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STAFF REPORT

Review of Riverside Public Utilities 2023 Integrated Resource Plan

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ABSTRACT

Senate Bill 350 (De León, Chapter 547, Statutes of 2015) established Public Utilities Code Section 9622, which requires the California Energy Commission to review the integrated resource plans of identified publicly owned utilities to ensure they meet various requirements specified in the law, including greenhouse gas emission reduction targets and renewable energy procurement requirements.

Integrated resource plans are long-term planning documents that outline how publicly owned utilities will meet demand reliably and cost-effectively while achieving state policy goals and mandates. Riverside Public Utilities submitted its Integrated Resource Plan and supplemental information for review June 12, 2024. This staff report presents the results of the California Energy Commission staff review of the *Riverside Public Utilities 2023 Integrated Resource Plan*.

Keywords: Publicly owned utility, integrated resource plan, Riverside Public Utilities, RPU, demand, resources, portfolio, generation, transmission, distribution, Renewables Portfolio Standard, forecast, energy efficiency, transportation electrification, demand response, greenhouse gas emissions, GHG, system reliability

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EXECUTIVE SUMMARY

Senate Bill 350 (De León, Chapter 547, Statutes of 2015) requires publicly owned utilities meeting an electrical demand threshold to adopt an integrated resource plan that meets certain requirements, targets, and goals, including greenhouse gas emission reduction targets and renewable energy procurement requirements set forth in Public Utilities Code Section 9621. The California Energy Commission's *Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines* require the utilities to file an integrated resource plan with data and supporting information sufficient to demonstrate that they meet these requirements as well as the targets and planning goals from 2018 to 2030. Under PUC Section 9622, the CEC must then review the integrated resource plans for consistency with the requirements of PUC Section 9621.

The *Riverside Public Utilities 2023 Integrated Resource Plan* serves as a framework for Riverside Public Utilities' transition from carbon-intensive resources such as coal and natural gas to renewable or zero-carbon resources such as geothermal, solar, wind, nuclear, and hydroelectric power. Like most California public utilities, Riverside is summer peaking. It generates electricity using two gas power facilities and a solar array located within Riverside. The utility also procures electricity from the following resources outside its service territory: geothermal projects in the Salton Sea and China Lake; the fossil fuel-burning generators Intermountain Power Project and Clearwater Power Plant; Palo Verde nuclear power plant; the Hoover Dam; and multiple solar and wind resources. Riverside Public Utilities procures less electricity from must-take contracts than is necessary to meet demand on an average summer or winter day, and purchases electricity on the spot market or generates electricity from fossil fuel resources to make up the difference.

The City of Riverside has a goal for one hundred percent of the city's electricity production to come from zero-carbon sources by 2040. In accordance with this, Riverside Public Utilities intends to retire its gas-fired power plants by or before 2040. The *Riverside Public Utilities 2023 Integrated Resource Plan* considers various portfolios of zero-carbon and renewable resources the utility could procure to meet future load. Riverside Public Utilities' preferred resource portfolio, submitted as part of the integrated resource plan process, forecasts that the utility will add a geothermal resource, two new solar resources, a utility-scale battery energy storage system, and one or more as-yet unspecified baseload zero-carbon resources.

In reviewing the *Riverside Public Utilities 2023 Integrated Resource Plan* and determining consistency with the requirements of Public Utilities Code Section 9621, CEC staff relied on the four standardized reporting tables and narrative descriptions in the integrated resource plan filing, as well as analysis and verification of the materials submitted. Staff presents the following conclusions in accordance with the requirements:

1. *Achieving greenhouse gas emissions targets and Renewables Portfolio Standard requirements:* The utility plans to meet state requirements set forth in PUC Section 9621(b)(1) and PUC Section 9621(b)(2) for greenhouse gas emission reduction and renewable energy procurement. Riverside Public Utilities' preferred resource portfolio includes geothermal energy, solar power, and wind power. Currently, geothermal power accounts for roughly 70 percent of the utility's renewable energy procurement and 30 percent of the utility's total electricity procurement. Solar power accounts for roughly 25

percent of renewable procurement and ten percent of total procurement. Wind power accounts for roughly 2.5 to four percent of renewable procurement and one to two percent of total procurement. By 2030, Riverside plans to procure more electricity from geothermal and wind to meet its 60 percent of retail sales Renewables Portfolio Standard Requirements.

2. *Meeting planning goals:* The utility intends to meet planning goals related to retail rates, reliability, transmission, and distribution systems as set forth in Public Utilities Code Section 9621(b)(3). The utility includes a five-year, five percent average annual rate increase. However, when compared with other utilities in the area, Riverside Public Utilities still has one of the lowest electricity rates. Riverside Public Utilities' Integrated Resource Plan includes adequate local and system transmission capacity to accommodate its growing load.
3. *Considering peak needs:* The utility has considered the role of existing renewable generation, grid operational efficiencies, energy storage, and distributed resources, including energy efficiency, in helping ensure the utility's energy and reliability needs in the hours that encompass the peak hour as set forth in PUC Section 9621(c). Riverside Public Utilities' preferred resource portfolio uses geothermal, wind, and solar power, as well as battery energy storage, to meet portions of the utility's peak demand. Riverside Public Utilities also administers a voluntary program for large commercial customers to shift or shed load during periods of peak demand.
4. *Addressing Resource Procurement Types:* The utility addressed the procurement requirements for energy efficiency and demand response, energy storage, transportation electrification, portfolio diversification, and resource adequacy as set forth in PUC Section 9621(d). Riverside Public Utilities has implemented programs to increase energy efficiency and is in contract negotiations to purchase resource adequacy from a utility-scale battery energy storage system. The preferred portfolio demonstrates renewable resource diversity by including geothermal, wind, and solar power. It also includes large hydropower, nuclear power, and the previously mentioned battery energy storage system, which all provide dependable capacity.

CHAPTER 1:
Demand Forecast and Procurement

Introduction

Senate Bill 350 (De León, Chapter 547, Statutes of 2015) requires publicly owned utilities (POUs) with an annual electrical demand exceeding 700 gigawatt-hours (GWh) to develop integrated resource plans (IRPs).[1] IRPs are electricity system planning documents that describe how utilities plan to meet their energy and capacity resource needs while achieving policy goals and mandates, meeting physical and operational constraints, and fulfilling other priorities such as reducing impacts on customer rates. SB 350 requires the governing board of a POU to adopt an IRP and a process for updating it at least once every five years starting no later than January 1, 2019.[2]

Riverside Public Utilities (RPU) filed its initial IRP on December 18, 2018, which was deemed compliant by the CEC in August 2019. On June 11, 2024, Riverside City Council adopted RPU's updated IRP, the *Riverside Public Utilities 2023 IRP (RPU 2023 IRP)*, which was filed with the CEC on June 12, 2024.

PUC Section 9622 requires the California Energy Commission to review POU IRPs to ensure they achieve PUC Section 9621 provisions. If the CEC determines that an IRP is inconsistent with the requirements of PUC Section 9621, the CEC shall provide recommendations to correct the deficiencies. The CEC adopted the *Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines* to govern the submission of the POUs' IRPs.[3]

This chapter provides an overview of RPU and its IRP development process. In addition, the chapter addresses the *Guidelines'* requirements that POUs provide a demand forecast and a procurement plan as part of its IRP.

