# AGENDA

**NOTICE OF REGULAR MEETING**
**TIME:** 6 p.m.
**PLACE:** Regular Meeting Place
7051 Dublin Boulevard, Dublin, CA
www.dsrsd.com

**DATE:** Tuesday, January 16, 2024

**Our mission is to protect public health and the environment by providing reliable and sustainable water, recycled water, and wastewater services in a safe, efficient, and fiscally responsible manner.**

1. CALL TO ORDER

2. PLEDGE TO THE FLAG

3. ROLL CALL

4. SPECIAL ANNOUNCEMENTS/ACTIVITIES

   4.A. New Employee Introductions

5. PUBLIC COMMENT (MEETING OPEN TO THE PUBLIC)
   At this time those in the audience are encouraged to address the Board on any item of interest that is within the subject matter jurisdiction of the Board and not already included on tonight's agenda. Comments should not exceed five minutes. Speaker cards are available from the District Secretary and should be completed and returned to the Secretary prior to addressing the Board. The President of the Board will recognize each speaker, at which time the speaker should proceed to the lectern, introduce him/herself, and then proceed with his/her comment. Written comments received by 3 p.m. on the day of the meeting will be provided to the Board.

6. AGENDA MANAGEMENT (CONSIDER ORDER OF ITEMS)

7. CONSENT CALENDAR
   Matters listed under this item are considered routine and will be enacted by one Motion, in the form listed below. There will be no separate discussion of these items unless requested by a Member of the Board or the public prior to the time the Board votes on the Motion to adopt.

   7.A. Approve Regular Meeting Minutes of December 19, 2023
   **Recommended Action:** Approve by Motion

   7.B. Approve Continuation of Emergency Action Procurement by General Manager for Repair of the LAVWMA Livermore Interceptor Pipeline and Find that the Need for the LAVWMA Livermore Interceptor Pipeline Emergency Still Exists
   **Recommended Action:** Approve by Motion

8. BOARD BUSINESS

8.A. Receive Presentation on the Energy Facilities Master Plan Project (CIP 22-P009) and Proposed Energy Policy
**Recommended Action:** Receive Presentation and Provide Direction

9. REPORTS

9.A. Boardmember Items

9.A.1. Joint Powers Authority and Committee Reports
9.A.2. Submittal of Written Reports for Day of Service Events Attended by Directors
9.A.3. Request New Agenda Item(s) Be Placed on a Future Board or Committee Agenda

9.B. Staff Reports

10. ADJOURNMENT

*All materials made available or distributed in open session at Board or Board Committee meetings are public information and are available for inspection during business hours by calling the District Secretary at (925) 828-0515. A fee may be charged for copies. District facilities and meetings comply with the Americans with Disabilities Act. If special accommodations are needed, please contact the District Secretary as soon as possible, but at least two days prior to the meeting.*

**DUBLIN SAN RAMON SERVICES DISTRICT**
**MINUTES OF A REGULAR MEETING OF THE BOARD OF DIRECTORS**

**December 19, 2023**

1. CALL TO ORDER

A regular meeting of the Board of Directors was called to order at 6 p.m. by President Johnson.

2. PLEDGE TO THE FLAG

3. ROLL CALL

Boardmembers present at start of meeting: President Ann Marie Johnson, Vice President Arun Goel, Director Richard M. Halket, Director Dinesh Govindarao, and Georgean M. Vonheeder-Leopold.

District staff present: Jan Lee, Assistant General Manager; Carol Atwood, Administrative Services Director/Treasurer; Steve Delight, Engineering Services Director/District Engineer; Dan Gill, Operations Director; Michelle Gallardo, Special Assistant to the General Manager; Douglas E. Coty, General Counsel; and Nicole Genzale, Executive Services Supervisor/District Secretary.

4. SPECIAL ANNOUNCEMENTS/ACTIVITIES
Assistant General Manager Lee informed the Board that the District's contractor is onsite to test and monitor the audiovisual system during the meeting. She also announced that the reception for retiring General Manager McIntyre will be rescheduled from this evening.

5. PUBLIC COMMENT (MEETING OPEN TO THE PUBLIC) – 6:01 p.m. No public comment was received.

6. AGENDA MANAGEMENT (CONSIDER ORDER OF ITEMS) – Assistant General Manager Lee recommended that Item 8.A be rescheduled due to General Manager McIntyre's absence. The Board agreed to defer the item to a future meeting.

7. CONSENT CALENDAR

Director Vonheeder-Leopold MOVED for approval of the items on the Consent Calendar. Director Govindarao SECONDED the MOTION, which CARRIED with FIVE AYES.

