



**WATER
AGENCY**

Energy Master Plan Project Prioritization

Regular Board Meeting
October 16, 2024

James Carney (Zone 7) and Ricky Gutierrez (Carollo)

Agenda

- Strategic Alignment, Background, and Purpose
- Developing a Prioritization Framework
- Identifying and Prioritizing Project Opportunities
- Framework Application, Results, and Overview of High Priority Projects
- Next Steps

Strategic Alignment, Background, and Purpose



Strategic Plan Alignment

GOAL E

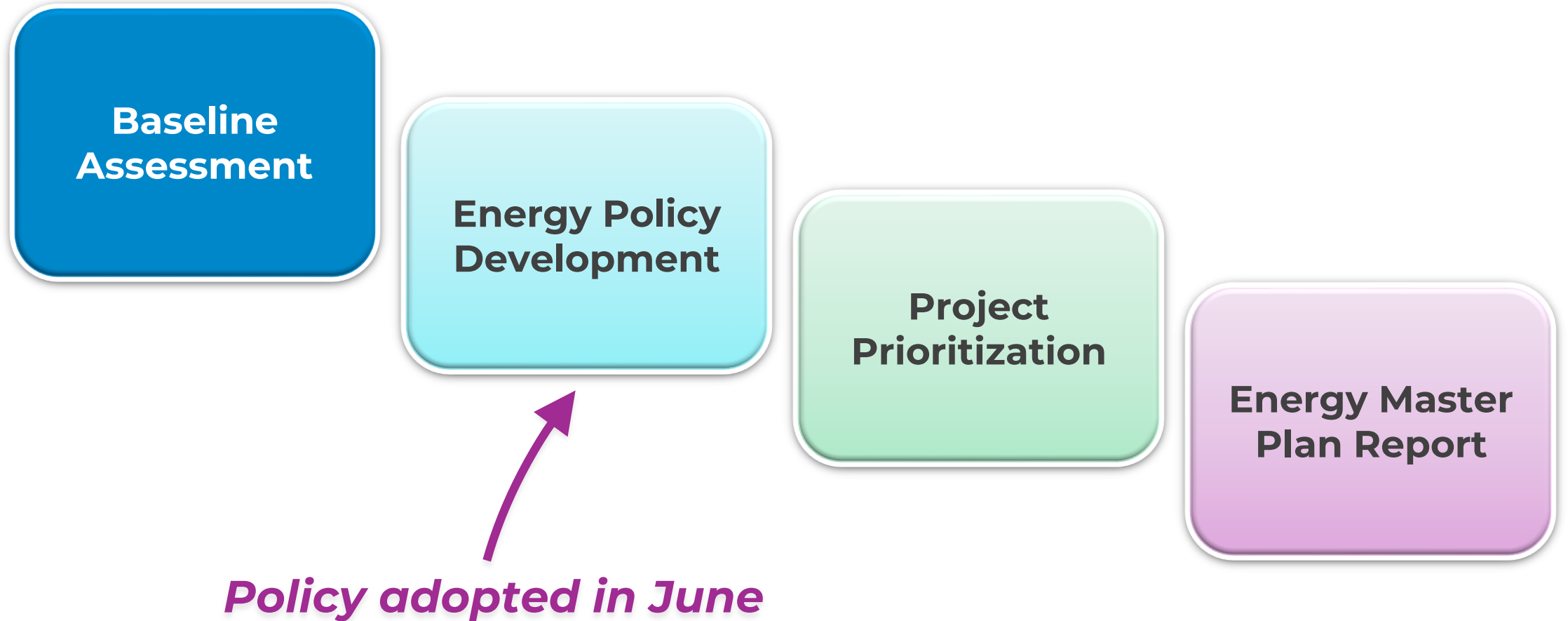
Effective Operations

Provide the Agency with effective leadership, administration, and governance.