Riverside Public Utilities

RPU is a City of Riverside Enterprise Fund that provides electricity service to most of Riverside, which is located in inland Southern California. RPU's service territory is shown in **Figure 1**. RPU is governed by Riverside's City Council and by a nine-person Board of Public Utilities appointed by the City Council. In December 2021, RPU had roughly 112,000 customers: 99,450 residential customers (88.8 percent), 11,950 commercial customers (10.7 percent), and 600 industrial customers (0.5 percent). In contrast, 36 percent of the utility's sales were to residential customers, 20 percent to commercial customers, and 43 percent to industrial

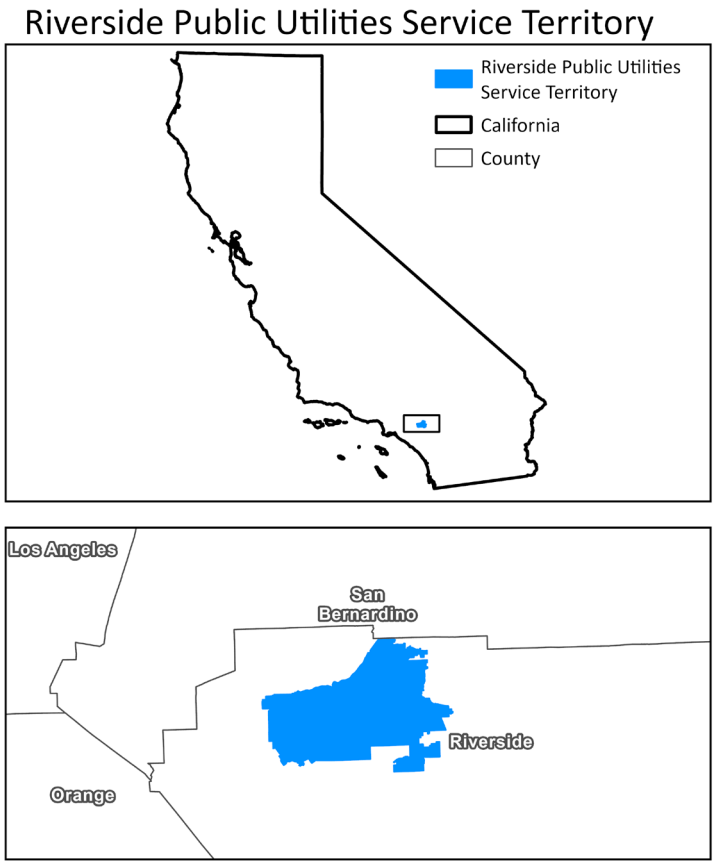
1 Public Utilities Code Section 9621, https://codes.findlaw.com/ca/public-utilities-code/puc-sect-9621/.

2 Public Utilities Code Section 9621(b)

3 Vidaver, David, Melissa Jones, Paul Deaver, and Robert Kennedy. October 2018. *Publicly Owned Utility Integrated Resource Plan Submission and Review Guidelines — Revised Second Edition (Chapter 2.E.1).* California Energy Commission. Publication Number: CEC-200-2018-004-CMF, https://efiling.energy.ca.gov/GetDocument.aspx?tn=224889&DocumentContentId=55481.

customers. In 2021, RPU's peak demand was 560.4 megawatts (MW), and the utility's total electricity sales were 2,246,814 megawatt-hours (MWh). Riverside's monthly peak is highest in months with the highest average temperatures – during the summer.

Figure 1: Map of Riverside Public Utilities Service Territory



Source: CEC

RPU procures electricity from several resources within Riverside city limits: the natural gas power plants Riverside Energy Resource Center (RERC) and Springs Generation Facility (Springs) and a solar photovoltaic (PV) farm at the decommissioned Tequesquite landfill. RPU has also contracted for natural gas, nuclear, hydroelectric, wind, geothermal, and solar resources located outside of the city. RPU is located within the California Independent System Operator (California ISO) balancing authority and is its own scheduling coordinator into the California ISO.

RPU plans to meet some summer peak load through their utility-owned and contracted resources. RPU will also use short-term capacity purchases to help meet peak demand. RPU's strategy to limit must-take contracts and procure energy instead to meet demand on a typical day has been more cost-effective than procuring more must-take resources because excess energy would have to be sold at a loss. RPU plans to continue this approach in the near term.

The City of Riverside has a goal for all of Riverside's electricity production to come from zero-carbon sources by 2040.[4] The *RPU 2023 IRP* examines resources the utility could potentially procure in 2028 and beyond to meet this goal.

Energy and Peak Demand Forecast, Method and Assumptions

The guidelines require that a POU IRP provide a forecast of future energy and peak demand to determine whether a POU's IRP is consistent with the requirements of PUC Section 9621.[5] The guidelines also state that, if a POU uses a forecast other than the CEC's adopted demand forecast, the POU must explain the method the POU used to develop the demand forecast.[6]

RPU chose to not use the CEC's demand forecast and instead developed its own. RPU used regression models to project its future total monthly load and monthly peak demand. Data inputs into RPU's models included per capita income, employment, temperature, energy savings from efficiency and rooftop PV, and energy expenditures from building and vehicle electrification. The models used monthly data from January 2007 to December 2021.

RPU summed the monthly total load results for all twelve months in each year to forecast the utility's total annual demand for electricity for the years 2023-2045, as shown in **Figure 2**. In the peak demand model, RPU used the model results for August as the peak demand for each year between 2023 and 2045. **Figure 3** shows the annual peak demand, plus a planning reserve margin which is 15 percent for 2023 and 2024 and 17 percent thereafter. The forecasted annual electricity demand for 2023 is 2,261 GWh; for 2030, 2,464 GWh; and for 2045, 3,172 GWh. The forecasted peak demand, plus planning reserve margin, for 2023 is 686 MW; for 2030, 721 MW; and for 2045, 818 MW.

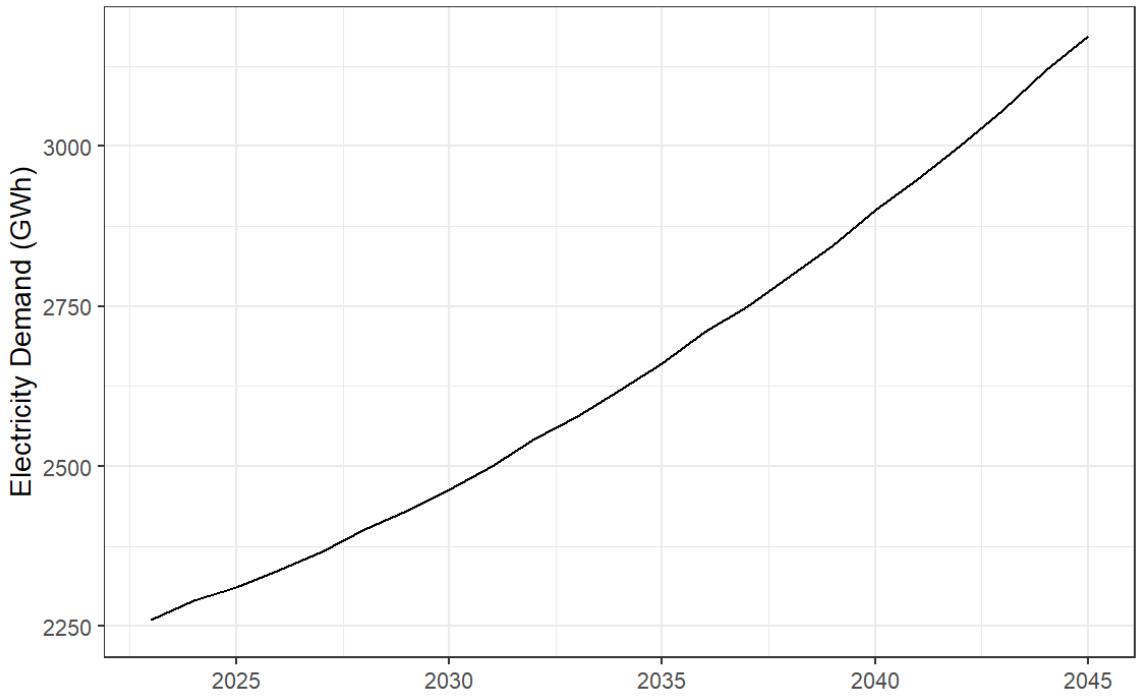
CEC staff compared RPU's energy and peak demand forecast to the Energy Commission's 2023 Demand Forecast Update report. CEC's forecast for annual RPU demand between 2022 and 2040 ranges from 2.75 percent less to 2.5 percent more than the RPU forecast, depending on the year. So, the RPU forecast can be considered to be within a reasonable range.