7.A. Approve Meeting Minutes of December 5, 2023 – Approved

7.B. Approve Continuation of Emergency Action Procurement by General Manager for Repair of the LAVWMA Livermore Interceptor Pipeline and Find that the Need for the LAVWMA Livermore Interceptor Pipeline Emergency Still Exists – Approved

8. BOARD BUSINESS

8.A. NOT HELD – Approve Proclamation Honoring Retiring General Manager Daniel McIntyre

8.B. Discuss and Approve Board Committee and Joint Powers Authority Assignments for Calendar Year 2024

Assistant General Manager Lee reviewed the item for the Board.

Director Halket MOVED to Approve Board Committee and Joint Powers Authority Assignments for Calendar Year 2024. Vice President Goel SECONDED the MOTION, which CARRIED with FIVE AYES.

8.C. Accept Annual Comprehensive Financial Report with Independent Auditor's Report for Fiscal Year Ended June 30, 2023, and Memorandum on Internal Control and Required Communications for Fiscal Year Ended June 30, 2023

Administrative Services Director Atwood reviewed the item for the Board. She introduced Ms. Whitney Crockett, a partner from Maze and Associates, the firm that conducted the audit. Ms. Crockett reported the District received a clean opinion which is the highest level of assurance that an agency can receive. She highlighted the sections in the report showing the opinion, changes from last year, and findings. She also complimented the efforts of the District's Financial Services staff. The Board and staff discussed various aspects of the report including the overall audit process, impacts from the District's recent financial system transition, and the best practice recommendation received regarding bank and utility billing reconciliations. The Board was pleased with the report.

Director Halket MOVED to Accept the Annual Comprehensive Financial Report with Independent Auditor's Report for Fiscal Year Ended June 30, 2023, and Memorandum on Internal Control and Required Communications for Fiscal Year Ended June 30, 2023. Director Vonheeder-Leopold SECONDED the MOTION, which CARRIED with FIVE AYES.

8.D. Receive Presentation on Preliminary 2024 Water Rates

Management Analyst II Corinne Ferreyra reviewed the item and gave a presentation (handed out to the Board) that was added to the website as supplementary materials and covered the following:

- Background (wholesale and retail rates, fixed versus variable charges, and previous Board direction)
- Residential consumption demographics
- Revenue requirements and projected working capital
- Zone 7 Water Agency (Zone 7) wholesale charge, retail rates, and bimonthly bill impacts for six rate scenarios
- Power charge, water shortage condition rates, and recycled water rates
- Next steps to adopt new rates effective April 1, 2024

The Board and staff discussed various aspects of the presentation, and examined the six rate scenarios, the Board's flexibility to manage rates, and how best to balance customer billing impacts with revenue stability. Assistant General Manager Lee confirmed that all six rate scenarios presented will generate the overall 5.5 percent increase needed to meet the District's revenue requirement.

Staff explained that under the water shortage condition (drought) rates, there would be no rate increase for the first five CCF consumed (CCF = 100 cubic feet of water, equivalent of 748 gallons) to reflect low users' limited conservation ability. Staff also explained the District's charge for recycled water (about 80 percent of the potable water rate) is in line with market rate, which is between 75 percent and 90 percent of the potable irrigation rate. Staff lastly noted the impact rising energy costs have on power charges for pumping to higher elevations.

The Board and staff discussed the Proposition 218 noticing process and timeline for adopting new rates, and the importance of effectively communicating and explaining the upcoming rate changes and billing impacts to customers.

The Board determined that Rate Scenario #3 provided the soundest approach to meeting District objectives. The Board directed staff to proceed with Rate Scenario #3, to establish a separate wholesale fixed charge to collect 30 percent of the Zone 7 fixed charge, and to continue collecting 20 percent of DSRSD retail revenues from fixed charges and 80 percent from variable charges, and to proceed with the proposed next steps and timeline in order to adopt rates effective April 1, 2024.

9. REPORTS

9.A. Boardmember Items

9.A.1. Joint Powers Authority and Committee Reports
DERWA – December 11, 2023

President Johnson invited comments on recent JPA activities. Directors felt the available staff reports adequately covered the many matters considered at the JPA meetings and made a few comments about some of the JPA activities.

9.A.2. Submittal of Written Reports for Day of Service Events Attended by Directors

Director Vonheeder-Leopold submitted a written report to Executive Services Supervisor/District Secretary Genzale. She reported that she attended the virtual Alameda County Special Districts Association Executive Committee meeting on December 13. She summarized the activities and discussions at the meeting.

9.A.3. Request New Agenda Item(s) Be Placed on a Future Board or Committee Agenda

President Johnson requested that staff keep the Board apprised of the State's newly adopted regulations on direct potable reuse and messaging related to the new regulations and District initiatives.

9.B. Staff Reports

Assistant General Manager Lee reported that the January 2, 2024 Board meeting will be cancelled. The next Board meeting will be held on January 16, 2024.

10. ADJOURNMENT

President Johnson adjourned the meeting at 7:25 p.m.

