

INTEGRATED RESOURCE PLAN (IRP)

Date:

June 14, 2023

IRPs shall consider all reasonable opportunities to meet future energy resource requirements using Demand Side Management techniques, new renewable resources and other programs that will provide retail consumers with electricity at the lowest possible costs, and minimize, to the extent practicable, adverse environmental effects.

To meet your Integrated Resource Planning reporting requirement, complete the following. Unaddressed items will be deemed incomplete and not eligible for approval. Western reserves the right to require customers to provide any supporting back-up data used to support and develop this report.

Customer Contact Information:

(Provide contact information for your organization. Contact person should be able to answer questions concerning the plan)

Customer Name:	Power and Water Resources Pooling Authority (PWRPA)
Address:	3514 W. Lehman Rd, Tracy CA 95304
Contact Person:	Cori Bradley
Title:	Operations Manager
Phone Number:	916-405-8923
E-Mail Address:	cori@robertson-bryan.com
Website:	www.pwrpa.org

Type of Customer:

(Check one as applicable)

<input checked="" type="checkbox"/>	Municipal
<input type="checkbox"/>	State
<input type="checkbox"/>	Federal
<input checked="" type="checkbox"/>	Irrigation District
<input checked="" type="checkbox"/>	Water District
<input type="checkbox"/>	Other (Specify) _____

Identification of Resource Options (considerations that may be used to develop potential options include cost, market potential, consumer preferences, environmental impacts, demand or energy impacts, implementation issues, revenue impacts, and commercial availability):

Supply-side options:

(Including, but not limited to: purchase power contracts and conventional and renewable generation)

List existing supply-side options:	List future supply-side resource options considered and evaluated:
Base Resource allocation from WAPA	Base Resource allocation from WAPA
Forward and Day-ahead Bilateral Power Contracts.	Forward and Day-ahead Bilateral Power Contracts.
Share of Whitney Point Solar	Share of Whitney Point Solar
Share of Astoria Solar Project	Share of Astoria Solar Project
Share in Lodi Energy Center Plant	Share in Lodi Energy Center Plant
Slate Solar & Battery Project	Slate Solar & Battery Project
Warm Springs Small Hydro	Warm Springs & Lake Success Small Hydro
Santa Clara Valley Solar Projects	Santa Clara Valley Solar Projects
Westlands BOR payback	Westlands BOR payback
	Survey of solar, small hydro, and other renewable development opportunities
	Continue to evaluate energy storage opportunities
	Conduct surveys of low head hydro generation possibilities.

Demand-side options:

List existing demand-side options:	List future demand-side resource options considered and evaluated:
Four districts – AEWS, SCVWD, WWD, and Z7 – participated in California’s 2022 Demand Side Grid Support program, curtailing a total of 296,000 kWhs of load from CAISO’s grid.	Continued district participation in CA’s DSGS program (May-October); possible additional districts to participate in future years
RD108: Concrete lined canals	RD108: Sealing cracks on concrete lined canals
	GCID: evaluating the use of PV energy generation at our pump station and some recapture pump sites but has no firm plans to initiate any PV project.
Raising water levels in canals to reduce pumping lifts.	Ongoing evaluation of microgrid opportunities
Utilization of water storage to meet demand and offset pumping.	
Pump testing to identify failing equipment	
Experiments with load shifting to avoid peak periods.	

Resource options chosen:

(Provide a narrative statement that describes the option chosen and clearly demonstrates that decisions were based on a reasonable analysis of the options)

PWRPA's load forecast is the aggregation of its member district load forecasts for three-year types: wet, average and dry. Base Resource projections and existing other supplies in the portfolio are applied against the load forecasts to determine the Net Short Position (NSP). This determination is updated and evaluated monthly to adapt to changing Base Resource and demand projections.

PWRPA's Risk Policy Compliance stipulates that PWRPA purchases contracts with market suppliers to hedge 100 percent of its forecasted NSP for the upcoming four months, 80 percent for the following two months, 60 percent for the following three months, 50 percent for the following nine months and 30 percent for the following nine months.

PWRPA values a diverse resource portfolio. In addition to Base Resource, we currently have long-term contracts for partial ownership in a combined cycle natural gas plant, participation in multiple solar/battery plants (large and small), and small hydro. Looking towards the future we are evaluating energy storage and micro grid opportunities. In considering new projects, we aim to maintain a competitive price advantage over other utilities, comply with state regulatory mandates, and honor our member specific portfolio content goals.

The member districts have taken steps to conserve power through various methods, including load-shifting, implementing energy-efficiency methods, engineering water conservations measures, and inspecting and replacing worn equipment. PWRPA has a Public Purpose program to collect and spend money in participant projects aimed at energy efficiency.