4 City of Riverside. 2023. Envision Riverside 2025, p. 12. https://online.fliphtml5.com/ltghc/dvxo/.

5 *POU IRP Guidelines*, Chapter 2, E., pp. 5–6.

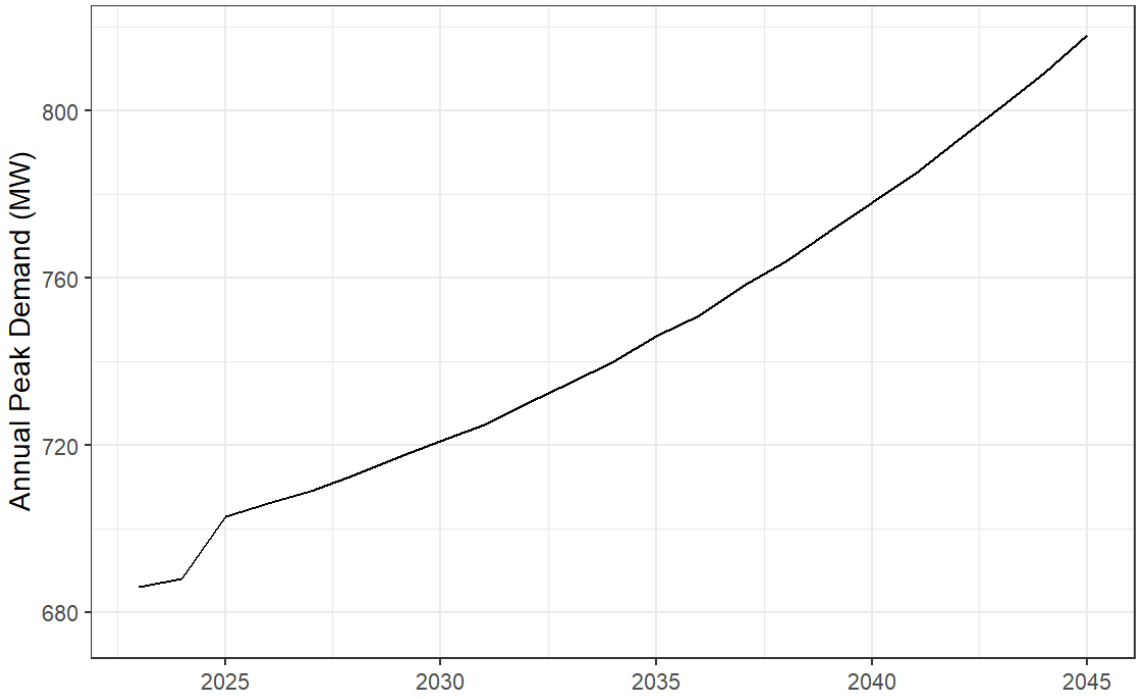
6 CEC demand forecast at the time of POU IRP study: California Energy Commission. 2023. "CED 2023 Baseline LSE and BAA Tables," https://efiling.energy.ca.gov/GetDocument.aspx?tn=255153.

Figure 2: RPU Preferred Portfolio Forecast for Annual Electricity Demand



Source: CEC, Energy Assessments Division, Based on *RPU 2023 IRP* filing

Figure 3: RPU Preferred Portfolio Annual Peak Forecast (including Planning Reserve Margin)



Source: CEC, Energy Assessments Division, Based on *RPU 2023 IRP* filing

Resource Procurement Plan

The guidelines require that POUs report the mix of resources they plan to use to meet demand through 2030.[7] POUs are also required to provide an IRP with data and supporting information, detailing the POU's plan to meet the various targets and goals. Staff determined the *RPU 2023 IRP* filing meets these requirements. The following sections discuss the utility's existing resources, the utility's procurement strategy, the portfolio analysis underlying resource selections, and the resources identified in the standardized reporting tables for 2030.

Existing Resources

RPU's existing electricity generation resources include fossil fuel and solar resources inside the city of Riverside, and fossil fuel, nuclear, hydropower, geothermal, wind, and solar resources outside of the city. RPU owns some of these resources and has procured others through an entitlement, a power purchase agreement (PPA), or an ownership interest. **Table 1** shows RPU's under contract (active and future) resources for the period 2023-2042.

Table 1: Long-term generation resources in the RPU power portfolio

Existing Resources	Technology	Name-plate Capacity (MW)	Contract End Date	Asset Type
Intermountain (IPP)[8]	Coal	136	Jun 2025	Entitlement/ PPA
IPP-Combined-Cycle Conversion	Natural gas	64	Jun 2027	Entitlement/PPA
Palo Verde	Nuclear	12	Dec 2030	PPA (SCPPA)
Hoover[9]	Hydroelectric	18-28	Sep 2067	PPA (SCPPA)
RERC 1-4	Natural gas	194	n/a	Owned Asset
Springs	Natural gas	36	n/a	Owned Asset
Clearwater	Natural gas	28.5	n/a	Owned Asset
CalEnergy Portfolio	Geothermal	86	Dec 2039	PPA
Coso	Geothermal	10/30	Dec 2041	PPA
Wintec	Wind	1.3	Dec 2023	PPA
WKN	Wind	6	Dec 2032	PPA
AP North Lake	Solar PV	20	Aug 2040	PPA
Antelope Big Sky Ranch	Solar PV	10	Dec 2041	PPA (SCPPA)
Antelope DSR	Solar PV	25	Dec 2036	PPA (SCPPA)
Summer	Solar PV	10	Dec 2041	PPA (SCPPA)

7 *POU IRP Guidelines*, p. 6.

8 IPP ceased delivering coal-generated electricity to California on November 26, 2025. This table is from the *RPU 2023 IRP*, which was developed prior to this date.

9 RPU is contractually entitled to 30 MW of nameplate capacity from Hoover but operationally expects that the utility can get 18-28 MW of capacity.

Existing Resources	Technology	Name-plate Capacity (MW)	Contract End Date	Asset Type
Kingbird B	Solar PV	14	Dec 2036	PPA (SCPPA)
Columbia II	Solar PV	11	Dec 2034	PPA (SCPPA)
Tequesquite	Solar PV	7.3	Dec 2040	PPA w/PO
Cabazon	Wind	39	Dec 2024	PPA
Future Resources (under contract)	**Technology**	**Name-plate Capacity (MW)**	**Contract Start & End Dates**	**Asset Type**
Pattern/SunZia	Wind	125	Apr 2026 to Mar 2041	PPA
Recently Expired Contracts	**Technology**	**Name-plate Capacity (MW)**	**Termi-nation Date**	**Asset Type**
Salton Sea 5	Geothermal	46	May-2020	PPA
Expired Contracts with continuing Debt Service Payments	**Technology**	**Name-plate Capacity (MW)**	**Force Majeure Date**	**Asset Type**
SONGS	Nuclear	39	Feb 2012 Force Majeure	Ownership Interest

Source: RPU 2023 IRP, p. 3-2.

RPU owns and operates two natural gas-based power facilities in the city of Riverside, RERC and Springs; Riverside uses RERC for energy and resource adequacy, and Springs primarily for resource adequacy. RPU has a PPA for a solar PV farm in the city, located at the site of the decommissioned Tequesquite landfill.