Submitted by,

Nicole Genzale, CMC
Executive Services Supervisor/District Secretary

Dublin San Ramon Services District
Water, wastewater, recycled water

# STAFF REPORT

**Meeting Date:** January 16, 2024

**TITLE:** Approve Continuation of Emergency Action Procurement by General Manager for Repair of the LAVWMA Livermore Interceptor Pipeline and Find that the Need for the LAVWMA Livermore Interceptor Pipeline Emergency Still Exists

**RECOMMENDATION:**

Staff recommends the Board of Directors approve, by Motion, a continuation of the Emergency Action as declared in Board Resolution Nos. 22-23 and 36-23 and find that there exists a need for continuing the LAVWMA Livermore Interceptor Pipeline Emergency which the Board last confirmed on December 19, 2023.

**DISCUSSION:**

From late 2022 through March of 2023, a series of severe winter storms characterized as "atmospheric rivers" struck California bringing damaging winds and historic precipitation. On February 9, 2023, District staff discovered that these storms had left a portion of LAVWMA's Livermore Interceptor Pipeline and its associated manhole exposed in the Arroyo Mocho Creek, and caused significant erosion in the nearby creek bed and banks.

The LAVWMA's Livermore Interceptor Pipeline serves the sole benefit of the City of Livermore, and as such, all costs (100 percent) associated with the repair of the pipeline will be allocated to the City of Livermore. On September 5, 2023, the District's Board of Directors approved Resolution No. 36-23, confirming the District State of Emergency declared by the General Manager on June 12, 2023, and authorizing emergency action procurement for the repair of the LAVWMA Livermore Interceptor Pipeline. Per Public Contract Code 22050, the Declaration of the District State of Emergency shall be reviewed by the Board of Directors at every regular meeting to determine, by a four-fifths vote, that there is a need to continue the emergency action.

To date, six task orders have been issued to Carollo Engineers and DPI, Inc. for engineering design services, construction services and construction management services totaling $5,827,630.52 and a total of $2,726,298.09 has been spent. Additional task orders, purchase orders, and/or other contracts are expected to be awarded in the near term for property acquisition.

Construction began October 3, 2023, has reached approximately 60 percent construction completion, and is anticipated to be completed in February 2024. In parallel with the construction effort, staff also continues to work with property owners on negotiating property rights for the new pipeline easements and pursuing funding assistance through the Federal Emergency Management Agency (FEMA) and the California Office of Emergency Services (CalOES).

To ensure the project can meet the aggressive project schedule, staff recommends the Board of Directors find the need to continue the State of Emergency declared by the General Manager on June 12, 2023. Expedited action, including construction services and construction management services, is necessary to mitigate any additional damage to the pipeline and avoid the potential discharge of treated wastewater effluent to the Arroyo Mocho Creek. A four-fifths vote is necessary to extend the emergency.

| | | |
|---|---|---|
| **Originating Department: Engineering and Technical Services** | **Contact: K. Castro/S. Delight** | **Legal Review: Not Required** |
| **Financial Review: Not Required** | **Cost and Funding Source: $7,000,000 to be reimbursed by LAVWMA** | |
| **Attachments:** ☒ **None** ☐ **Resolution** ☐ **Ordinance** ☐ **Task Order** ☐ **Proclamation** ☐ **Other (see list on right)** | | |

Dublin San Ramon Services District
Water, wastewater, recycled water

# STAFF REPORT

**Meeting Date:** January 16, 2024

**TITLE:** Receive Presentation on the Energy Facilities Master Plan Project (CIP 22-P009) and Proposed Energy Policy

**RECOMMENDATION:**

Staff recommends the Board of Directors receive a presentation on the Energy Facilities Master Plan Project (CIP 22-P009) and proposed Energy policy and provide direction.

**DISCUSSION:**

The District's 2024–2028 Strategic Plan includes the following goal and action items in support of the District's mission and vision:

*"Improve energy efficiency and reliability for the District*

- *Develop a District energy policy and District energy master plan that evaluates sustainable energy sources and opportunities for cost-effective energy conservation and efficiency*
- *Initiate cost-effective energy projects consistent with the District's energy policy, business needs, and future regulations"*

In an effort to meet this strategic goal, on January 18, 2022, the Board of Directors authorized a task order with Carollo Engineers to prepare an Energy Facilities Master Plan (Master Plan). The scope of this "once in a generation" Master Plan included an energy-focused evaluation for all the District's facilities, which would inform the development of a District Energy policy. The Energy policy would provide an adaptable framework to establish a resilient energy supply, optimize energy efficiency, increase renewable energy generation, and foster environmental sustainability.