Initiative 16

Develop and implement an energy strategy

Energy Master Plan Study

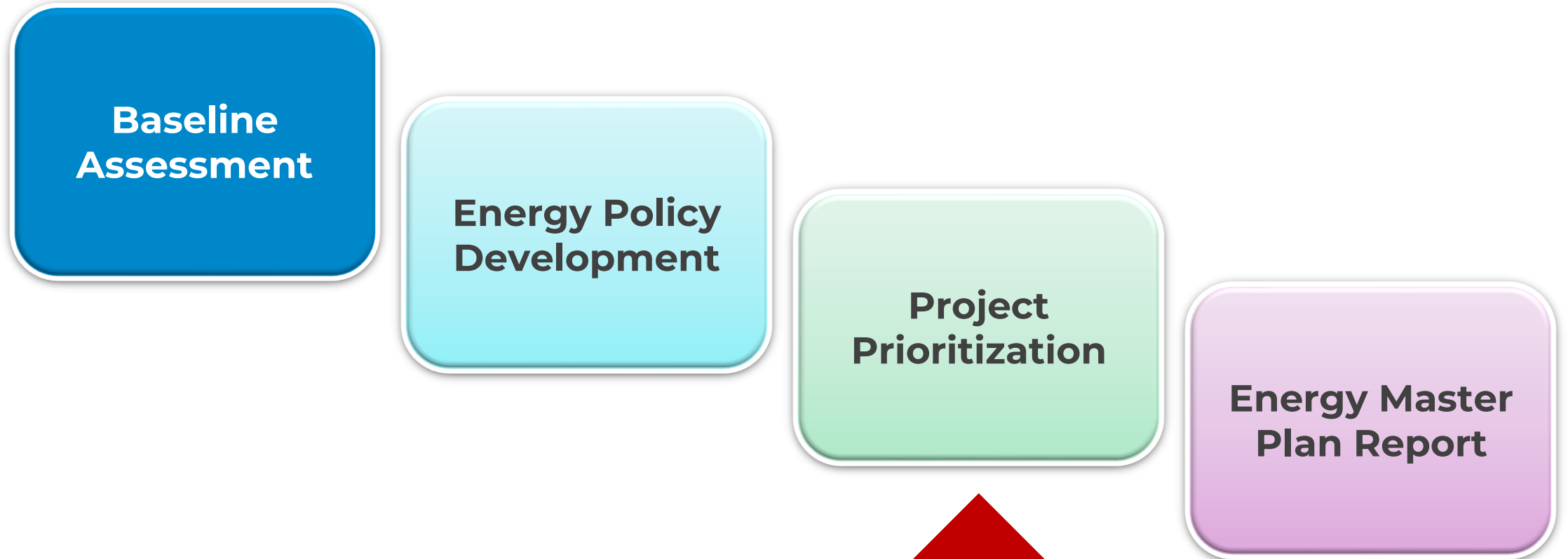


Adopted Energy Policy

- Outlines Zone 7's goals and priorities regarding energy management
- Flexibility to consider variety of potential benefits from energy management activities

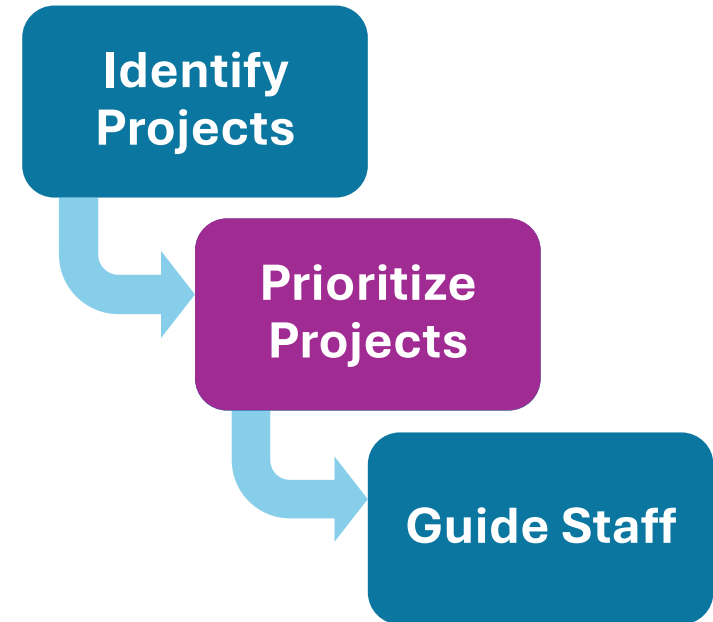


Energy Master Plan Study



Purpose of Project Prioritization

- Identify initial set of potential project opportunities
- Provide a consistent **framework** for **prioritizing** project opportunities
- Focus and guide staff efforts

