluate repair and/or replacement options for Glenarm Unit 2.

CITY COUNCIL POLICY CONSIDERATION:
The PWP 2015 Update to the IRP will support the City Council's strategic goals for a sustainable economy and to sustain natural environmental resources for the use of future generations, and at the same time, contribute to the reduction of greenhouse gas emissions and impacts on climate change.

ENVIRONMENTAL ANALYSIS:
On March 11, 2009, and March 5, 2012, the City Council found that the adoption of the 2009 and 2012 IRPs were exempt from review pursuant to State CEQA Guidelines Sections 15262 and 15271. 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 CEQA Guidelines §15262). To fall under this exemption, however, the lead agency is required to consider environmental factors.

Like the 2009 and 2012 documents, the PWP 2015 Update to the IRP is a guidance document, which does not commit the City to undertaking any particular project. Furthermore, it does not serve as a legally binding plan with which subsequent activities must be consistent or adhere.

The PWP 2015 Update to the IRP is drafted, in part, with environmental factors under consideration. One of the primary goals of the PWP 2015 Update to the IRP is to reduce the environmental impact of the City's overall energy portfolio, particularly with regard to greenhouse gases. Further, any specific construction project undertaken pursuant to the PWP 2015 Update to the IRP will be subject to full CEQA review at the appropriate time.

FISCAL IMPACT:
Approval of the PWP 2015 Update to the IRP will have no immediate fiscal impact, and is essentially a continuation of current City policies. The IRP recommendations will, however, establish the policy guidance and framework to evaluate power resource and program choices with potential substantial cost implications for PWP and its electric ratepayers. Over a 20 year period, implementation of the recommended Stay-the-Course goals will result in an increase from today in PWP's average levelized portfolio energy cost. The increase in PWP's portfolio energy cost is passed to the customers through the electric rates.

Respectfully submitted,

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Attachment 1: 2015 IRP Key Assumptions and Analysis
Attachment 2: Bill Impact Analysis