The Energy Facilities Master Plan was executed in two phases, over a span of approximately two years. Phase 1, which was completed in September 2022, included an investigation and evaluation of the District's existing energy demands, energy production, and carbon footprint. The findings of Phase 1 were presented at a Board workshop on September 27, 2022. As part of Phase 1, staff worked with the Board of Directors to establish "guiding principles" for the Master Plan. The guiding principles, which were reviewed at the February 21, 2023 Board meeting, were used in evaluating alternatives for energy and greenhouse gas (GHG) improvements and prioritizing future capital investments related to energy and GHG emissions in Phase 2. The guiding principles included the following:

- Strive to establish a diverse, reliable, and resilient energy supply portfolio for operation of District facilities.
- Comply with all regulatory energy and GHG-related mandates and strive to exceed them when related investments are cost-effective with consideration to the anticipated payback period and life cycle cost.
- Consider the impact on energy demand, energy efficiency, and GHG impacts where relevant in capital improvements.
- Seek opportunities to offset any additional future energy demands with renewable energy production.

Phase 2 included the development of long-term projections for energy demand and capacity; an evaluation of financing and/or strategic partnerships opportunities for funding future energy projects; and an alternatives analysis to identify recommended capital improvement projects over a 25-year planning horizon. These evaluations and analyses were completed in November 2023.

On January 16, staff will provide a presentation summarizing the preliminary results and findings from the Energy Master Plan. The presentation will include a discussion of the key projects recommended in the Master Plan, a high-level overview of the impacts on the District's energy consumption and greenhouse gas emissions, and review of the

| | | |
|---|---|---|
| **Originating Department: Engineering and Technical Services** | **Contact: J. Ching/S. Delight** | **Legal Review: Not Required** |
| **Financial Review: Not Required** | **Cost and Funding Source: N/A** | |
| **Attachments:** ☐ None ☐ Resolution ☐ Ordinance ☐ Task Order ☐ Proclamation ☒ Other (see list on right) | **Attachment 1 – Draft Executive Summary for the Energy Facilities Master Plan**<br>**Attachment 2 – Draft Energy Policy**<br>**Attachment 3 – Presentation Slides** | |

draft Energy policy. The draft Executive Summary for the Energy Facilities Master Plan and draft Energy policy are included as Attachment 1 and Attachment 2, respectively.

PREPARED FOR DUBLIN SAN RAMON SERVICES DISTRICT

DRAFT EXECUTIVE SUMMARY

# DSRSD ENERGY FACILITIES MASTER PLAN

January 2024

carollo®

Dublin San Ramon Services District
Water, wastewater, recycled water

# Abbreviations

| | |
|---|---|
| ACF | advanced clean fleets |
| Admin | administration |
| AHU | air handling unit |
| BAAQMD | Bay Area Air Quality Management District |
| CARB | California Air Resources Board |
| CAPEX | capital expenses |
| CIP | capital improvement program |
| CO2 | carbon dioxide |
| DAFT | dissolved air flotation thickener |
| DERWA | DSRSD-EBMUD Recycled Water Authority |
| DLD | dedicated land disposal |
| DO | dissolved oxygen |
| DP-G | Distribution Panel G |
| DSRSD | Dublin San Ramon Services District |
| EBMUD | East Bay Municipal Utility District |
| EV | electric vehicle |
| FSL | facultative sludge lagoon |
| FOF | field operations facility |
| FOG | fats, oils and grease |
| FW | food waste |
| FYE | fiscal year ending |
| GHG | greenhouse gas |
| HSW | high strength waste |
| HVAC | heating, ventilation, and air conditioning |
| ICE | internal combustion engine |
| IRA | inflation reduction act |
| JPA | Joint Power Authority |
| k | thousand |
| kW | Kilowatt |
| kWh | Kilowatt-hour |
| kWh/yr | kilowatt-hour per year |
| LAVWMA | Livermore-Amador Valley Water Management Agency |
| M | million |
| MG | million gallons |
| mgd | million gallons per day |
| MTCO2e | metric tons of carbon dioxide equivalents |
| MW | Megawatt |
| MWh | megawatt-hour |
| MWh/yr | megawatt-hours per year |
| NG | natural gas |
| OPEX | operating expenses |
| PG&E | Pacific Gas and Electric Company |
| PPA | power purchase agreement |
| scf/yr | standard cubic feet per year |
| SGIP | self-generation incentive program |
| SRT | solids retention time |
| TM | technical memorandum |
| VFD | variable frequency drive |
| WWTP | wastewater treatment plant |
| ZEV | zero-emission vehicle |