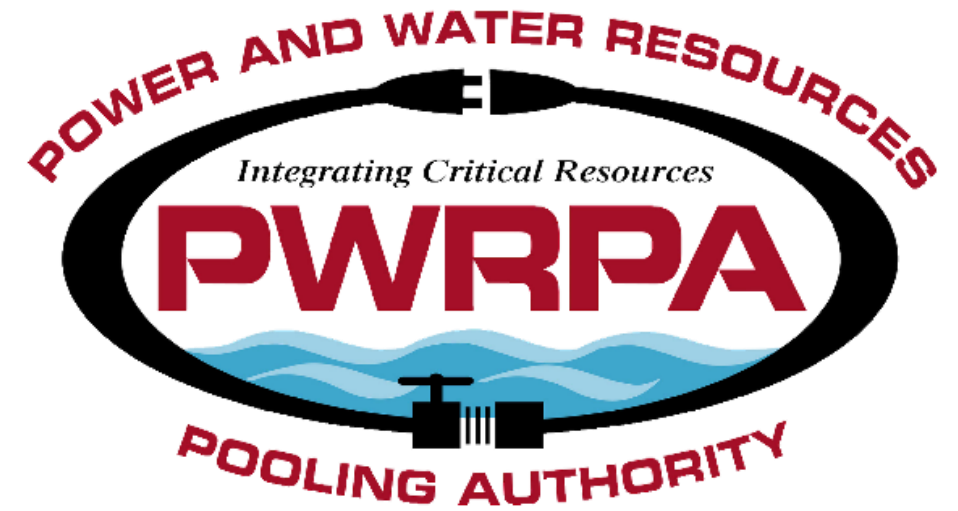


Scope of Project Prioritization

- Consider and prioritize **energy management opportunities** that may be complementary to the Agency's operations.
- Does not replace existing processes the Agency uses to plan and budget projects aligned with its mission.



PWRPA (Power and Water Resources Pooling Authority)



- Alternative to PG&E/Ava
- PWRPA is a JPA (est. 2004)
- Zone 7 joined PWRPA in 2014
- PWRPA conveys power to members across PG&E transmission and distribution lines
- PWRPA currently serves PPWTP, DVWTP-Ozone, MGD, and the Mocho wellfield
- Zone 7 has achieved substantial cost savings via PWRPA

PWRPA Entities

1. Glenn-Colusa Irrigation District
2. Princeton-Cordora-Glenn and Provident Irrigation Districts
3. Reclamation District 108
4. Sonoma County Water Agency
- 5. Zone 7 Water Agency**
6. Santa Clara Valley Water District
7. Bryon-Bethany Irrigation District
8. Banta-Carbona Irrigation District
9. West Stanislaus Irrigation District
10. Westlands Water District
11. James Irrigation District
12. Lower Tule River Irrigation District
13. Cawelo Water District
14. Arvin-Edison Water Storage District