RPU also owns or contracts with natural gas, wind, geothermal, and solar resources outside of city boundaries.[10] RPU owns and operates a combined cycle natural gas-based power plant in Corona, CA, named Clearwater Power Plant (Clearwater) which it uses for energy and resource adequacy and plans to operate it through 2039.

Until 2025, RPU had rights to 136 MW of electricity from coal-burning generation units at the Intermountain Power Project (IPP) in Utah. As of November 2025, IPP replaced its coal-

10 Due to their inefficient heat rates, the Springs units are rarely dispatched outside of critical peak load events.

burning generation units with gas-fired units. RPU is entitled to 64 MW of this generation through June 2027, at which time RPU plans to exit its contract with IPP.

RPU currently receives power from geothermal projects in the Salton Sea and China Lake, CA; wind projects near Palm Springs, CA; and a solar project in the city of Hemet, CA. RPU also has a PPA to receive 125 MW of nameplate capacity from SunZia Wind Energy, a project being developed in New Mexico, starting in April 2026.

RPU is a member of the Southern California Public Power Authority (SCPPA) and receives energy from renewable or non-carbon resources contracted by SCPPA. SCPPA owns a share of the Palo Verde Nuclear facility, a nuclear power plant located in Arizona. At the time the *Riverside 2023 IRP* was written, RPU had contracted with SCPPA to receive 11.7 MW of power from Palo Verde until 2030. All SCPPA members who receive power from Palo Verde, including RPU, plan to extend their contracts through 2045.

SCPPA also receives electrical capacity from the Hoover Dam, of which RPU is entitled to 30 MW until 2067. Additionally, SCPPA has PPAs with solar projects that provide RPU with 70.1 MW of nameplate capacity.

RPU Planning Process

In 2020, the City of Riverside's Mayor, City Councilmembers, and staff had discussions and held two Strategic Planning Workshops to determine priorities for the next five years. In October 2020, the City adopted the Envision Riverside 2025 Strategic Plan, which laid out priorities that staff would work towards in the coming years. The Strategic Plan listed the following environmental stewardship goal for the City:

"Rapidly decrease Riverside's carbon footprint by acting urgently to reach a zero-carbon electric grid with the goal of reaching 100 [percent] zero-carbon electricity production by 2040 while continuing to ensure safe, reliable and affordable energy for all residents."[11]

For RPU's IRP, the utility sought to examine resources it could procure to meet demand, meet the requirements of PUC section 9621, and also meet the City's goal of 100 percent zero-carbon electricity production by 2040.

Resource Portfolio Evaluation

In its *2023 IRP*, RPU conducted initial analyses of resources the utility could procure after 2028 to meet state requirements and City of Riverside emission goals. RPU started with the utility's existing resource portfolio and made a series of assumptions about which contracts would be extended beyond 2030, and which new resources the utility would procure after that year.

RPU made the following assumptions about resource contracts currently slated to end after 2030:

- RERC will be retired after 2039, in accordance with Riverside's net zero emission generation goal by 2040.

11 Envision Riverside 2025, p. 12.

- The SunZia wind contract and the CalEnergy and Coso geothermal contracts will be renewed to continue through 2045.
- The Palo Verde Generating Station contract will be renewed through 2045.
- No other contracts that are ending will be renewed.

RPU assumed that the utility will procure new baseload resources, resources with a 90 percent capacity factor, in three tranches between 2030 and 2045:

- Starting in 2034, procure 394,200 MWh annually and 50 MW on peak.
- Starting in 2038, procure an additional 473,040 MWh annually and 60 MW on peak.
- Starting in 2043, procure an additional 157,680 MWh annually and 20 MW on peak.

RPU also assumed that it would procure two new solar PV resources, which would each provide 229,950 MWh annually and 75 MW on peak. RPU would procure the first of these resources starting in 2037, and the second starting in 2041.

RPU's existing contracts, together with these assumptions, create a resource stack that RPU could compare against its projected future demand. From this reference point, RPU considered several potential changes to the resource portfolio which were assessed on three metrics.

First, RPU used the Ascend Production Cost Modeling Software Platform to simulate portfolio costs from the new portfolio, varying weather induced load, generator dispatch, and day-ahead market energy prices.[12] RPU used the modeling results to calculate the load normalized portfolio cost and the standard deviation of the net portfolio cost.[13] RPU then added the expected cost and the standard deviation together to create a metric called the Risk Integrated Portfolio Cost (RIPC). Second, RPU estimated the net value of prospective resource additions. Third, RPU assessed whether adding the resource would make the utility's contracted electricity supply more closely match its electricity demand during most times of day.

RPU determined that the utility would need to procure an additional renewable resource, starting in 2030, that can provide 367,920 MWh of energy and 50 MW of capacity at peak. The utility considered two portfolio resource options to meet these requirements: Baseline A, which adds a geothermal resource; or Baseline B, which adds a solar resource paired with battery storage. RPU then calculated the RIPC for these two portfolios for the years 2030, 2036, and 2042. The utility also examined whether the Baseline A or Baseline B portfolio would better match demand on average. The portfolio with Baseline B, solar and storage, was found to have a one to two percent lower RIPC than the portfolio with Baseline A, the geothermal resource (**Figure 4**). However, the portfolio with the geothermal resource was found to yield an energy supply that better matches the utility's energy demand, on average. For this reason, RPU selected the portfolio with Baseline A as its preferred resource portfolio.

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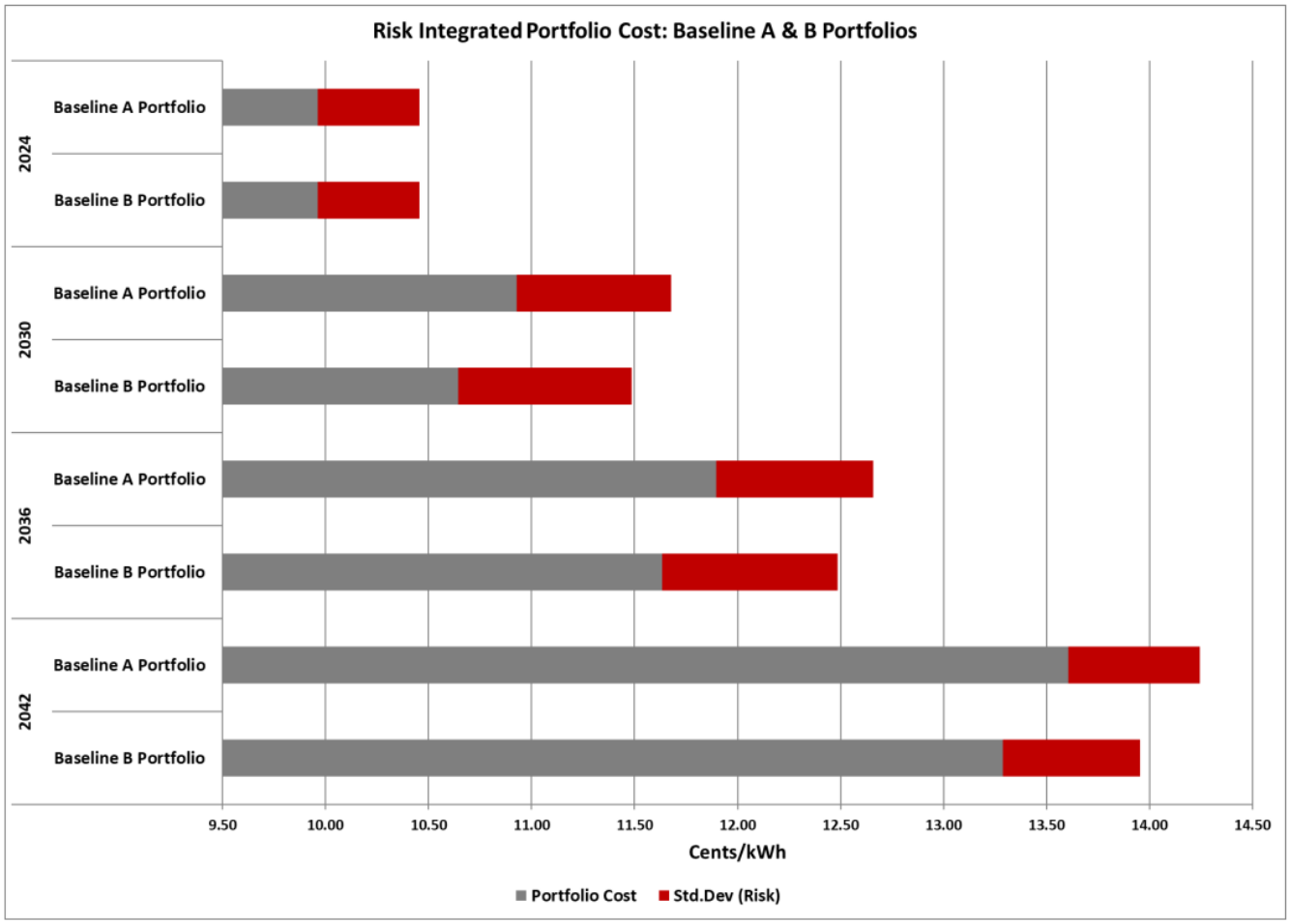
12 RPU. 2024. RPU 2023 IRP, p. 8-4. https://efiling.energy.ca.gov/GetDocument.aspx?tn=256831&DocumentContentId=92644.