# Executive Summary

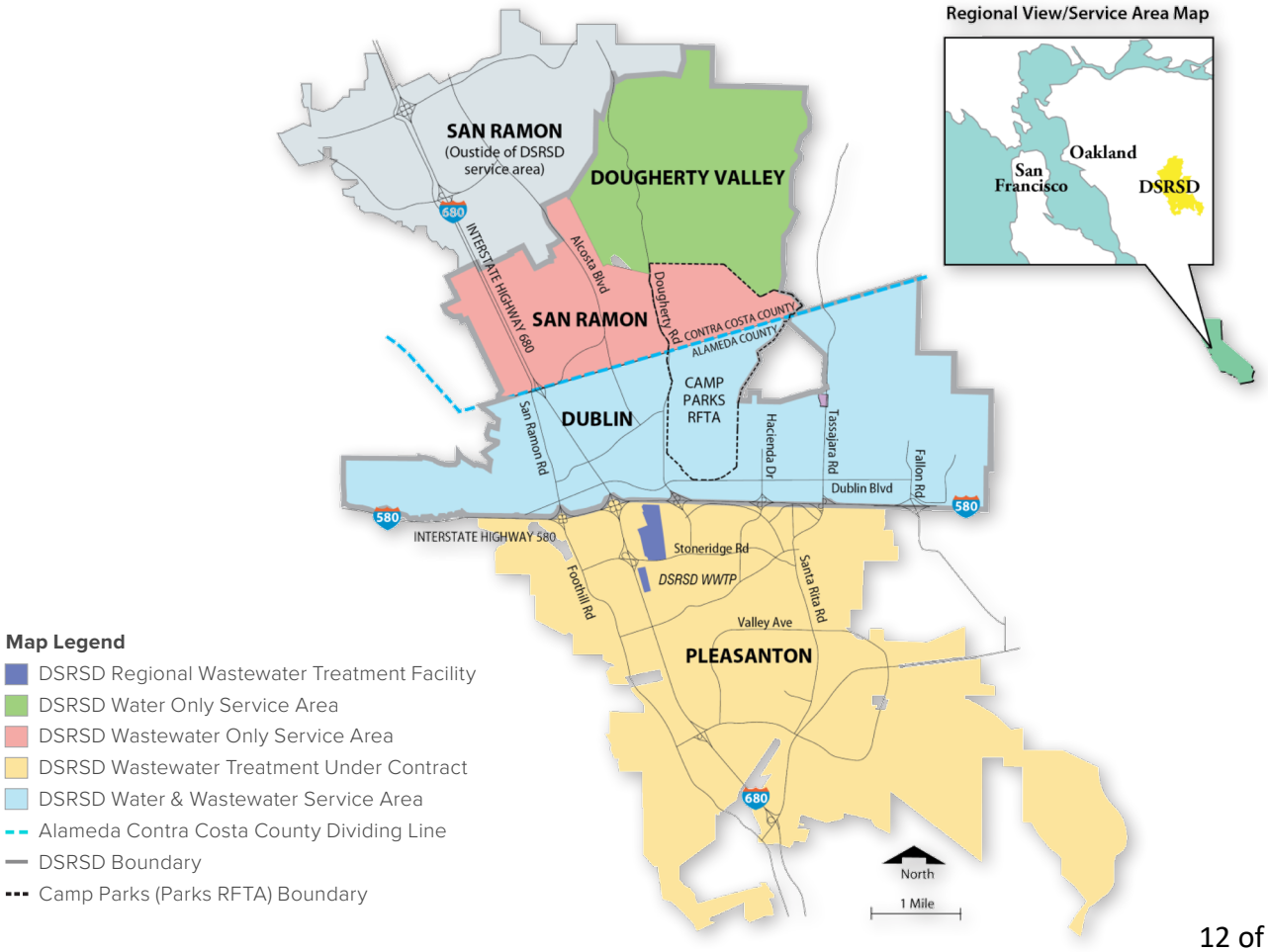
## Introduction

For over seven decades, the Dublin San Ramon Services District (DSRSD) has provided safe and reliable, water, recycled water, and wastewater services to its customers in Alameda and Contra Costa Counties. Currently, DSRSD provides these services to over 192,000 customers. Since its inception in 1953, DSRSD has maintained its commitment to efficient, responsible, and effective water and wastewater facility infrastructure with an emphasis on fiscal discipline environmental stewardship, and excellent customer service. Figure ES.1 shows DSRSD's current service boundaries.

DSRSD maintains partnerships with other public agencies to provide value to the community.

These partnerships include two joint power authorities (JPA). The DSRSD-East Bay Municipal Utility District (EBMUD) Recycled Water Authority (DERWA), was created in 1995 to improve the reliability of the valley's water supply, particularly in dry years, by treating and delivering recycled water. The partnership constructed the recycled water plant adjacent to DSRSD's wastewater treatment plant (WWTP) as well as the transmission system that connects to DSRSD and EBMUD recycled pipelines, and provides service to the City of Pleasanton The other JPA, the Livermore Amador Valley Water Management Agency (LAVWMA), formed in 1974 between DSRSD and the cities of Pleasanton and Livermore, is responsible for maintaining the pipeline that transports treated wastewater from the two treatment plants serving the Tri-Valley to the East Bay Dischargers Authority pipeline for eventual discharge to San Francisco Bay.