Developing a Prioritization Framework

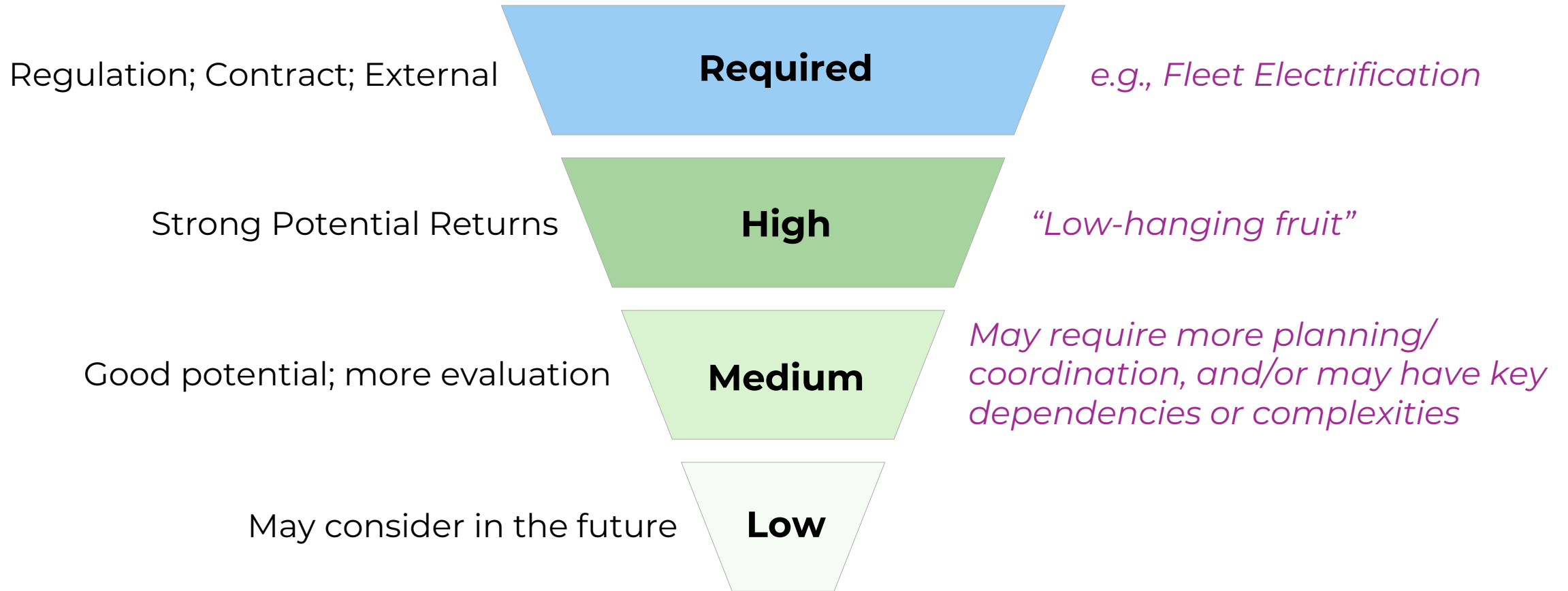


Framework Approach

- Conceptual-level prioritization
- Policy-informed consideration of benefits and costs
- Results in potential projects being assigned a **Priority Level**



