



PASADENA WATER AND POWER

MEMORANDUM

December 14, 2021

To: Environmental Advisory Commission

KW **From:** Gurcharan S. Bawa *G.S. Bawa*
General Manager

Subject: Information Item – 2021 Power Integrated Resource Plan (“IRP”) Update

EXECUTIVE SUMMARY:

For over 20 years, Pasadena Water and Power (“PWP”) has developed Power IRPs with three fundamental goals in mind:

1. Maintain a reliable power supply portfolio to meet PWP’s customers’ needs;
2. Meet or exceed sustainability goals and mandates; and
3. Minimize electric rate impacts and volatility.

On December 10, 2018, the City Council adopted the 2018 Power Integrated Resource Plan (“2018 IRP”). It included specific objectives and strategies such as incorporating cost-effective energy efficiency and solar programs, renewable resource procurement, and other options for meeting greenhouse gas (“GHG”) reduction targets and Renewable Portfolio Standard (“RPS”) mandates.

At this time an update to the 2018 IRP is warranted because of regulations promulgated in the interim which substantially increases the need for renewable generation capacity acquisition. PWP has now completed work on the 2021 Power IRP Update (“IRP Update”) to reassess projected costs and preferred resources to meet the goals and objectives of the 2018 IRP with updated information and assumptions. This IRP Update is not mandated by the California Energy Commission (“CEC”) and is intended for Pasadena’s use to guide resource procurement and program development for the next few years.

The IRP Update includes a new forecast of PWP’s long-term optimized portfolio of energy supply resources, including energy efficiency and demand response, in order to meet PWP’s load (electricity consumption) requirements through 2049.

PWP plans to conduct a more complete stakeholder-driven IRP process commencing in 2023 and to be completed by the end of 2024 to meet the statutory five-year IRP requirement in Senate Bill 350 (“SB 350”).

Key Results of the IRP Update include:

- Affirming that there will be no new long-term commitments for fossil-fueled power resources;
- Achieving a 60% RPS by 2030, using a combination of long-term and short-term procurement contracts, to comply with SB 350;
- Achieving 100% zero carbon electricity supply by 2045 objective to comply with the provisions of Senate Bill 100;
- Maintaining existing local gas-fired generation to meet peak demands and ensure local reliability through the planning period;
- Acquiring at least 70 megawatts (“MW”) of firm resources (approximately 120 MW of nameplate capacity) by 2025 to ensure power supply reliability and comply with California Independent System Operator (“CAISO”) Resource Adequacy requirements:
 - *The IRP model results indicate that a combination of bulk energy storage, solar plus storage, geothermal resources, and demand-response programs are the most cost-effective resource additions to achieve reliability, RPS, and GHG reduction goals;*
 - *A total of 120 MW installed nameplate capacity may be necessary to deliver 70 MW firm capacity.*

The average annual total rate increase is expected to average about 2.7% per year on the energy component through 2045.

BACKGROUND AND KEY FINDINGS:

PWP has prepared a Power IRP or similar document to guide long-term power resource procurement strategies every three to five years since the early 1990s. Most recently, Power IRPs were developed in 2009, 2012, 2015, and 2018.

The IRP Update process includes briefings to the Environmental Advisory Commission (“EAC”) and the Municipal Services Committee (“MSC”) in July, November and December 2021, and for approval and adoption by MSC and City Council in January 2022.

PWP’s RPS AND GHG PROGRESS TO DATE

PWP has made good progress towards implementing the recommendations in the 2018 IRP, including:

- Procurement of additional renewable resources;
- Opting out of the Intermountain Power Project’s gas repowering project;
- Local power plant repairs to enhance power supply and local grid reliability; and
- Meeting energy efficiency goals.

The combined result was a 56% reduction in GHG emissions versus 1990 levels in 2020. Additionally, PWP has achieved a targeted 40% RPS in calendar year 2020, exceeding the state-mandated RPS target of 33%.

PWP continues to implement its strategic procurement plan for all future long-term resource commitments with the recently completed Coso Geothermal purchase. This power purchase will start delivering reliable, baseload renewable energy to PWP in 2027.

ANTICIPATED NEAR-TERM ACTIONS:

1. Look closely at increasing near-term procurement considerations;
2. Investigate energy storage options for capacity requirements and local reliability;
3. Continue efforts toward 60% RPS by 2030 and net-zero carbon by 2045;
4. Examine alternative fuel sources for local reliability resources (Glenarm Power Plant); and
5. Refine forecasted growth of electric vehicle charging in Pasadena.

PWP's IRP UPDATE PROCESS

To prepare the IRP Update, PWP retained ACES Power Marketing LLC ("ACES") and Northwest Economic Research LLC ("NWER") to advise staff and perform analyses and modeling. The update process includes briefings to the EAC and MSC, and the inclusion of recommendations from both Committees.

PWP worked with ACES and NWER to define two portfolios of power resources: the "2018 Refresh" portfolio and the "2021 Update" portfolio. The 2018 Refresh portfolio includes only those new renewable resources adopted in the 2018 IRP. The 2021 Update portfolio includes new renewable resources and expands the demand-side management programs. As a result, the components of the 2021 Update portfolio are materially different from the 2018 Refresh portfolio.

The recommended 2021 Update portfolio meets or exceeds all of PWP's current legal, reliability and environmental requirements, provides flexibility to respond to changing conditions, and complies with current state regulatory and CAISO tariff requirements.

The IRP Update 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 GHG emissions and impacts on climate change.

FISCAL IMPACT:

Approval and adoption of the IRP Update will have no fiscal impact. The execution of any long-term power supply contract by PWP will require City Council approval. The IRP Update recommendations will, however, establish the policy guidance and framework to evaluate power supply resource and program choices that may result in

higher future electric energy costs than the lowest-cost solutions that would meet minimum compliance standards.

Over the study period, implementation of the recommended power resource portfolio may result in an estimated 2.7% average annual rate increase on the energy component, compared to current rates and taking into account cost reductions in power supplies as current contracts expire. Rates are expected to increase further due to increased costs to maintain customer and distribution system infrastructure, regional transmission costs, and inflation; however, some costs may decrease due to charging of new electric vehicles and electrification of fossil-fuel end-uses (e.g., water heating). This increase does not include the impact of inflation or increased costs associated with electric distribution, transmission, and customer service functions.

Attachment: 2021 Power IRP Update Report