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STAFF REPORT

Review of Silicon Valley Power 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. Silicon Valley Power submitted its Integrated Resource Plan and supplemental information for review April 30, 2024. This staff report presents the results of the California Energy Commission staff review of the *Silicon Valley Power 2023 Integrated Resource Plan*.

Keywords: Publicly owned utility, integrated resource plan, Silicon Valley Power, SVP, demand, resources, portfolio, generation, transmission, distribution, Renewables Portfolio Standard, forecast, energy efficiency, transportation electrification, demand response, greenhouse gas, GHG, emissions, system reliability

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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 *Silicon Valley Power 2023 Integrated Resource Plan* serves as a framework for the utility's transition from carbon resources such as natural gas to clean renewable resources such as wind, geothermal, hydroelectric, biogas, and solar. Silicon Valley Power has historically sold electricity at lower prices compared with many other electricity providers in the area, which has historically made Silicon Valley Power an attractive electricity provider for large technology companies. Silicon Valley Power projects that large technology companies will place new data centers in Silicon Valley Power territory between 2024 and 2035, resulting in a near doubling of annual electricity demand. Silicon Valley Power serves mostly large technology companies, which has allowed the utility to maintain an excellent credit rating.

Silicon Valley Power asserts that because of its excellent credit rating, renewable and noncarbon generation sources outside the utility's service territory will choose to contract with Silicon Valley Power. Silicon Valley Power is confident that this approach will allow the utility to meet rapidly growing electricity demand while meeting renewable energy, carbon-free energy, affordability, and reliability requirements.

In reviewing the *Silicon Valley Power 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. Silicon Valley Power's preferred portfolio includes large additions of renewable resources, especially wind and geothermal power. Silicon Valley Power is confident it can contract with renewable energy generators sufficient for the utility to meet state emission and renewable 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 has lower retail rates, compared with many other load-

serving entities in the area. The utility projects that if Silicon Valley Power procures its preferred resource portfolio from the *2023 Integrated Resource Plan*, its retail electricity rate would increase from roughly $0.14 per kilowatt-hour (kWh) (2022 dollars) in 2026 to $0.187 per kWh in 2035. Silicon Valley Power may require additional local transmission capacity, via the California Independent System Operator (California ISO) Transmission Planning Process, 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). In addition to nonrenewable sources such as natural gas and large hydroelectric power, Silicon Valley Power's preferred portfolio relies on renewable sources such as geothermal and wind power to meet substantial portions of peak load. Silicon Valley Power is also working with a commercial customer to install a behind-the-meter battery energy storage system that would decrease Silicon Valley Power's use of gas for electricity generation in the evenings, when Silicon Valley Power's demand currently peaks.
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). Silicon Valley Power has implemented programs to increase energy efficiency and has contracted with a company to operate a utility-scale battery energy storage system. The preferred portfolio demonstrates renewable resource diversity by including wind, geothermal, small hydropower, biogas, and solar power. The preferred portfolio also includes natural gas plants, large hydropower, 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]

Silicon Valley Power (SVP) filed its initial IRP on August 23, 2019 and was deemed compliant by the CEC in December 2019. Santa Clara City Council adopted SVP's updated IRP, the *Silicon Valley Power 2023 IRP (SVP 2023 IRP)*, on December 5, 2023. SVP filed the *SVP 2023 IRP* with the CEC on April 30, 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 SVP 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.

Silicon Valley Power

SVP is a utility owned by the City of Santa Clara and is the sole electricity provider within Santa Clara city limits. SVP's service territory is in the south Bay Area, shown in Figure 1. In 2023, SVP had roughly 60,685 customers. However, most of SVP's electricity sales are to a relatively small number of commercial and industrial customers — residential accounts make up 85 percent of SVP's customers but just 5.7 percent of retail sales. Since most of SVP's

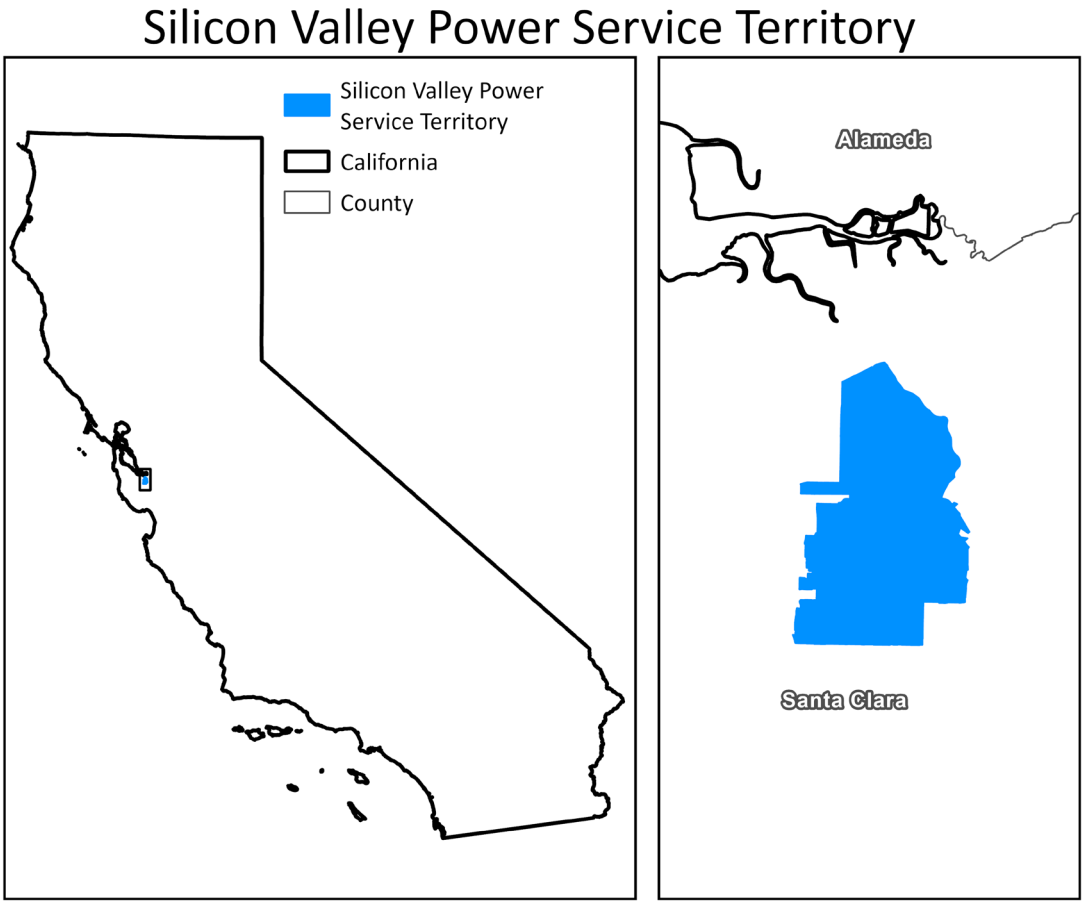
1 Public Utilities Code Section 9621, https://codes.findlaw.com/ca/public-utilities-code/puc-sect-9621/.