Priority Levels



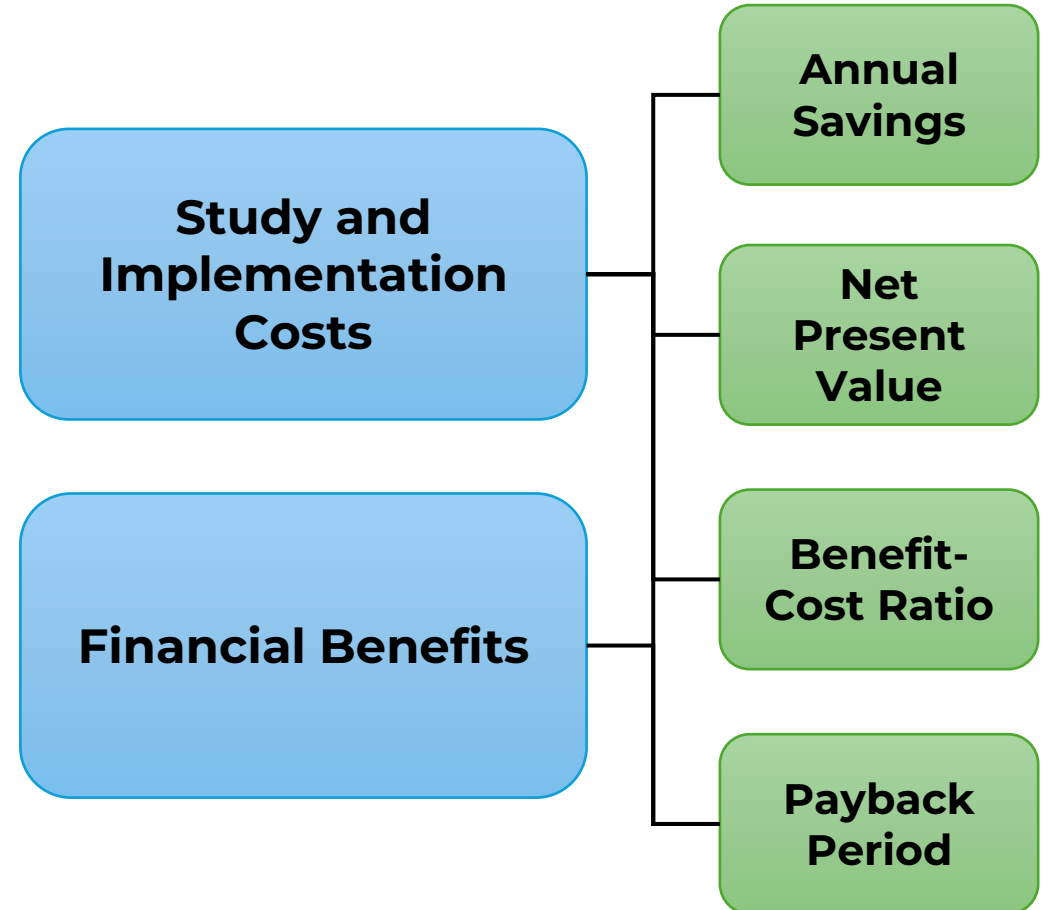
Project Evaluation Criteria

- Financial Evaluation
- Policy Alignment Evaluation
- Consideration of Other Factors



Financial Evaluation

- Addresses the **Fiscal Responsibility** focus area
- Key information for sorting projects that may be in the **High** priority level
- **Medium** and **Low** priority projects also evaluated, but further study likely to refine results

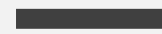


Energy Policy Alignment Evaluation

- Considers whether project impacts are aligned with policy goals
- Addresses *other* four policy focus areas:
 - Reliability and Resilience
 - Resource Optimization
 - Environmental Responsibility
 - Compliance and Governance



Aligned / Beneficial Impact



***Not Applicable /
Negligible Effect***



Not-Aligned / Adverse Impact

Other Key Factors

- Potential projects reviewed to identify issues such as:
 - **Dependencies** that currently affect implementation and/or result in more uncertain benefits and costs
 - Notable **complexities** associated with implementation (e.g., projects that may impact current standard operating procedures for the water system)
 - Opportunities where **additional study** is needed to fully evaluate potential benefits and costs

Identifying and Prioritizing Project Opportunities



Considered Range of Energy Projects

**Renewable Energy
/ GHG Reduction**



**Treatment
Efficiency**



**Buildings
& Fleet**



Reliability



**Operational
Efficiency**



Zone 7 Project Applicability

- Focus on energy management opportunities
- Identified opportunities given Zone 7's existing facilities and operations
- Market research and coordination, additional staff interviews
- Opportunities identified through Baseline Assessment and Policy Development tasks