Action Plan:

Specific Action Items to be Implemented Over the Next 5 Years:

(Lists are not meant to be inclusive, complete and provide other action items as applicable)

Energy Consumption Improvements:

Proposed Items	Begin Date	End Date	Est. kW capacity savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Boiler, Furnace, air conditioning retrofits					
Weatherization, insulation storm windows/doors					
Insulation of air ducts, boilers, pipes, etc.					
Clock thermostats and equipment system timers					
Heat pumps					
Energy audits					
Public education programs	Ongoing	Ongoing	n/a	n/a	Lower water use through outreach

Loan arrangements or rebate program for energy efficient equipment					
Use of infrared heat detection equipment					
Energy efficient lighting	Ongoing	Ongoing	n/a	n/a	Yearly testing/maintenance
Equipment inspection programs	Ongoing	Ongoing	n/a	n/a	Preventative maintenance
Electric motor replacements					
Upgrading of distribution lines/substation equipment					
Power factor improvement					
Other: SCADA	Ongoing	Ongoing	n/a	n/a	Units monitored and controlled remotely

Renewable Energy Activities:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Solar thermal/photovoltaic projects	Various	Various			Various districts evaluating behind-the-meter on-site solar installations
Day lighting technologies					
Active solar installations					
Active solar installations					
Biomass/refuse-derived fuels					
Geothermal projects					
Small-scale hydro projects	2023	Continuous	1400	1,321,500	LTRID's Success Power Plant to come under PWRPA's scheduling portfolio
Other:					

Load Management Techniques:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Load management devices/systems					
Demand control techniques and equipment	2023	NA	Variable	Variable	Continued district participation in CA's DSGS program (May-October); possible additional districts to participate in future years. Demand response opportunities, identification of loads that can provide value.
Smart meters or automated equipment					

Time-of-use meters					Meters are interval and migrated to 4G communication
Other: _____	Unknown	Unknown	Unknown	Unknown	Districts are working and implementing their SGMA (groundwater management plans) which result in reducing energy usage through decreased groundwater pumping.

Rate Design Improvements:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Cost-of-service pricing					
Elimination of declining block rates					
Time-of-day rates					
Seasonal rates					
Interruptible rates					
Other: _____					Rate incentives to convert to drip/micro spray which leads to avoiding pumping energy.

Agricultural Improvements:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Irrigation pump utilization/scheduling					
Irrigation pump testing or efficiency improvements	Annual	Ongoing	Unknown	Unknown	Districts test, repair, rewind pump motors on a regular schedule
Electric motor replacement	2014	2034	n/a	n/a	Pump Replacements done in phases, over 250 units.
Photovoltaic pumping systems					
Ditch lining or piping	6/1/2024	6/1/2028			RD108: Miles of concrete lined canal sealed
Laser land leveling					
Pumpback systems					
Water conservation programs	1992	Ongoing	n/a	n/a	SGMA and storage over pumping operational changes. Various programs and policies among Districts.
Other: _____					

Environmental Effects:

(Provide a narrative statement that sets forth the efforts taken to minimize adverse environmental effects of new resource acquisitions)

[Empty box for Environmental Effects narrative]

Public Participation:

(Customers must provide ample opportunity for full public participation in preparing and developing an IRP. Provide a brief description of public involvement activities, including how information was gathered from the public, how public concerns were identified, how information was shared with the public, and how it responded to the public comments)

All member districts were given copies of the IRP report and asked to respond to questions that were applicable to them.

PWRPA holds monthly Board meetings which are open to the public. Throughout the year, the Board evaluates resource positions and opportunities and members have full discretion of their participation levels in PWRPA projects. In the next year the PWRPA Board will be working to update policies relating to changes in State Renewable goals.

PWRPA's members Board meetings are also public and have various versions of public outreach and education on water and energy conservation (which reduces power needs).

Future Energy Service Projections:

(Provide a load forecast to show expected growth or expansion; or a narrative statement concerning expected future growth)

Calendar Year	Peak Demand (kW)	Total Energy (kWh)
2024		
2025		
2026		
2027		
2028		

or Narrative Statement:

PWRPA is a Joint Power Authority serving 14 California Water purveyors from Willows in the Northern Sacramento Valley to the Bakersfield area in the Southern San Joaquin Valley. Annual energy use and peak demands are inversely related to California’s rainfall and the type of hydropower production year. In addition, microclimates and hydrology differ greatly with the various Water Agencies throughout Western’s Sierra Nevada Region. In a wet year power use is reduced due to lower power demands for water pumping. Conversely, in a dry year like 2022, demands are much higher. Our load can swing from 300,000 to 500,000 MWh.

Load growth of PWRPA and its participants is principally due to water source changes forced by regulatory. Although we have some Districts planning to add load to PWRPA service, we anticipate that load will steady or go down in the next 5 years due to behind the meter solar installations and changes in operations due to SGMA (Sustainable Groundwater Management Program).

Measurement Strategies:

(Provide a brief description of measurement strategies for options identified in the IRP to determine whether the IRP’s objectives are being met. These validation methods must include identification of the baseline from which a customer will measure the benefits of its IRP implementation)

PWRPA reports its power use by source to the California Energy Commission relative to its mix of carbon based and renewable resources.

Various Districts voluntarily report to the Climate Registry.


Monthly reports to the Board of Directors summarize load and schedules to assess efforts.

Scheduling protocols through web based software allow districts to view compliance via scheduled and metered load.

Districts maintain pumping records to compare against past performance, maintain water flow data and produce annual reports to evaluate baseline and performance, and calculate irrigation efficiency of crops grown.

IRP Approval:

(Indicate that all of the IRP requirements have been met by having the responsible official sign below; **or** provide documentation that the IRP has been approved by the appropriate governing body)

<u>Cori Bradley</u> (Name – Print or type)	<u>Operations Manager</u> (Title)
 (Signature)	<u>June 14, 2023</u> (Date)

Other Information:

(Provide/attach additional information if necessary)

5-Year Plan