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.

electricity sales are to commercial and industrial customers, the utility has a high load factor — 78.3 percent in 2023.[4] In 2023, the utility's peak demand was 669 megawatts (MW), and its total sales, 4,480 gigawatt-hours (GWh).

Figure 1: Map of Silicon Valley Power Service Territory



Source: CEC

SVP has this distribution of sales due to its location and its electricity rates. The SVP service area is within Silicon Valley, the hub for high-tech industries in the United States, many of which use large amounts of electricity. SVP has historically had lower electricity rates, compared with many of the other load-serving entities (LSEs) in Silicon Valley. For this reason, tech companies with high demand for electricity have chosen to operate within SVP's service territory, and a large portion of SVP's electricity sales go to relatively few commercial and industrial customers. SVP is expecting a large increase in electricity demand from data centers in their service territory over the next 10 years. SVP projects that increased demand from data

4 Silicon Valley Power staff. 2023. *City of Santa Clara Electric Utility Fact Sheet — Dec 2023*, https://www.siliconvalleypower.com/home/showpublisheddocument/83511/638470585164300000.

centers will be the primary driver of changes in electricity demand in their service territory over this period.

SVP owns multiple generation sources within Santa Clara city limits: the natural gas power plants Donald Von Raesfeld and Gianera Generating Station and the solar resources Jenny Strand Solar Park and Tasman Parking Structure Solar PV. SVP also owns or contracts with other generation sources, most of which are located elsewhere in California. SVP-owned or contracted generation sources include natural gas, hydroelectric, landfill gas, wind, and solar generation sources. SVP is located in the California Independent System Operator (California ISO) balancing authority, which serves as the balancing authority and market operator.

SVP owns the distribution system located within Santa Clara city limits. However, SVP's grid is bordered on all sides by PG&E's grid. SVP receives electricity through three different points of interconnection, two inside Santa Clara at 115 kV and one in San Jose at 230 kV, which connect SVP and PG&E grids. California ISO charges SVP a volumetric rate — the Transmission Access Charge (TAC) — for electricity SVP imports over PG&E transmission lines.

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]

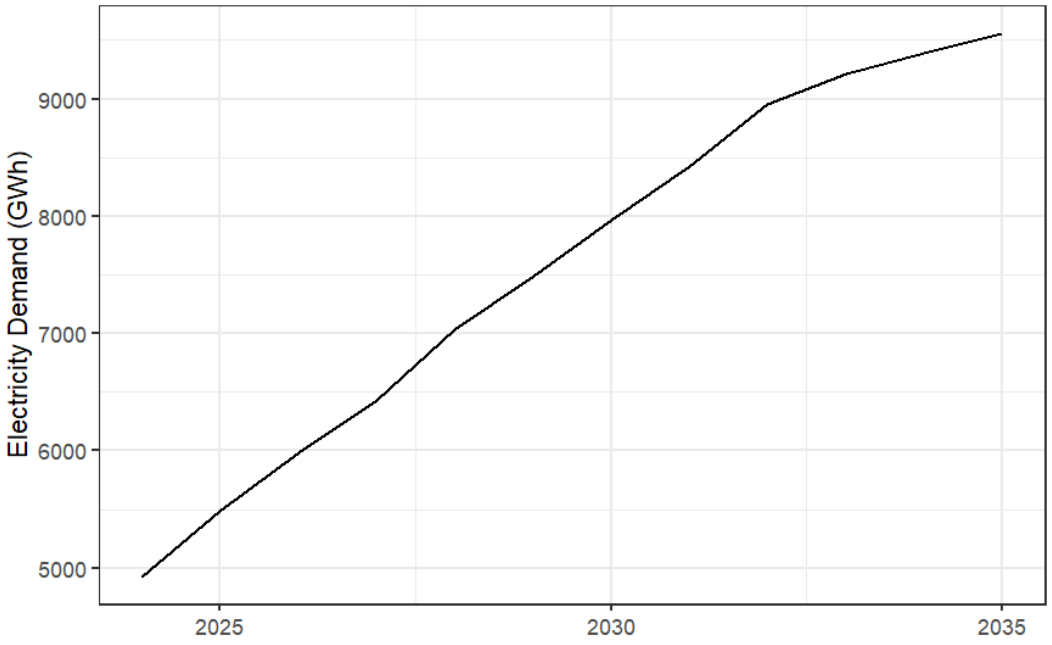
SVP had previously created a forecast of hourly energy demand for the period 2023–2035, which SVP submitted for the *2022 Integrated Energy Policy Report Update (IEPR Update)* demand forecast. SVP used this hourly forecast to project annual electricity demand. SVP then adjusted its annual demand projections to account for energy efficiency and transportation and building electrification. The utility used the CEC *2022 IEPR Update* Scenario 3 for Additional Achievable Energy Efficiency (AAEE) and Additional Achievable Fuel Substitution as the demand modifiers for energy efficiency and building electrification. SVP used the *2022 IEPR Update* baseline scenario for transportation electrification to create a demand modifier for transportation electrification. SVP applied PG&E hourly load shapes to its annual demand numbers to create hourly demand projections.