*Figure ES.1* ***DSRSD Service Area Map***



DSRSD's 2024-2028 Strategic Plan is a framework that guides decision making over a five-year period. It outlines the fundamental decisions that shape what the District plans to accomplish and sets a rational course of action. At its highest level, the Strategic Plan seeks to strengthen and build upon opportunities while addressing areas of concern. A critical objective of the Strategic Plan is to establish a long-term strategy to ensure greater energy efficiency and to bolster energy reliability across all DSRSD facilities.

Over time, DSRSD has taken strategic steps to meet increasing capacity demands, upgrading every major system to meet these demands while maintaining high quality service. Since the 1980's, DSRSD has been producing most of the energy required onsite at their WWTP through cogeneration, utilizing a blend of renewable biogas and natural gas to produce cost effective energy. Additionally, as their facilities have expanded, energy efficiency has been an important consideration. Some examples of steps taken towards improved energy efficiency include aeration system control improvements, the addition of variable frequency drives (VFD's) to reduce energy use at pumping facilities, installing energy efficient lighting, and reducing its fleet vehicle size. To continue fulfilling their commitment to environmental stewardship, DSRSD has now completed an Energy Facilities Master Plan (Master Plan). This document provides a comprehensive analysis of the District's energy demands, energy generation, and greenhouse gas (GHG) footprint for all its facilities and defines a comprehensive roadmap to cost-effectively minimize their energy and GHG footprint, while robustly achieving regulatory compliance. The key findings and recommendations from this Master Plan are described in this Executive Summary.

## The Master Plan is composed of 14 technical memoranda (TM):

- **TM 1 – State of the District Energy Management and Greenhouse Gas Emissions.**
- **TM 2 – Energy and Greenhouse Gas Emissions Opportunities and Financial Impact.**
- **TM 3 – State of the Assets Review: Wastewater Treatment Plant.**
- **TM 4 – Energy Demand and Production Capacity Projections.**
- **TM 5 – Energy Savings and Efficiency Opportunities Assessment.**
- **TM 6 – Energy Generation Opportunities and Power System Reliability Assessment.**
- **TM 7 – Greenhouse Gas Reduction Opportunities and Fleet Transition to Zero-Emission Vehicles.**
- **TM 8 – Financing/Partnerships Opportunities Assessment.**
- **TM 9 – Evaluation of Separate Recycled Water Treatment Plant Power Supply.**
- **TM 11 – Alternatives Analysis.**
- **TM 12 – Recommended Capital Improvement Program.**
- **TM 13 – Electrical System Design Standards.**
- **TM 14 – Electrical Distribution Infrastructure Replacement Model Evaluation and Update.**

## Baseline Energy Demand and Production and Greenhouse Gas Emissions

Serving as the foundation for this Master Plan, *TM 1 – State of the District Energy Management and Greenhouse Gas Emissions* sets a baseline of the current energy demand and production and GHG emissions for DSRSD's facilities. The Master Plan covers a 25-year planning horizon from 2022 to 2047, with 2021 serving as the baseline year. The baseline assessment included the following major DSRSD facilities/operational areas:

1 - **WWTP and its biosolids-handling facilities.**

2 - **Recycled water distribution system.**

3 - **Potable water distribution system.**

4 - **Wastewater collections system.**

5 - **District Administrative Building and Field Operation Facility.**

6 - **Vehicle fleet.**

The baseline assessment also included JPA facilities, however, these are not the focus of the Master Planning effort.

**In 2021, DSRSD facilities collectively consumed 15 gigawatt-hours (GWh) of electricity, including electricity imported from the Pacific Gas & Electric Company (PG&E) and self-generated sources. This is equivalent to the energy consumed by approximately 2,500 California homes based on statistics from the California Energy Commission.** The cogeneration system at the WWTP - utilizing biogas from the anaerobic digesters and supplemented with natural gas - produces both electricity and heat energy (Figure ES.2). **In 2021, the cogeneration system produced approximately 9.6 GWh of electricity, which accounts for 96% of the WWTP's total energy demand (approximately ~10 GWh).** This energy was produced at a cost of approximately $0.08 per kilowatt-hour (kWh). All combined, in 2021, the District facilities imported approximately 5.4 GWh of electricity at a cost of approximately $1.1 Million, and an average rate of $0.21 per kWh. In addition, the cogeneration system is engineered to recover thermal energy from the combustion process, and used to meet the heating requirements for the WWTP's four (4) anaerobic digesters, and heating/cooling for the various WWTP buildings. The thermal energy recovered from the cogeneration system typically meets 100% of the WWTP's thermal energy demands. Figure ES.3 shows the annual electricity use in 2021, broken down by facility.

## Baseline Assessment Key Findings:

Electrical Consumption: ~15 GWh/year, equivalent to 2500 homes

Natural Gas Consumption: 720,000 therms/year, equivalent to ~2,100 homes

GHG Emissions: ~4,400 MTCO2eq, equivalent to ~140 homes

Cogen produces 9.6 GWh/year and meets approximately 96% of the WWTP's total electrical demand.