13 RPU 2023 IRP, p. 12-7.

Figure 4: Risk Integrated Portfolio Cost: Baseline A and B Portfolios



*Baseline A Portfolio includes an additional geothermal resource; Baseline B Portfolio includes a solar and storage resource.

Source: *RPU 2023 IRP*, p. 12-9.

RPU ran a further analysis on Baseline A to evaluate the effect of various changes to the portfolio on the RIPC. RPU started with Baseline A and evaluated the effect of the following scenarios:

- Adding an 18 MW battery energy storage system (BESS) with a four-hour duration in 2028 and another in 2030 to replace Springs.
- Adding two 100 MW BESS, one with a four-hour duration and the other with a six-hour duration, in 2040 to replace RERC.
- Switching RERC's fuel from natural gas to biogas starting in 2035 and replacing RERC with two 100 MW BESS in 2040.
- Shutting down RERC in 2034 without replacing the resource.
- Shutting down RERC in 2034 and adding the two 100 MW BESS in 2035.

RPU's evaluation finds that either adding the two 18 MW BESS between 2028 and 2030 as a replacement for the retiring Springs facility or adding the two 100 MW BESS in 2040 as a replacement for the retiring RERC facility would decrease the Baseline A portfolio's RIPC. Based on these findings, RPU believes that these BESS replacements warrant further

consideration. At this time, RPU submitted the Baseline A Portfolio to the CEC as its preferred portfolio as the other alternatives would need further study.

Procurement Strategy

The preferred portfolio projects that the utility will decrease electricity procurement from fossil fuels and from current wind and solar resources while adding new renewable energy resources. As noted above, RPU will exit its contract to procure electricity from IPP after 2027 and will retire the gas-fired power plant Springs after 2030. The utility will procure less electricity, annually, from its gas-fired power plants RERC and Clearwater in the 2030s than it did in the later 2020s and will retire both power plants after 2039. Additionally, in the preferred portfolio, solar and wind contracts that collectively provide the utility with hundreds of thousands of MWh annually are slated to end before 2045.

The preferred portfolio projects that RPU will continue to procure electricity from its existing hydropower, geothermal, and nuclear resources. The amount of electricity procured from most of these projects will remain fairly consistent between 2025 and 2045, with the exception of the amount of electricity procured from Coso Geothermal, which will greatly increase starting in 2027.

RPU's preferred portfolio also adds electricity from the SunZia wind project starting in 2026; a new geothermal resource starting in 2030; two new solar resources starting in 2037 and 2041; and from three tranches of other non-carbon baseload resources, added in 2034, 2038, and 2043.

RPU projects that between 2023 and 2033, it will buy significantly more electricity than it sells on the spot market. From 2034 to 2037, the preferred portfolio forecasts smaller net purchases annually. From 2038 onwards, the portfolio projects RPU will sell more than it buys on the spot market.

CHAPTER 2:
Review for Consistency With PUC Section 9621 Requirements

This chapter summarizes the main elements of the *RPU 2023 IRP* and provides staff's findings regarding the consistency with PUC Section 9621 requirements, as well as the guidelines. These findings include whether the utility meets greenhouse gas (GHG) emission reduction targets and Renewables Portfolio Standard (RPS) energy procurement requirements, as well as planning goals for retail rates, reliability, transmission and distribution systems, net load, and disadvantaged communities. In addition, the IRP must address procurement of energy efficiency and demand response, energy storage, transportation electrification, and portfolio diversification.

Greenhouse Gas Emission Reduction Targets

POUs are required to meet the GHG targets established by the California Air Resources Board (CARB), in coordination with the CEC and CPUC.[14] The initial GHG targets set by CARB reflect the electricity sector's percentage in achieving the economywide GHG emission reductions of 40 percent from 1990 levels by 2030. Staff finds that the City of Riverside plans to meet its portion of the reductions required to achieve the established GHG emission target range of 30 million to 38 million metric tons of carbon dioxide equivalent (MMTCO2e) published in CARB's *2022 Scoping Plan for Achieving Carbon Neutrality (2023 CARB Update)* adopted in September 2023.[15] RPU's preferred portfolio results comply with the requirement of PUC Section 9621(b)(1).[16]

CEC staff reviewed the GHG emissions associated with Riverside's preferred portfolio and independently assessed the emission factors associated with various resources to ensure consistency with other available data.

RPU's preferred portfolio, as specified in the Riverside 2023 IRP, will allow the utility to fall under its utility-specific 2023 CARB Update GHG target of 275,000–349,000 MTCO2e. RPU's preferred portfolio results in roughly 209,035 MTCO2e in 2030, consistent with the requirement of PUC Section 9621(b)(1). **Table 2** shows GHG emissions for Riverside's preferred portfolio in 2023, 2025 and 2030.

14 Public Utilities Code Section 9621(b)(1).

15 Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets: 2023 Update, https://ww2.arb.ca.gov/sites/default/files/2023-09/sb350-final-report-2023.pdf.

16 CARB's 2022 Scoping Plan for Achieving Carbon Neutrality, https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

Table 2: Greenhouse Gas Emissions For Riverside Resources

Power Source	Fuel Type	GHG Intensity (MT CO_2e /MWh)	Total Emissions (MT CO_2e) 2023	Total Emissions (MT CO_2e) 2025	Total Emissions (MT CO_2e) 2030
Riverside Energy Resource Center (RERC)	Natural Gas	0.512	26,412	47,373	40,474
Clearwater	Natural Gas	0.483	4,564	8,022	5,691
Springs	Natural Gas	0.744	1,487	3,596	3,630
Intermountain Power Project	Coal	0.916	317,523	75,744	0
Intermountain Repower Project	Natural Gas	0.367	0	79,999	0
Net Spot market purchases (sales)	System	0.428	318,214	548,503	159,240
Total Portfolio Emissions	**NA**	**NA**	**668,200**	**763,237**	**209,035**

Source: CEC, Energy Assessments Division, Based on *Riverside's 2023 IRP* filing

Renewables Portfolio Standard Planning Requirements

PUC Section 9621(b)(2), as established by SB 350, requires that POU IRPs ensure procurement of at least 50 percent renewable energy resources by 2030, consistent with Article 16 (commencing with Section 399.11) of Chapter 2.3. In 2018, Senate Bill 100 (De León, Chapter 312, Statutes of 2018) increased the RPS requirement for 2030 from 50 to 60 percent by 2030.[17] Staff reviewed the renewable procurement table and the discussion in the IRP filing. Staff find the *RPU 2023 IRP's* preferred resource portfolio is consistent with the RPS procurement requirements and all interim compliance periods, as well as the requirements of PUC Section 9621(b)(2).