SVP projects that its annual electricity demand will nearly double between 2023 and 2035. Figure 2 shows the projections in SVP's preferred resource portfolio for net electricity demand for 2024–2035. Figure 3 shows the projections for peak demand of the preferred portfolio.

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

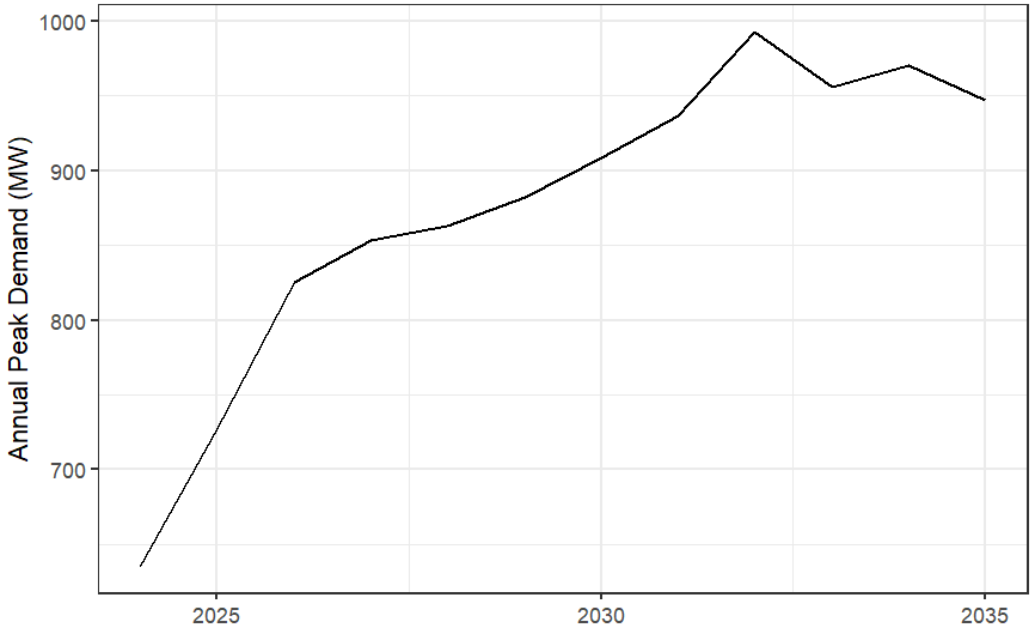
6 CEC demand forecast at the time of POU IRP study: California Energy Commission. 2023. "CED 2023 Baseline LSE and BAA Tables," https://efiling.energy.ca.gov/GetDocument.aspx?tn=255153.

Figure 2: SVP Preferred Portfolio Forecast for Annual Electricity Demand



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

Figure 3: SVP Preferred Portfolio Annual Peak Forecast



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

Most of this increased demand comes from new industrial load. SVP projects that between 2023 and 2035, industrial demand will increase from 4,184 to 8,810 GWh, while residential demand will increase from 271 to 502 GWh, and commercial demand will increase from 98 to 368 GWh.

More specifically, SVP expects a large majority of the increase in demand will come from data centers built in its service area.[7] Tech companies are investing heavily in generative artificial intelligence (AI, for example, ChatGPT) and need electricity to power the data centers to train and use the technology. Tech companies are forecasting very large increases in generative AI use and, correspondingly, very large increases in electricity demand from data centers. For example, Lawrence Berkeley National Laboratory released a report in December 2024 forecasting that annual electricity consumption by data centers in the United States will increase from 176 terawatt hours in 2023 to between 325 terawatt hours and 580 terawatt hours in 2028.[8] To keep costs down, tech companies are looking to site data centers in locations in Silicon Valley that have low retail electricity prices – including Silicon Valley Power service territory.

CEC staff compared SVP's energy and peak demand forecast to the Energy Commission's 2023 Demand Forecast Update report. The SVP forecast shows one to eleven percent less energy demand as compared to the Energy Commission Forecast Update, each year between 2024 and 2035, which is within the CEC guidelines acceptable range.

SVP Planning Process

SVP's goal in drafting the *SVP 2023 IRP* was to create a roadmap for future resource procurement, including energy efficiency, transportation electrification, and energy storage, which would allow SVP to meet the requirements of PUC Section 9621. As part of the IRP process, SVP hired a consultant to perform capacity expansion modeling using PLEXOS LT. The modeling found the lowest-cost resource portfolio for the planning period while meeting expected demand and adhering to state requirements.

SVP noted that there are several scenarios for how the requirements on utilities may change in the future. For this reason, SVP's consultant modeled three different scenarios.

- Base SB 100: SVP must meet current state requirements for renewable and zero-carbon electricity procurement — that is, renewable energy must account for 60 percent of electricity sales in 2030.
- Accelerated SB 100: Seventy percent of SVP's electricity sales must come from renewable and zero-carbon sources in 2030, and 100 percent from renewable and zero-

7 Olson, Arne, Aaron Burdick, Jimmy Nelson, Nathan Lee, Chen Zhang, Rawley Loken, Sam Schreiber, and Cameron Morelli. 2023. *2023 Integrated Resource Plan: Silicon Valley Power (SVP).* Energy and Environmental Economics, Inc. https://efiling.energy.ca.gov/GetDocument.aspx?tn=256106&DocumentContentId=91885, p. 4.

8 Shehabi, Arman, Sarah J. Smith, Alex Hubbard, Alex Newkirk, Nuoa Lei, Md Abu Bakar Siddik, Billie Holecek, Jonathan Koomey, Eric Masanet, and Dale Sartor. 2024. *2024 United States Data Center Energy Usage Report*. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637. https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report_1.pdf, p. 5-6.

carbon sources in 2035. In 2035, the utility can still use fossil fuels to generate electricity up to the amount lost from line and storage losses.