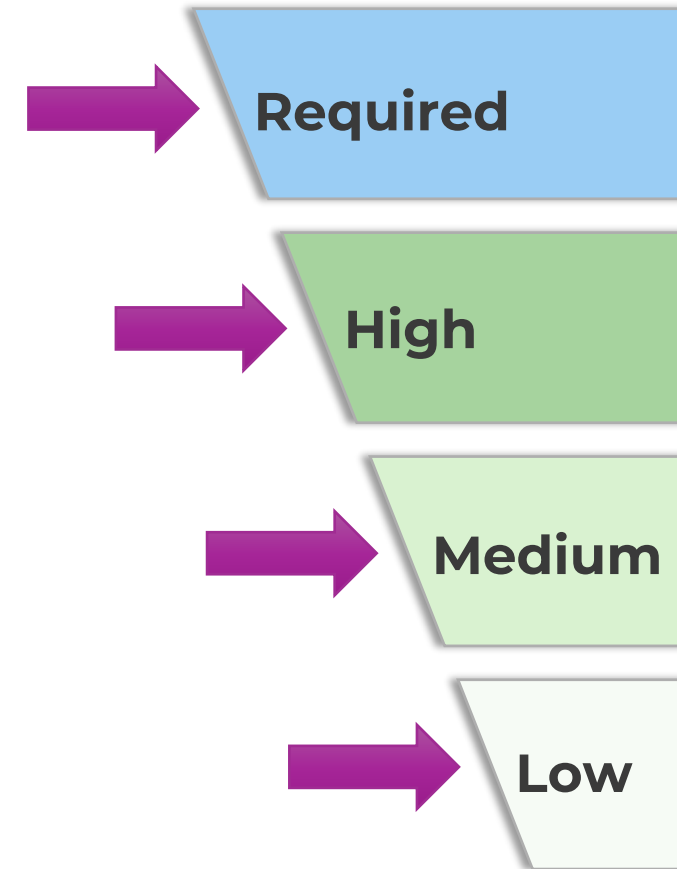


Framework Application and Results



Applied Prioritization Framework

- Identify **required** projects
- Evaluate potential benefits and costs for remaining projects
 - Identify **top performers** that are recommended for implementation (**High**)
 - Identify projects with **good potential**, but that may require additional effort prior to implementation (**Medium**)
- Sort remaining concepts with potential for **future** consideration (**Low**)



Prioritization Results

Required

Fleet Electrification

High

Stoneridge to PWRPA

Floating Solar (Lake I)

PPWTP Solar (PWRPA)

Well Pumps
Efficiency Study *

MGDP RO System
Efficiency Study *

Medium

PPWTP Wind + BESS

North Canyons Solar +
BESS

Energy Management
Tool Study

Electrify Bldg. HVAC (for
GHG reduction)

Other Bldg. Efficiency
Upgrades

Clean Diesel for
Generators

Low








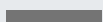
DVWTP Hydropower

DVWTP Dewatering
Facility

3rd Party Demand
Response Aggregator

WTP Ozone System
Optimization Study

Energy Policy Alignment (Required and High Priority Projects)

Project	Fiscal Responsibility	Reliability and Resilience	Resource Optimization	Compliance and Governance	Environmental Responsibility
Fleet Electrification					
Stoneridge to PWRPA					
Floating Solar (Lake I)		 *			
PPWTP Solar (PWRPA)		 *			
Well Pumps Eff. Study					
MGDP RO Eff. Study					

High Priority Projects Summary

- Five projects (2 requiring an initial study)

Project	Summary Statistics				
	Total Cost (\$K)	Annual Savings (\$K) ↓	NPV Savings (\$K; 5%, 20-yrs)	Discounted Payback Period	Benefit-Cost Ratio
Stoneridge to PWRPA	\$500	\$350	\$3,900	1.5 years	8.8
Floating Solar (Lake I)	\$300	\$275	\$3,100	1.2 years	11.5
PPWTP Solar (PWRPA)	\$200	\$150	\$1,700	1.4 years	9.4
Wells Pumps Eff. Study *	\$1,200	\$150	\$700	10.5 years	1.6
M GDP RO Eff. Study *	\$650	\$100	\$500	7.6 years	1.8

Required and High Priority Project Overviews



Fleet Electrification (Required)

- **Electrify the Zone 7 fleet and provide charging infrastructure.**
- **Background:** Required to comply with regulations. All vehicle purchases will be ZEV by 2035.
 - CARB Advanced Clean Fleets (Medium/heavy-duty vehicles)
 - CARB Advanced Clean Cars II (Light duty vehicles)
- **Financials:**
 - Infrastructure (rough order of magnitude): **\$2M**
 - Vehicles (incremental cost, order of magnitude): **20-50%** higher cost per vehicle
 - *Staff continues to track funding opportunities for vehicles and infrastructure*
- **Project Type:** EV charging infrastructure and fleet vehicle purchases.
 - North Canyons EV Chargers (2025)
 - DVWTP EV Chargers (2027)
 - Parkside EV Chargers (2029)
 - PPWTP EV Chargers (2031)



Stoneridge to PWRPA

- **Convert Stoneridge to PWRPA power.**
- **Background:** Facility is currently on PG&E/Ava power
 - PWRPA electric power rates (\$/kWh) would be 40-50% lower than PG&E/Ava for this facility
- **Financials:** Including recent facility upgrades, savings is estimated to be **~\$350K per year**. Cost is estimated at ~\$500K. Expected payback period of 1-2 years.
- **Project Type:** Design and construction by Zone 7; PG&E/Ava coordination supported by PWRPA.
 - Requires interconnection design and modification of electrical equipment onsite.
 - Estimated schedule of approximately 1-year.
- **Key Risks:** Schedule dependent upon PG&E review timelines (moderate/tolerable risk).