Riverside's largest sources of renewable energy are the Coso and CalEnergy geothermal projects. Geothermal energy currently accounts for over 70 percent of Riverside's renewable energy sources, while solar energy is just under 5 percent and wind energy approximately 25 percent. By 2030, Riverside plans to increase geothermal and solar energy resources to meet its 60 percent of retail sales RPS Requirements.

Retail Rates

PUC Section 9621(b)(3) requires POUs to develop IRPs that enhance each POU's ability to fulfill its obligation to serve its customers at just and reasonable rates, minimizing impacts to ratepayer bills. Staff reviewed the analysis and information RPU presented in its IRP filing on

17 Public Utilities Code Section 399.11(a), https://law.justia.com/codes/california/code-puc/division-1/part-1/chapter-2-3/article-16/section-399-11/.

the rate and bill impacts from different resource portfolios they evaluated. Staff finds the *RPU 2023 IRP* consistent with the rates discussion, as required in PUC Section 9621(b)(3).

In August 2023, RPU proposed a five-year (fiscal years 2023/24 through 2027/28) electric utility rate plan that would result in a five-year system average annual rate increase of five percent for typical electric customers. The residential tiers will see a first-year rate increase of 7.1 percent with a gradual decline to 2.4 percent by year five. For the typical commercial customer in year one the rate increase will be 2.5 percent with a gradual increase to 2.9 percent by year five. Lastly, the typical industrial customer will receive a 5.9 percent increase in year one with a slight decline to 4.3 percent in year five. On September 19, 2023, the City Council adopted RPU's proposed five-year electric utility rate plan.[18]

Prior to the adoption, the City of Riverside held ten community outreach events to engage with the community on the proposed rate increases. The City Manager and RPU General Manager made presentations to community groups and residents, while providing opportunities for question and answer sessions during each event. Riverside also compared its proposed residential electric rates to other southern California IOUs and POUs and found the proposed residential rates to be substantially lower than the rates for the IOUs and some POUs.[19]

The five percent rate increase is projected to fully fund RPU's proposed infrastructure upgrades, operations, and power supply costs.

System and Local Reliability

SB 350 requires filing POUs to adopt an IRP that ensures system and local reliability and addresses resource adequacy requirements.[20] [21] Staff reviewed the *RPU 2023 IRP* filing capacity reporting table and the accompanying discussion. Staff finds that RPU has planned sufficient resources to maintain a reliable electric system. In addition, RPU's preferred portfolio of resources contains sufficient capacity to meet anticipated resource adequacy requirements in 2030. Staff finds this IRP is consistent with reliability requirements in PUC Section 9621(b)(3) and resource adequacy requirements in PUC Section 9621(d)(1)(E).

Riverside is a scheduling coordinator and a participating transmission owner with the California ISO. As such, it has turned over operation of its transmission to the California ISO. Load-serving entities within California ISO must provide sufficient capacity to meet their coincidence adjusted monthly peak load forecast plus a planning reserve margin. Riverside uses the default planning reserve margin in the California ISO tariff of 15 percent for its planning reserve margin. After 2024, Riverside will need to procure additional system resource adequacy to meet its projected system peaks and reserve margin, especially in third quarter of each year.

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18 RPU 2023 IRP, p. 15-1.

19 Ibid, see Figure 15.2.1 on page 15-4

20 Public Utilities Code Section 9621(b)(3), https://law.justia.com/codes/california/code-puc/division-4-9/section-9621/.

21 Public Utilities Code Section 454.52(a)(1)(E), https://law.justia.com/codes/california/code-puc/division-1/part-1/chapter-3/article-1/section-454-52/.

Two contracts are projected to come on-line between late 2025 and the second quarter of 2026. The first is a 15-year 80 MW BESS and the second is 28 MW of dependable capacity from the new SunZia wind energy project. RPU's contract with IPP coal was projected to be replaced with a new fossil gas/hydrogen facility in June 2025; in practice, one unit of this two-unit coal plant retired in September 2025 and the other unit retired on November 26, 2025. Regardless, RPU's capacity credit from IPP dropped from 136 MW to 64 MW. By 2027 an additional 20 MW from Coso geothermal is projected to fill capacity shortfalls. Riverside plans to fill additional capacity shortfalls with year-ahead system resource adequacy purchases.

Transmission and Distribution Systems

PUC Section 9621(b)(3) requires filing POUs to adopt an IRP that achieves the goal of strengthening the diversity, sustainability, and resilience of the bulk transmission and distribution systems and local communities, as further specified in PUC Section 454.52(a)(1)(G). Staff finds the *RPU 2023 IRP* consistent with the transmission and distribution requirements, detailed below.

Riverside's Energy Delivery Division is responsible for managing and maintaining its sub transmission and distribution facilities. Its objectives are to ensure electric service reliability, to operate and maintain the system safely, efficiently, and in compliance with requirements, and to supervise and control all activities related to energy distribution delivery.

Transmission System

Riverside's system is interconnected to the California ISO transmission grid at Southern California Edison's (SCE's) Vista Substation. Riverside's electrical system is comprised of 15 substations linked by a network of 69 kV and 33 kV lines. The system includes 98.6 circuit miles of sub-transmission lines. In connection with its entitlement to IPP, Riverside acquired a 10.2 percent (195 MW) entitlement in the transfer capability of the 500-kV DC transmission line, known as the Southern Transmission System. This line provides for the transmission of energy from, among other resources, the IPP to the California transmission grid. The Southern Transmission System provides approximately 2,400 MW of transfer capability, of which Riverside has a total entitlement of 244 MW. In addition, Riverside has a 12 MW entitlement in SCPPA's share of the Mead-Phoenix Transmission Project and a 118 MW entitlement to SCPPA's share of the Mead-Adelanto Transmission Project.

SCE and RPU are moving forward with the CPUC-approved Riverside Transmission Reliability Project. When completed, this project will provide additional transmission capacity to meet projected load growth by developing a new 220 KV interconnection to the bulk transmission system via new SCE and Riverside substations.

Distribution System

Riverside's overhead distribution network contains 517 miles of distribution circuits with approximately 23,000 poles. Its underground distribution network has over 838 miles of cable.

As part of its IRP, RPU conducted a preliminary Integration Capacity Analysis to determine the ability of its distribution feeders to accommodate distributed energy resources and new electricity load. The preliminary analysis found there is currently sufficient capacity on many feeders to accommodate DER growth. RPU plans to track DER load growth more granularly, supported by its Advanced Metering Infrastructure (AMI) efforts.

In 2019, RPU began implementing AMI throughout its distribution system. The implemented AMI solution and devices (collectors and meters) also collect and transmit data from all currently installed legacy meters. As of December 2022, more than 25,000 customers have been upgraded to AMI meters (including all Commercial customers), and this AMI network is being used to collect and transmit data from all remaining legacy meters. Riverside is using this AMI data to model its distribution system and identify circuits and substations that have reached their distributed generation penetration limits and take actions necessary to alleviate these limits.

Disadvantaged Communities and Localized Air Pollutants

RPU is making efforts to minimize localized air pollutants and GHG emissions. Staff reviewed the *RPU 2023 IRP* filing to determine the extent to which it minimizes local air pollutants with a priority placed on disadvantaged communities.