- Zero Emissions With Emerging Technology: SVP uses technologies that are not currently commercially available to have a zero-emission resource portfolio by 2035.

SVP and its consultant used models to find the least-cost resource portfolio under each scenario. SVP submitted the resource portfolio for the Accelerated SB 100 scenario as their preferred resource portfolio.

While developing the *SVP 2023 IRP*, SVP used a community survey and a hybrid (in-person and virtual) community workshop to gather feedback from stakeholders, including large business customers.[9]

Resource Procurement Plan

The guidelines require that POUs report the mix of resources they plan to use to meet demand through 2030.[10] 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 has determined the *SVP 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

In 2022, 34 percent of SVP's power came from renewable sources, and an additional 40 percent of SVP's power came from hydroelectric generation.[11] SVP's existing electricity generation resources are detailed below.

SVP owns two fossil fuel-based power plants within Santa Clara. The Gianera Generating Station has two combustion turbines that run on natural gas and has a nameplate capacity of 49.5 MW. The other plant is the Donald Von Raesfeld, a combined-cycle natural gas power plant with a nameplate capacity of 122 MW.

SVP also procures electricity from two solar power resources located within Santa Clara. In 2011, the solar company MiaSole donated 1,000 PV modules to SVP; these modules, called the Jenny Strand Solar Park, are sited within city limits and have a nameplate capacity of 100 kW. SVP also has a 20-year power plant agreement (PPA) with Tioga Solar Santa Clara for solar panels on a parking garage with a nameplate capacity of roughly 400 kW.

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9 Ibid., p. 14, 16.

10 *POU IRP Guidelines*, p. 6.

11 Olson, Arne, Aaron Burdick, Jimmy Nelson, Nathan Lee, Chen Zhang, Rawley Loken, Sam Schreiber, and Cameron Morelli. *2023 Integrated Resource Plan: Silicon Valley Power (SVP)*, p. 31.

SVP owns additional zero carbon electricity generation sources and has long-term contracts with other zero-carbon generation sources across California. SVP owns, or has contracted with, hydroelectric resources that together have several hundred MW of electric capacity. More specifically, SVP owns the generator at Black Butte Dam (6.2 MW) near Orland (Glenn County) and the Stony Gorge generator (4.9 MW) near Willows (Glenn County). SVP has PPAs with four hydroelectric generators in Tuolumne County with a combined capacity of 125.6 MW. This includes four run-of-river hydroelectric resources in Madera County with a combined nameplate capacity of 32.3 MW; the Rio Bravo plant in Kern County (14 MW); and 126 MW of hydroelectric resource from the Central Valley Project. SVP also purchases the electricity produced by the Grizzly Creek power plant in Plumas County (17.7 MW).

SVP has PPAs to receive shares of the electricity generation from Aquamarine Westside solar project in Kings County and Samsung's Central 40 solar project in Stanislaus County. They also have a PPA to receive all electricity generated by Recurrent Energy's RE Rosamond One solar project in Kern County. The three PPAs together total 135 MW of solar resources.

SVP has a PPA with Avangrid in Kern County for electricity generation from the 50 MW Manzana Wind Power Project. SVP has contracted with Cimarron in Baja California for 300 MW of wind power and has signed PPAs with S-Power for an additional 49.5 MW (nameplate capacity) of wind power from Alameda County, which are both planned to begin delivering power to SVP in 2026.

The City of Santa Clara is also a member of the Northern California Power Agency (NCPA) and is entitled to a share of multiple NCPA generation resources. Specifically, SVP is entitled to a total of 31.25 MW of electricity generation from two natural gas-powered combustion turbines in Alameda, Alameda CT 1 and CT 2, and one gas-powered combustion turbine in Lodi, Lodi CT, all of which are owned by NCPA.

SVP is entitled to 25.75 percent of the electricity generated by the Lodi Energy Center (LEC), a 302 MW natural gas power plant in Lodi (San Joaquin County) owned by NCPA. NCPA plans to switch the fuel source for LEC from natural gas to hydrogen. Hydrogen would be produced on-site using an electrolyzer and would make up 45 percent of the fuel mix starting in 2027, increasing to 100 percent of the fuel mix by 2032. NCPA estimates that buying an electrolyzer to accomplish the 45 percent goal will cost $225 million. NCPA estimates that upgrading the electrolyzer to produce enough hydrogen to switch the fuel mix to 100 percent hydrogen will cost an additional $2 billion.

SVP is also entitled to hydroelectric resources through NCPA, including 93.6 MW of hydroelectric resource from the NCPA Hydroelectric Project, 78 MW from the South Feather Power Project, and 6.8 MW from Camp Far West Hydroelectric Facility.

SVP is entitled to roughly 97.5 MW of geothermal resource from NCPA's Geothermal Project, and the utility has a PPA with Calpine geothermal for 50 MW of geothermal power in 2025 and 2026, increasing to 100 MW from 2027 until 2036. These geothermal resources are in Lake and Sonoma Counties. SVP procures additional resources through a PPA with City of Redding Electric Utility and Modesto Irrigation District, referred to as the "M-S-R PPA." Through the M-

S-R PPA, SVP is entitled to 122.5 MW from wind projects Big Horn I and II in Washington state.

Procurement Strategy

Between 2024 and 2035, SVP aims to procure enough zero-carbon and renewable energy to meet the large increase in electricity demand from their customers while meeting targets for greenhouse gas emission reduction, renewable procurement, affordability, and reliability. SVP is confident that its credit rating and procurement strategy will allow it to procure sufficient renewable and zero carbon energy to meet future electricity demand while meeting state requirements.