Cogen recovers 325,000 therms/year and meets approximately 96% of the District's total thermal demand

*Figure ES.2 Cogeneration System Schematic*

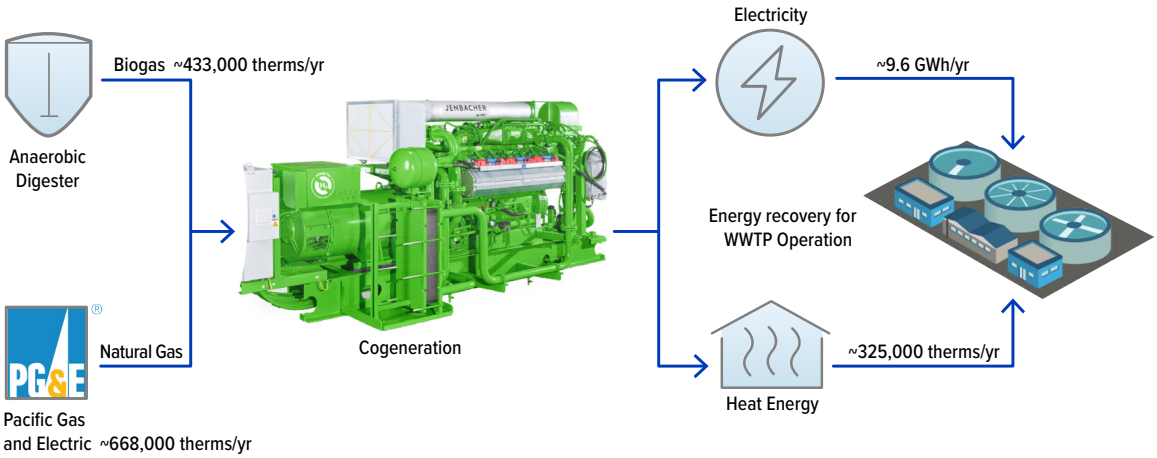
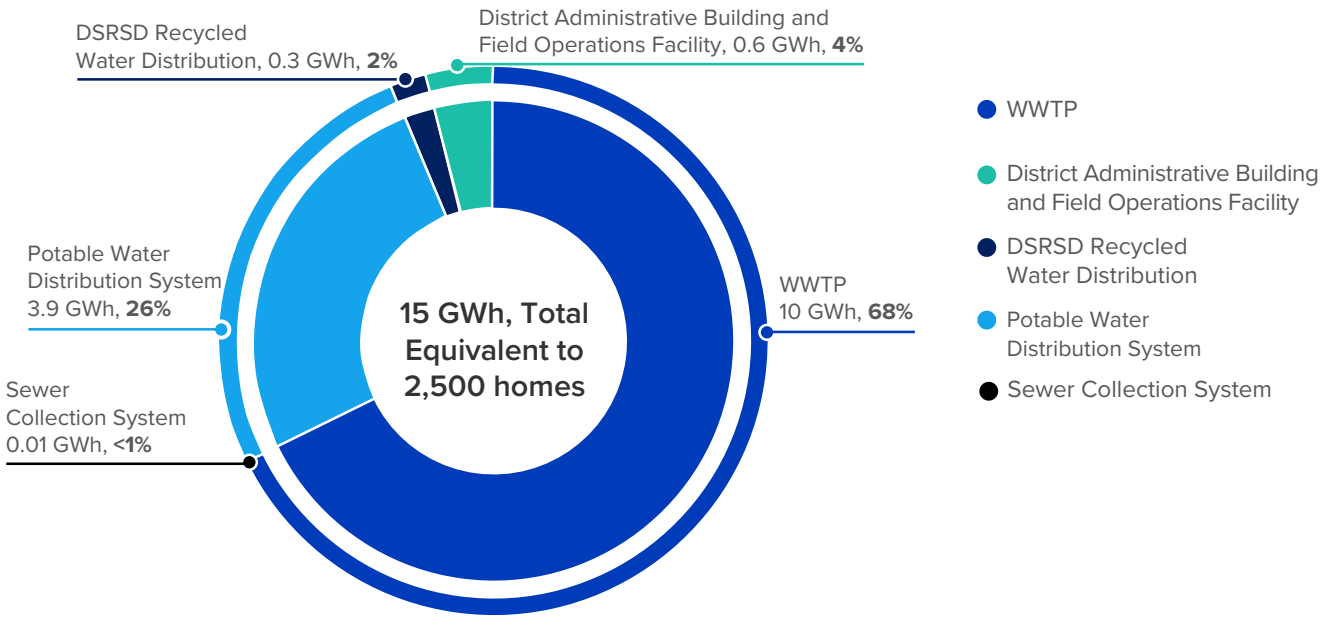