As RPU decreases GHG emissions, it will also decrease emissions of other air pollutants produced when natural gas is burned to generate electricity. RPU has installed rooftop solar PV systems on several utility and community facilities to decrease use of fossil fuel generation.

Riverside supports efforts to increase vehicle electrification by providing increased access to public chargers, specifically in areas of disadvantaged communities. The City of Riverside and RPU policies and actions have supported the installation of electric vehicle charging infrastructure, the conversion of about 70 percent of the City's light-duty, medium-duty, and heavy-duty fleets to alternative fuels. Low-income customers and commercial customers located in a disadvantaged community are eligible for an increased rebate amount for residential and commercial electric vehicles charging equipment.

RPU's strategic plan for improving equity and air quality, Envision Riverside 2025, includes action items to reduce GHG emissions, with a focus on disadvantaged communities. These actions include studying opportunities to integrate solar generation, energy efficiency, fuel switching, energy storage and other advanced technology to support reduction of GHG emissions and other air pollutants, and integrating renewable energy resources at public and private facilities, including parking structure, parking lots, and buildings.

Net Energy Demand in Peak Hours

Senate Bill 338 (Skinner, Chapter 389, Statutes of 2017) requires POUs to consider existing renewable generation, grid operation efficiency, energy storage, distributed energy resources, and energy reduction measures (such as energy efficiency and demand response) to reduce the need for new or additional gas-fired generation and distribution and transmission resources (PUC Section 9621[c]). The *RPU 2023 IRP* includes a discussion of how RPU considers these resources to meet peak demand when selecting its portfolio. RPU's preferred portfolio is consistent with the requirement set forth above.

RPU's preferred resource portfolio projects that RPU will use renewable generation such as geothermal, solar, and wind power, as well as non-renewable resources such as gas-fired electricity generation, battery storage, large hydroelectric plants, and nuclear power to meet peak demand. The preferred portfolio also projects that RPU will use short-term capacity purchases to help meet peak demand each year between 2023 and 2045. The portfolio projects that in 2025 RPU will meet 46 percent of peak demand (plus the planning reserve

margin) with gas-fired power plants, 34 percent with short-term capacity purchases, 16 percent with renewable energy, and 4 percent with large hydroelectric and nuclear power. This translates to 323 MW from natural gas, 239 MW from short-term capacity purchases, 112 MW from renewables and 29 MW from hydroelectric and nuclear.

By 2030, RPU will decrease its natural gas capacity by letting its contract with IPP expire. RPU makes up for this decrease by increasing spot market purchases and investments in geothermal and wind. RPU adds 70 MW of geothermal and, while losing one wind contract, adds a net of 24 MW of wind by 2030.

The preferred portfolio also forecasts that between 2026 and 2040, a battery energy storage system will provide RPU with 70 to 80 MW of dependable capacity at peak. This system is described in more detail in the Energy Storage section below.

RPU's preferred resource portfolio forecasts that the utility will reduce gas-fired generation at peak by exiting its contract with IPP for gas-fired electricity after 2027, and by retiring RPU's gas-fired power plants. Springs will be retired after 2030, followed by RERC and Clearwater after 2039.

RPU also administers the Power Partner Program, a voluntary program for large commercial customers which may reduce RPU's peak demand. Under this program, between July and October, when demand peaks, RPU can ask participating customers to shed a portion of their electricity demand or to shift some demand off peak.[22]

Additional Procurement Goals

PUC Section 9621(d)(1) requires filing POUs to address procurement of energy efficiency and demand response, energy storage, transportation electrification, and a diversified portfolio, which are discussed in the next section. The resource adequacy provisions of this code section are discussed in the system reliability section above.

Energy Efficiency and Demand Response Resources

CEC staff finds that the *RPU 2023 IRP* is consistent with the requirement in PUC Section 9621(d)(1)(A) as it includes a discussion of energy efficiency and demand response programs it plans to implement and quantifies the amount of energy efficiency savings it plans to achieve.

RPU offers a wide variety of energy efficiency programs to both their residential and commercial customers. RPU also has Energy Savings Assistance Program and direct installation of efficiency upgrades and weatherization to multi-family, mobile homes, and small businesses. Residential customer programs include rebates for home appliances, heating ventilation and air conditioning (HVAC), shade trees, pool pumps, and home weatherization. For commercial customers, RPU offers rebates for HVAC, high efficiency lighting and controls, energy management systems, pool pumps, high efficiency electric motors, and Leadership in

22 Riverside Public Utilities staff. N.d. "Power Partners." *Riverside Public Utilities*. https://riversideca.gov/utilities/businesses/power-partners.

Energy and Environmental Design (LEED) construction. RPU also offers research grants for EE, renewable energy, energy storage, and electric transportation.

RPU has come close to or exceeded their energy efficiency targets between July 2013 and June 2022. RPU has a reporting frequency of their 10-year potential study of every four years. In 2021, the California Municipal Utilities Association hired GDS Associates, Inc. to develop, analyze, and quantify the potential impact of EE for their members. The study identified achievable and cost-effective efficiency savings and established annual targets from 2022 to 2031 for RPU which is set at 23,358 MWh.

RPU does not currently administer any type of long-term, dispatchable demand response program in its service territory. In response to the closure of San Onofre Nuclear Generating Station in 2012, RPU developed the Power Partners voluntary load curtailment program to call upon up to 10 MW of commercial and industrial load shedding capability during any California ISO Stage 3 Emergency, which it continues to administer. For large commercial customers, RPU uses commercial time of use rate structures to encourage and incentivize off-peak energy use.

Energy Storage

CEC staff finds that this IRP is consistent with the requirement in PUC Section 9621(d)(1)(B) to address procurement of energy storage as it discussed the potential role of energy storage on its system. Assembly Bill 2514 (Skinner, Chapter 469, Statutes of 2010) also requires POUs to evaluate the potential of energy storage systems as a resource and establish procurement targets, if appropriate.

RPU plans to add a 320 MWh/80 MW BESS in early 2026 which will also provide resource adequacy. This BESS will contribute to meeting RPU's peak demand starting in 2026. In its IRP process, RPU studied the addition of a 120 MW solar PV system paired with a 200 MWh/50MW BESS, as well as BESS replacements for its gas-fired Springs and RERC Facilities once they reach their anticipated end-of-life retirement dates. RPU ultimately did not choose to include these resources in its preferred resource portfolio, electing instead to look into these resource options further.

RPU is working to fully understand the ways energy storage will affect its system and system operations. RPU desires to optimize and increase the use of existing infrastructure and avoid costly upgrades through use of behind-the-meter storage at distribution and transmission substations, and electric vehicles being used as home battery storage systems. This evaluation includes how these systems will operate and shift load under various rates, voluntary load shedding programs, and potential demand response programs.

Transportation Electrification

Staff finds that this IRP is consistent with the requirement of PUC Sections 9621(b)(4) and 9621(d)(1)(C) as it addresses transportation electrification, projecting for light-duty electric vehicle (EV) growth.

Following the plan laid out in Envision Riverside 2025, RPU works closely with various departments within the City of Riverside to develop the plan to expand access to electric vehicle charging infrastructure and meeting their environmental and sustainability goals of reaching carbon neutrality by 2040. RPU has implemented various programs to help meet the

transportation electrification goals. This includes streamlining the permitting process for EV charging, clean fleet efforts, participating in the Low Carbon Fuel Standard Program, EV education and awareness, rebate programs, and electric rates supporting EV charging. RPU does not currently measure the EV load from charging stations but does track where EV charging is installed. There are approximately 223 level 2 public chargers, and 59 DC fast chargers installed within the City of Riverside. Most public access chargers are located around downtown, universities, shopping areas, and auto centers, most of which are in disadvantaged communities.