When modeling future resource portfolios to meet these goals, SVP assumed geothermal and wind power would be available for SVP to procure based on the California Public Utilities Commission (CPUC) 2022–2023 IRP cycle resource potential. The model was allowed to select up to 10.33 percent of the total geothermal potential or 347 MW. Moreover, the model could select up to 5 percent of total wind power that could be generated in-state or offshore in Humbolt Bay and Morro Bay. In addition to this amount of geothermal and wind power, the model was allowed to select any amount of solar power. SVP did not include DER as a candidate resource in its capacity expansion modeling because DERs have higher capital costs.

Resource Portfolio Evaluation

The preferred resource portfolio projects that SVP will meet growing electricity demand from data centers, in large part, by procuring large amounts of wind (740 MW) and geothermal power (330 MW) by 2035.[12]

More specifically, the preferred resource portfolio projects that SVP will procure 500,000 MWh of electricity from solar resources in Southern California and 500,000 MWh of electricity from wind resources in New Mexico annually starting in 2026.

SVP will contract for additional wind power generated in Wyoming starting in 2027, additional geothermal power generated in California starting in 2028, and additional wind power generated in Central California starting in 2029. The amount of electricity procured from these new contracts will increase over time. SVP assumes that it will procure:

- 470,000 MWh of geothermal in 2028, increasing to 2,820,000 MWh in 2035.
- 330,000 MWh of wind in Wyoming in 2027, increasing to 940,000 MWh in 2035.
- 260,000 MWh of wind resources in California in 2029, increasing to 1,240,000 MWh in 2035.

The preferred resource portfolio also decreases gas-based electricity generation over the forecast period. In the preferred resource portfolio, electricity generation from the Gianera Generating Station turbines decreases starting in 2029 and ceases altogether in 2033.

12 Ibid., p. 97.

Electricity generation from Donald Von Raesfeld decreases from 1,280,000 MWh in 2024 to 1,026,000 MWh in 2030 and 508,000 MWh in 2035. Electricity generation from SVP's share of the Lodi CT also ceases after 2025.

In addition, in the preferred resource portfolio, the utility's short-term purchases of electricity decrease from roughly 1,000,000 MWh annually in 2024 and 2025 to roughly 300,000–700,000 MWh annually for the remainder of the forecast period. The preferred resource portfolio forecasts that short-term sales will increase over the forecast period from roughly 250,000 MWh in 2024 to 400,000 MWh in 2030 and 480,000 MWh in 2035.

CHAPTER 2:
Review for Consistency With PUC Section 9621 Requirements

This chapter summarizes the main elements of the *SVP 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 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.[13] 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 SVP plans to achieve the established GHG emission target range of 30 million to 53 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) published in the *SB 350 IRP Electric Sector GHG Planning Targets: 2020 Update (2020 CARB Update)*.[14] SVP's preferred portfolio results comply with the requirement of PUC Section 9621(b)(1).

In 2023, the 2030 electricity sector GHG planning target range was brought into alignment with CARB's *2022 Scoping Plan for Achieving Carbon Neutrality* (*2023 CARB Update*) adopted in September 2023.[15] The electricity sector GHG planning target range of 30–38 $MMTCO_2e$ retains the lower bound of 30 $MMTCO_2e$ from the *2020 CARB Update* but reduces the upper bound from 53 to 38 $MMTCO_2e$. CEC staff emphasizes that the *2023 CARB Update* electricity sector GHG emission targets have not been incorporated into the guidelines and, as such, preferred portfolio results that are within the *2020 CARB Update* range but not the *2023 CARB Update* range are in compliance with PUC Section 9621(b)(1).

SVP's preferred portfolio, as specified in the *SVP 2023 IRP*, will allow SVP to fall under its utility-specific *2020 CARB Update* GHG target of 275,000–485,000 $MTCO_2e$ but not the *2023*

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

14 CARB. March 2021. *Senate Bill 350 Integrated Resource Planning Electricity Sector Greenhouse Gas Planning Targets: 2020 Update*, https://ww2.arb.ca.gov/sites/default/files/2021-04/sb350-final-report-2020.pdf.

15 CARB. September 2023. *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.

CARB Update target of 275,000–348,000 $MTCO_2e$. CEC staff reviewed the GHG emissions associated with SVP's preferred portfolio of resources in 2030 and independently assessed the emission factors associated with various resources in SVP's portfolio to ensure consistency with other data available.

SVP's preferred portfolio results in roughly 481,000 $MTCO_2e$ in 2030, consistent with the requirement of PUC Section 9621(b)(1). Table 1 shows GHG emissions for SVP's preferred portfolio of resources in 2030.

The guidelines specify that, when calculating emissions associated with short-term or spot market electricity sales and purchases, POUs must assign these short-term sales and purchases an emission factor of 0.428 metric tons CO_2e per MWh of electricity. SVP expressed to CEC staff that the utility does not believe this approach accurately estimates the emissions associated with SVP's spot market sales and purchases. SVP asked that CEC consider using average emissions associated with electricity generation across the California ISO in each hour to calculate spot market sales and purchases. This request will be taken into consideration during the guideline update prior to the next POU IRP cycle in 2028.

Table 1: Greenhouse Gas Emissions From SVP Preferred Portfolio

Power Source	Fuel Type	GHG Intensity (MT CO_2e /MWh)	Total Emissions (MT CO_2e) 2024	Total Emissions (MT CO_2e) 2025	Total Emissions (MT CO_2e) 2030
DVR	Natural Gas	0.424	548,599	556,173	433,497
Gianera 1	Natural Gas	0.809	8,007	8,007	1,096
Gianera 2	Natural Gas	0.809	8,007	8,007	2,350
Alameda CT 1	Natural Gas	0.762	0	0	0
Alameda CT 2	Natural Gas	0.762	0	9,181	0
Lodi CT	Natural Gas	0.742	9,700	15,034	0
LEC	Natural Gas	0.363	174,212	212,381	0
LEC Hydrogen 45 Blend	Natural Gas/Hydrogen Blend	0.286	0	0	16,419
Net Spot Market Purchases (sales)	System	0.428	302,675	410,928	27,478
Total Portfolio Emissions	**NA**	**NA**	**1,051,199**	**1,219,710**	**480,840**

Source: CEC, Energy Assessments Division, Based on *SVP 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.[16] Staff reviewed the renewable procurement table and the discussion in the IRP filing. Staff finds that the *SVP 2023 IRP's* preferred plan is consistent with the RPS procurement requirements and all interim compliance periods, as well as the requirements of PUC Section 9621(b)(2).