Floating Solar

- **1.8 MW-DC floating solar array on Lake I**
- **Background:** NEM2A interconnection with PG&E.
 - Serve aggregated load at Chain of Lakes wells
 - Reduce energy price uncertainty
 - Staff in procurement phase to negotiate a PPA and perform regulatory and permitting due diligence.
- **Financials:** May reduce electric power rate (\$/kWh) by 50-70%, resulting in savings of **~\$275K per year**. A no capital cost model would realize immediate savings. BESS would be considered for future addition.
- **Project Type:** Financing, design, construction, and operation performed by PPA partner. No capital budget expenditure for Zone 7.
- **Key Risks:** Short schedule, driven by PG&E NEM2 deadline and regulatory/permitting timelines. Staff is working with legal to define and allocate this risk in contract negotiations. NEM2 deadline is April 2026.

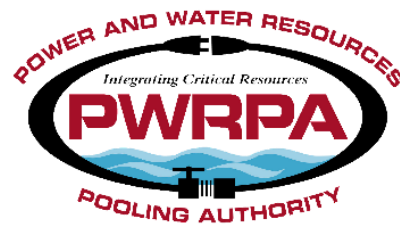


Well Pump Efficiency Study

- **Study to analyze current efficiency of well pumps and pump station equipment.**
- **Background:** Zone 7's groundwater wells are energy-intensive.
 - Analyze current pumps and related equipment.
 - Evaluate opportunities for installation of more efficient equipment (e.g., Variable Frequency Drive pumps) that would achieve positive net benefits.
- **Financials:** Benefits based on potential reduced energy use and associated cost savings (reduced pump maintenance is another potential benefit). Potential savings estimated at **~\$150K per year**. Study costs (\$200K) and implementation costs (\$1M) result in a payback period estimate of 10 years. *Note that the study will refine these estimates.*
- **Project Type:** Study, followed by capital improvement project. Expected schedule of 2-3 years.
- **Key Risks:** None. Initial effort is a study.



PPWTP Solar



- **1.5-2 MW-DC ground-mounted solar at PPWTP**
- **Background:** PWRPA-led PPA model could provide cost savings and reduce energy price uncertainty. Additionally, project would generate Bucket 1 RECs, which is an additional marketable asset that is only available via PWRPA.
- **Financials:** May reduce the electric power rate (\$/kWh) by 50%, resulting in savings of **~\$150K per year**. A no capital cost model would realize immediate savings. BESS would be considered for future addition.
- **Project Type:** Financing, design, construction, and operation performed by PPA partner. No capital budget expenditure for Zone 7. PWRPA has ability to assist with procurement to streamline process. Expected schedule of 2 years.
- **Key Risks:** PG&E coordination will be required for grid interconnection (moderate/tolerable schedule risk).

MGDP RO Efficiency Study

- **Study the benefits of replacing interstage pumps with pressure turbine pumps for energy recovery.**
- **Background:** Concept is to replace 4 interstage pumps in the RO train with turbine pumps. Turbines could recover energy from the high-pressure RO concentrate and feed it into the second RO train. Potential benefits of 230,000-330,000 kWh/year (or up to 10-15% of annual facility energy use).
- **Financials:** Estimated annual savings of \$100K per year. Study costs (\$150K) and implementation cost (\$500K) result in a payback period of 7-8 years. *Note that the study will refine these estimates.*
- **Project Type:** Study, followed by capital improvement project. Expected schedule of 2-3 years.
- **Key Risks:** None. Initial effort is a study.



Next Steps



Next Steps

- **Energy Master Plan**

- Complete report and documentation (early 2025)

- **Energy project implementation:**

- Focus on **Required** and **High Priority** projects
- Evaluate appropriate timing to incorporate projects into budgetary processes
 - 10-year CIP underway now.
 - Will review budgetary and CIP implications to balance potential energy projects with other Agency priorities.



Next Steps

- **Required project efforts**

- Fleet Electrification:
 - EV Chargers at North Canyons (in-progress)
 - EV Chargers at DVWTP (target 2027)

- **High Priority project efforts**

- Initiating conversion of Stoneridge to PWRPA
- Working with developer on Lake I Floating Solar
- Initiating PWPRA evaluation of PPWTP solar
- Development of budget recommendation for wellfield and MGD efficiency studies



Questions?