RPU included transportation electrification in its demand forecast but opted to not include CEC's 2022 California Energy Demand Update's (CEDU) Additional Achievable Transportation Electrification in their IRP as RPU staff were not able to fully validate the accuracy of the forecast for the City of Riverside. For light-duty EVs, RPU used a previous method produced by the CEC for transportation electric vehicle adoption, Transportation Electrification Common Assumptions 3.0. For medium and heavy-duty electric vehicles, RPU rescaled the 2021 Integrated Energy Policy Report projections for Southern California Edison. These previous versions have lower transportation electrification than the 2022 CEDU. RPU forecasts that its light-duty EV load growth will be roughly 47 percent of CEC's 2022 CEDU in 2030, while medium and heavy-duty EV load growth will exceed CEC's forecast at 120 percent. Combined, RPU's projected energy demand is 57 percent of the CEC's forecast in 2030.

RPU is supportive of transportation electrification and is making efforts to meet the City of Riverside and California climate goals but also see many challenges ahead. These challenges include the uncertainty of forecasts, rate tariffs for transportation electrification, and EVs versatility as energy storage. RPU plans to continue supporting these efforts with a more conservative approach as the electric system evolves.

Portfolio Diversification

PUC Section 9621(d)(1)(D) requires that POUs address the procurement of a diversified portfolio of resources consisting of both short-term and long-term electricity and demand-response products. Riverside's IRP and standardized tables demonstrate use of modeling and reliability analyses to balance a diverse resource portfolio including new resource procurement. Riverside's preferred portfolio contains an array of zero-emission resources, including solar, wind, geothermal, nuclear, battery storage, and large hydroelectric generation. Riverside's procurement of battery storage and geothermal add dependable capacity to that provided by its existing gas-fired, nuclear, and hydroelectric resources. Based on staff's review, Riverside's IRP meets this portfolio diversification requirement.

APPENDIX A: Abbreviations

Abbreviation	Term
AAEE	Additional achievable energy efficiency
AMI	Advanced Metering Infrastructure
BESS	Battery energy storage system
California ISO	California Independent System Operator
CARB	California Air Resources Board
CEC	California Energy Commission
CEDU	California Energy Demand Update
Clearwater	Clearwater Power Plant
CPUC	California Public Utilities Commission
DER	Distributed energy resources
EV	Electric vehicle
GHG	Greenhouse gas
GWh	Gigawatt-hours
HVAC	Heating Ventilation and Air Conditioning
IEPR	Integrated Energy Policy Report
IPP	Intermountain Power Project
IRP	Integrated resource plan
LEED	Leadership in Energy and Environmental Design
LSE	Load-serving entity
MMTCO2e	Million metric tons of carbon dioxide equivalent
MW	Megawatt
MWh	Megawatt-hour
PEV	Plug-in electric vehicle
POU	Publicly owned utility
PPA	Power purchase agreement
PUC	Public Utilities Code

Abbreviation	Term
RERC	Riverside Energy Resource Center
RIPC	Risk Integrated Portfolio Cost
RPS	Renewables Portfolio Standard
RPU	Riverside Public Utilities
SB 350	Senate Bill 350 (De León, Chapter 547, Statutes of 2015)
SCPPA	Southern California Public Power Authority
Solar PV	Solar photovoltaic
Springs	Springs Generating Station
TPP	Transmission Planning Process

APPENDIX B: Glossary

Term	Definition
Additional achievable energy efficiency (AAEE)	Energy efficiency savings not yet considered committed but deemed likely to occur, including impacts from future updates of building codes and appliance standards and utility efficiency programs expected to be implemented.
Additional Achievable Fuel Substitution	Energy demand from consumption changing from fossil fuels to electricity, such as building electrification, not yet considered committed but deemed likely to occur.
Biogas	Gases from renewable resources.
Behind-the-meter resources	Generation and storage located at the customer site. More generally, it can refer to any device located at the customer site that affects the consumption of grid-provided energy (appliance control systems, for example)
California Air Resources Board (CARB)	The "clean air agency" in California government. CARB's main goals include attaining and maintaining healthy air quality, protecting the public from exposure to toxic air contaminants, and providing innovative approaches for complying with air pollution rules and regulations.
California Energy Commission (CEC)	The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The Energy Commission's seven major areas of responsibility are: 1. Advancing State Energy Policy 2. Achieving Energy Efficiency 3. Investing in Energy Innovation 4. Developing Renewable Energy 5. Transforming Transportation 6. Overseeing Energy Infrastructure 7. Preparing for Energy Emergencies Funding for the Commission's activities comes from the Energy Resources Program Account, Federal Petroleum Violation Escrow Account, and other sources.

Term	Definition
California Independent System Operator (California ISO)	The non-profit that runs the bidding process to determine which electricity sources will be deployed to meet electricity demand across much of California.
Demand forecast	A forecast of electricity demand served by the electric grid, measured by peak demand and energy consumption. Some factors that affect the demand forecast include economics, demographics, behind-the-meter resources, and retail rates.
Demand response	Providing wholesale and retail electricity customers with the ability to choose to respond to time-based prices and other incentives by reducing or shifting electricity use, particularly during peak demand periods, so that changes in customer demand become a viable option for addressing pricing, system operations and reliability, infrastructure planning, operation and deferral, and other issues.
Distributed energy resources	Small-scale power generation technologies (typically in the range of 3 to 10,000 kilowatts) located close to where electricity is used (for example, a home or business) to provide an alternative to or an enhancement of the traditional electric power system.
Electrolyzer	A technology that uses electricity to split water into oxygen molecules and hydrogen molecules.
Greenhouse gas (GHG)	Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halogenated fluorocarbons (HCFCs), ozone (O3), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).
Integrated Energy Policy Report (IEPR)	Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the Energy Commission to prepare a biennial integrated energy report. The report contains an integrated assessment of major energy trends and issues facing California's electricity, natural gas, and transportation fuel sectors. The report provides policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy, and protect public health and safety.
Integrated resource plan (IRP)	A plan adopted by the governing board of a POU under PUC Section 9621.
IRP filing	An IRP adopted by the filing POU's governing board that is electronically submitted to the Energy Commission, along with the standardized tables and supporting Information, by the filing POU or authorized representative.
Power purchase agreement (PPA)	A contract between an electricity generation source and another party, in which the other party pays to receive a predetermined portion of the electricity the source generates for a predetermined length of time.

Term	Definition
Plug-in electric vehicle (EV)	A vehicle that uses one or more electric motors for propulsion. Electric vehicles include battery-electric and plug-in hybrid vehicles.
Public Utilities Code (PUC)	The set of laws that regulate public utilities in California, including natural gas, telecommunications, private energy producers, and municipal utility districts.
Renewables Portfolio Standard (RPS)	A regulation that requires a minimum procurement of energy from renewable resources, such as wind, solar, biomass, and geothermal.
Senate Bill 350 (De León, Chapter 547, Statutes of 2015)	Also known as the Clean Energy and Pollution Reduction Act, this bill established clean energy, clean air, and greenhouse gas reduction goals, including reducing greenhouse gas to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050. The California Energy Commission is working with other state agencies to implement the bill.
Solar photovoltaic (Solar PV) system	A technology which uses sunlight to generate electricity using photovoltaic panels.
Southern California Public Power Authority	An organization of southern California utilities that constructs and operates electricity generation and transmission projects.
Standardized Tables	The four tables that are required with the IRP filing submitted to the Energy Commission. These tables include information and data necessary to help staff determine if the IRP is consistent with PUC Section 9621. The four standardized tables are Capacity Resource Accounting Table (CRAT), Energy Balance Table (EBT), Renewable Procurement Table (RPT), and Greenhouse Gas Emissions Accounting Table (GEAT).
Zero-emission resources	An engine, motor, process, or other energy source, that emits no waste products that pollute the environment or disrupt the climate.