SVP's renewable procurement plans include additions of new renewable resources between year-end 2023 and 2030, and SVP anticipates that RPS-eligible renewables will account for at least 60 percent of retail sales in 2030.

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

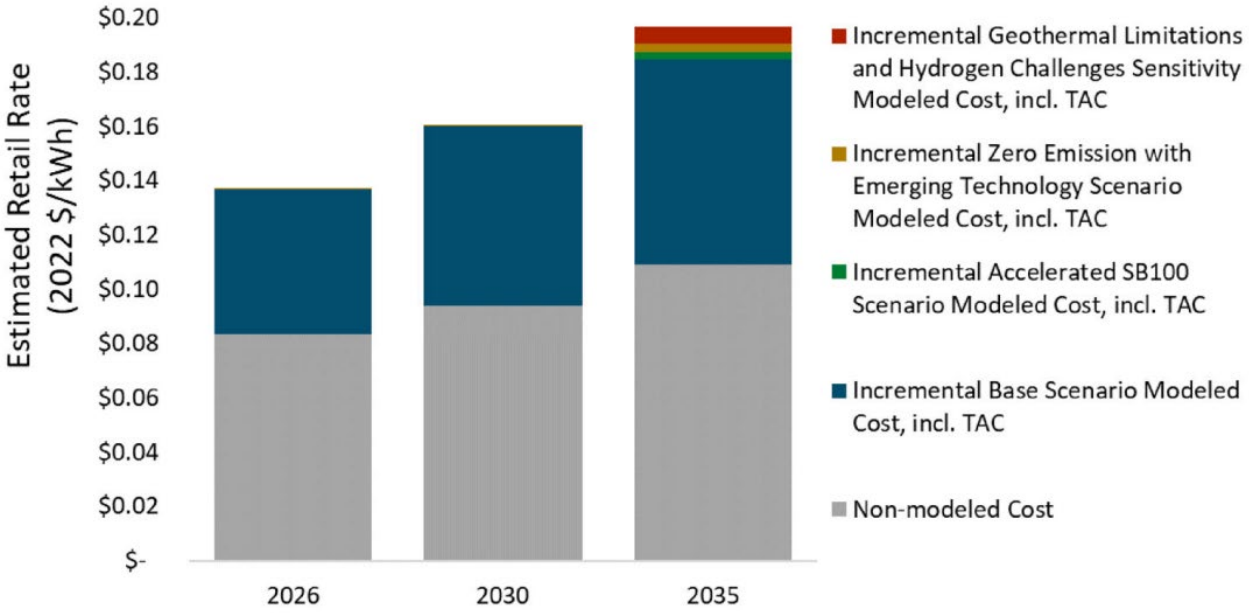
The *SVP 2023 IRP* states that "for SVP, lower rates have been an economic driver for robust development within Santa Clara, and continuing this long-standing focus on providing affordable and reliable services to customers is a goal of this IRP."[17]

Figure 4 illustrates the retail electricity rates customers will pay, according to capacity expansion modeling, if SVP procures various resource portfolios. The preferred resource portfolio is called Accelerated SB 100 and is represented in green. The sum of the grey, blue, and green segments represents the predicted retail rates if SVP procures the preferred resource portfolio. SVP's capacity expansion modeling estimates that, if the utility implements the preferred resource portfolio, its retail rates will be roughly $0.14 per kWh (in 2022 dollars) in 2026, $0.16 per kWh in 2030, and $0.187 per kWh in 2035.

16 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/.

17 Olson, Arne, Aaron Burdick, Jimmy Nelson, Nathan Lee, Chen Zhang, Rawley Loken, Sam Schreiber, and Cameron Morelli. 2023. *2023 Integrated Resource Plan: Silicon Valley Power (SVP)*, p. 117.

Figure 4: Modeled Impact of Resource Portfolios on Retail Electricity Rate



Source: *SVP 2023 IRP*, p. 118.

System and Local Reliability

SB 350 requires filing POUs to adopt an IRP that ensures system and local reliability and addresses resource adequacy requirements.[18] [19] Staff reviewed the *SVP 2023 IRP* filing capacity reporting table and the accompanying discussion. Staff finds that SVP has planned sufficient resources to maintain a reliable electric system. In addition, SVP'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).

Historically, LSEs on the California ISO have planned to ensure that they have enough resource to meet peak demand by taking the CEC's calculation for the ISO's coincident peak in each month and calculating the amount the LSE contributes to that coincident peak. The LSE then makes sure it has enough resource to meet 115 percent of the LSE's contribution. However, many LSEs are no longer defaulting to 15 percent as it may not be sufficient for portfolios with high levels for variable resources like solar. For reliability in the *SVP 2023 IRP*, SVP used the CPUC's 2022–2023 IRP approach to reliability modeling that determined the level of resources needed to support a 0.1 day/year loss of load expectation (LOLE) in the California

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

19 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/.

ISO. SVP determined the load share level of resources needed based on the forecasted coincident managed peak and marginal effective load carrying capacity (ELCC) values for new resources.

SVP has several reliable power sources within its service territory such as the natural gas power plants Donald Von Raesfeld and Gianera Generating Station. In SVP's preferred resource portfolio, these power plants will provide 165 MW during the CAISO coincident system peak in 2024, increasing to 177 MW during the coincident system peak in 2035. SVP is also planning to site a 200 MWh BESS (discussed below) at the Kifer Receiving Station within SVP service territory. In SVP's preferred resource portfolio, the BESS will provide 45 MW during the CAISO coincident peak in 2025, decreasing to 20 MW in 2035. If SVP has a resource shortfall, the utility will buy additional resources (using short-term purchases) to meet local reliability needs.

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 determined that the *SVP 2023 IRP* filing adequately plans to maintain and enhance its transmission and distribution systems. Staff finds that SVP is planning for enough transmission to adequately deliver resources to its service area to meet the requirement as discussed below. Staff also finds that SVP plans to address the adequacy of its distribution system and as such finds the *SVP 2023 IRP* consistent with the transmission and distribution requirements set forth above.

Transmission System

SVP relies on the California ISO to provide sufficient transmission capability to transmit electricity into SVP's service territory. SVP owns the entire electric distribution system within Santa Clara city but not the electricity transmission and distribution systems in surrounding areas. SVP owns two 115 kV receiving stations, within its service territory, where the utility's distribution system is connected to PG&E's transmission system. SVP also has a 230 kV interconnection with PG&E at PG&E's Los Esteros Substation in the City of San Jose.

SVP projects large increases in annual electricity demand and in peak demand. SVP projects that it will need more transmission capability to accommodate the increased demand. However, SVP cannot increase transmission capability into its service territory on its own. Any projects to increase transmission capability feeding into SVP's service territory must be approved by the California ISO as part of the California ISO's Transmission Planning Process (TPP).

As of the writing of the *SVP 2023 IRP*, the California ISO had approved additional projects to increase transmission capacity, including two 500 MW high-voltage, direct-current lines near SVP's service territory. Nonetheless, if the ISO does not approve additional increases in transmission capability feeding into SVP's electricity system, SVP may not have enough transmission capability by 2035 to meet electricity demand.

Distribution System

SVP owns the electricity distribution system within its service territory. According to the *SVP 2023 IRP*, the distribution system includes 27 stations, 27 miles of 60 kV lines, and roughly 500 miles of 12 kV lines. More than 60 percent of the 12 kV lines are underground. SVP has planned and contracted for upgrades to its distribution system, such as a $26.92 million project to expand the Esperanca Substation.

Disadvantaged Communities and Localized Air Pollutants

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

The *SVP 2023 IRP* states that SVP's service territory does not have land for large solar arrays or the resources to generate electricity from other noncarbon sources, limiting SVP's ability to generate electricity locally from nonfossil sources. Nonetheless, SVP does have two smaller solar projects in its service territory that generate electricity without substantial on-site GHG emissions. First, SVP has a PPA with Tioga Solar Santa Clara for a 389.76 kW (nameplate capacity) solar PV array on a parking structure on Tasman Drive. Second, SVP has a 100 kW solar PV system, the Jenny Strand Solar Park.

Furthermore, in SVP's preferred scenario, the utility would decrease the amount of electricity generated annually from natural gas power plants in its service territory. This lower generation from local gas plants will decrease local GHG emissions. It will also decrease emissions of other air pollutants produced when natural gas is burned to generate electricity.

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 *SVP 2023 IRP* includes a discussion of how it considers preferred resources to meet peak demand when selecting its portfolio. SVP's preferred portfolio is consistent with the requirement set forth above.

SVP's preferred resource portfolio forecasts that the utility will use renewable generation, energy storage, energy efficiency, and demand response programs to meet SVP's share of California ISO's system-level marginal reliability need. The preferred resource portfolio forecasts that SVP will rely on SVP-owned or contracted geothermal resources Geo Plant 1 Units 1 and 2, Geo Plant 2 Unit 4, and Calpine Geo to help meet SVP's share of system-level reliability need. The Geo Plants will collectively provide a dependable capacity of 35 MW in 2024, increasing to 38 MW in 2028, using marginal ELCC. Calpine Geo will provide a capacity of roughly 35 MW in 2025 and 2026 and roughly 70 MW starting in 2027. Small hydro resources owned or contracted by SVP will provide 58 MW in 2024, decreasing to 44 MW in 2035. Currently owned or contracted wind resources will provide 40 MW in 2024, decreasing to 8 MW in 2035.

The preferred portfolio also projects that SVP will meet its share of system-level reliability need using additional geothermal and wind resources the utility has yet to contract with. Geothermal resources SVP has yet to contract for will provide 49 MW in 2028, and this will increase to 317 MW by 2035. Wind resources SVP has yet to contract for will provide 65 MW in 2026, increasing to 113 MW in 2035.

In total, in SVP's preferred resource portfolio, the total dependable capacity of geothermal power procured — measured using marginal ELCC — would greatly increase over the forecast period, from 35 MW in 2024 to 422 MW in 2035. The dependable capacity of wind power procured would increase from roughly 40 MW in 2024 and 2025 to roughly 80–120 MW in 2026–2035.

SVP's preferred resource portfolio uses storage to help meet SVP's share of system-level marginal reliability need. The preferred portfolio forecasts that a planned utility-scale BESS will provide dependable capacity starting in 2025. The dependable capacity from that BESS will decrease from 45 MW in 2025 to 20 MW in 2035.

The preferred portfolio also uses energy efficiency and demand response to slightly decrease peak demand. The preferred portfolio projects that energy efficiency will shave a steadily increasing number of MW off peak demand. The preferred portfolio projects that energy efficiency will reduce peak demand by 16 MW in 2024, rising to 59 MW in 2035. The preferred portfolio also projects that demand response/interruptible programs will decrease peak demand 8 MW each year in the forecast period.

SVP has also considered distributed energy resources (DER) to help meet peak demand. Between 2019 and 2021, SVP and three community choice aggregators (CCAs) — Peninsula Clean Energy, Silicon Valley Clean Energy, and East Bay Community Energy — released a joint request for proposals for DER. Under this proposal, SVP would decrease its peak demand using paired solar PVs and batteries on residential buildings. However, the vendor selected under the request for proposals claimed that revenues from this project would not be high enough relative to program costs; thus, the project was not pursued at that time.

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 system reliability section above.

Energy Efficiency and Demand Response Resources

CEC staff finds that the *SVP 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.

SVP administers programs that encourage commercial and residential customers to get energy audits, as well as various monetary incentives for businesses and residents to use energy-

efficient appliances. These programs include a Data Center Efficiency Program, Business Energy Audits, a Residential Heat Pump Electric Water Heater Rebate program, and a Multifamily Boiler Electrification Pilot Program, among others. SVP is also considering a program that would give businesses incentives to install paired PV and batteries, which reduce demand on the California ISO during the ISO coincident peak.

Between July 2014 and June 2023, SVP accumulated net energy savings of roughly 130,888 MWh — significant progress toward the utility's SB 350 EE doubling goals. In 2021, the Santa Clara City Council adopted the *California Municipal Utilities Association Energy Efficiency Potential Forecasting Study*.[20] This study finds that SVP has potential to save 10,604 MWh — 0.21 percent of unmanaged net energy for load — from energy efficiency in 2024, declining to 5,372 MWh in 2030. SVP's preferred resource portfolio also includes demand response/interruptible programs that will decrease the utility's demand by 8 MW during the ISO coincident system peak.

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.

SVP plans to add a 50 MW, 200 MWh BESS as a new resource in April 2026. SVP will buy electricity when prices on the California ISO market are low, store the electricity in the BESS, then sell the electricity and discharge when prices are high, bringing in revenue for SVP. The *SVP 2023 IRP* also suggests the BESS might decrease emissions within Santa Clara.

In addition, SVP plans to create a microgrid to provide power to several City of Santa Clara buildings, including one of its fire stations and its emergency operations center. The microgrid will have solar PV and a 2 MW, 2-hour BESS. If SVP's larger grid loses power, the microgrid will automatically "island," or operate independently of the grid, and require a command to reconnect to the main grid. SVP anticipates that this microgrid will be operational in late 2026. Moving forward, SVP is also interested in creating a platform to coordinate the use of DERs.

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.

In 2018, SVP received a grant from the CEC to help SVP write an *EV Ready Communities Blueprint*. The blueprint included goals for EV adoption and policies to be adopted. The

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20 GDS Associates, Inc. April 2021. *2020 Energy Efficiency Potential Forecast*. California Municipal Utilities Association. https://www.cmua.org/files/CMUA%202020%20EE%20Potential%20Forecast.pdf.

blueprint also forecast the number of plug-in electric vehicles that Santa Clara residents would likely be driving in the future. The blueprint forecast that residents would collectively be driving about 15,000 EVs in 2030.[21]

As of 2023, there were 726 public Level 2 charge ports and 39 public DC fast charge ports in Santa Clara. SVP installed 113 of the 726 public Level 2 charge ports itself, including ports at city hall, libraries, city parks, and community recreation centers. The public charging ports will make it easier for Santa Clara residents to switch to EVs.

SVP projects that the electric load needed to charge EVs will increase as the number of EVs that Santa Clara residents drive increases. The *SVP 2023 IRP* projects that the capacity required to charge EVs in the SVP service area will contribute 0.14 percent of peak demand in 2024, increasing to 0.83 percent of peak demand in 2035. Similarly, the total energy required to charge EVs in SVP's service territory will be 0.31 percent of net energy for load in 2024, rising to 1.41 percent of net energy for load in 2035.

In the future, SVP plans to write an equity-focused transportation and building electrification plan that will suggest government initiatives to equitably electrify buildings and vehicles.

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. The SVP preferred portfolio includes modeling and reliability analyses as well as a diverse array of zero-emission resources, including wind, geothermal, large and small hydropower, solar, and biogas. Natural gas-powered electricity generation and a planned BESS will provide additional dependable capacity.

21 Ibid., p. 53, 57.

APPENDIX A: Abbreviations

Abbreviation	Term
AAEE	Additional achievable energy efficiency
BESS	Battery energy storage system
CAISO	California Independent System Operator
CARB	California Air Resources Board
CCA	Community Choice Aggregator
CEC	California Energy Commission
CPUC	California Public Utilities Commission
DER	Distributed energy resources
ELCC	Effective load-carrying capability
EV	Electric vehicle
GHG	Greenhouse gas
GWh	Gigawatt-hours
IEPR	Integrated Energy Policy Report
IRP	Integrated resource plan
LOLE	Loss of load expectation
LSE	Load-serving entity
MMTCO2e	Million metric tons of carbon dioxide equivalent
MW	Megawatt
MWh	Megawatt-hour
NCPA	Northern California Power Agency
PEV	Plug-in electric vehicle
POU	Publicly owned utility
PPA	Power purchase agreement
PUC	Public Utilities Code
RPS	Renewables Portfolio Standard
SB 350	Senate Bill 350 (De León, Chapter 547, Statutes of 2015)

Abbreviation	Term
SVP	Silicon Valley Power
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.

Term	Definition
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 responsibilities are: 1. Forecasting statewide energy demand. 2. Licensing of power plants and transmission lines sufficient to meet those needs. 3. Promoting energy conservation and efficiency measures. 4. Promoting the development of renewable energy. 5. Promoting the transition to clean transportation fuels. 6. Investing in energy innovation. 7. Planning for and supporting the state's response to energy emergencies. Funding for the Commission's activities comes from the Energy Resources Program Account, Federal Petroleum Violation Escrow Account, and other sources.
Community Choice Aggregator	A part of a city or county government, or a joint powers authority made up of multiple city or county governments, which procures electricity for customers. Community Choice Aggregators do not own the transmission or distribution systems used to transmit electricity to customers.
Demand forecast	A forecast of electricity demand served by the electric grid, measured by peak demand and energy consumption. Some factors that determine load 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 to electricity to split water into oxygen molecules and hydrogen molecules.

Term	Definition
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.
Northern California Power Agency (NCPA)	A joint powers agency that owns electric generation resources. Its members are the Bay Area Rapid Transit District, the Plumas-Sierra Electric Cooperative, the Port of Oakland, the Truckee Donner Public Utility District, and the following cities: Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, Santa Clara, Shasta Lake, and Ukiah.
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 regulates 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.

Term	Definition
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.