*Figure ES.3 DSRSD Facilities Annual Electricity Consumption 2021*




In addition to electricity, DSRSD also uses natural gas, diesel, and gasoline. Natural gas is used as a supplemental energy source for the cogeneration system at the WWTP and for building heating and cooling at the District Administrative Building and Field Operations Facility. **In 2021, these facilities used approximately 720,000 therms of natural gas at a cost of approximately $160,000, the equivalent of heating approximately 2,100 homes.** The vast majority (~668,000 therms) was used as a fuel for the cogeneration system to produce electrical power. The diesel and gasoline consumption in 2021 amounted to 9,350 gallons of gasoline and 630 gallons of diesel used to fuel the vehicle fleet, plus 3,306 gallons of diesel used for biosolids harvesting equipment at the WWTP facultative sludge lagoons (FSL's) and dedicated land disposal (DLD). The total fuel consumption by the District is comparable to 60 vehicles driven daily in the United States.

Also documented in TM 1 is a comprehensive GHG emissions inventory, which included Scope 1, 2, and 3 emissions for operations of the facilities listed above. Scope 1 includes direct emissions from on-site combustion and treatment processes. Scope 2 includes indirect emissions from purchased electricity. And Scope 3 includes indirect emissions from off-site sources such as chemical production and transport. **In 2021, all DSRSD facilities combined produced a total of approximately 4,400 metric tons of carbon dioxide equivalents (MTCO2e), the equivalent GHG footprint of approximately 140 homes.** The majority (73%) of these emissions were contributed by the WWTP, and the largest source of emissions at the WWTP (78%) was from natural gas used for cogeneration. Figure ES.4 shows the 2021 GHG emissions, broken down by facility. Figure ES.5 provides the 2021 natural gas consumption for DSRSD facilities.

*Figure ES.4 DSRSD Facilities 2021 GHG Emissions (GHG units in metric tons of CO2 equivalents)*

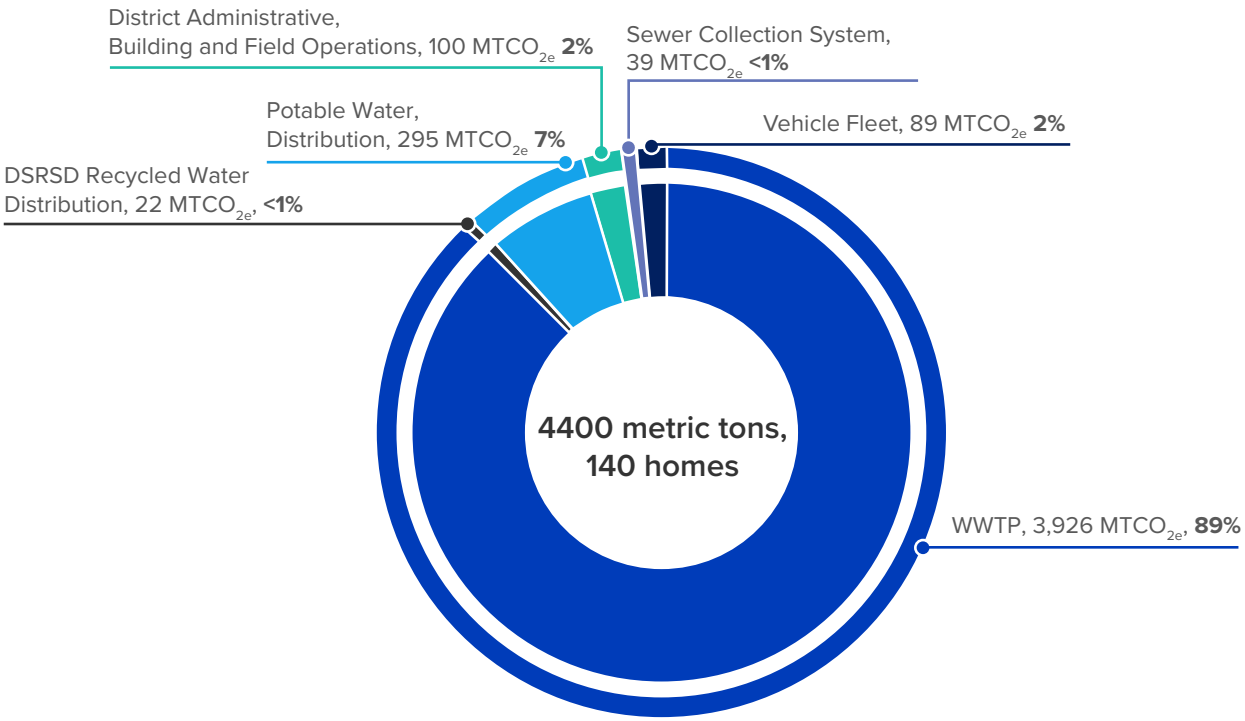
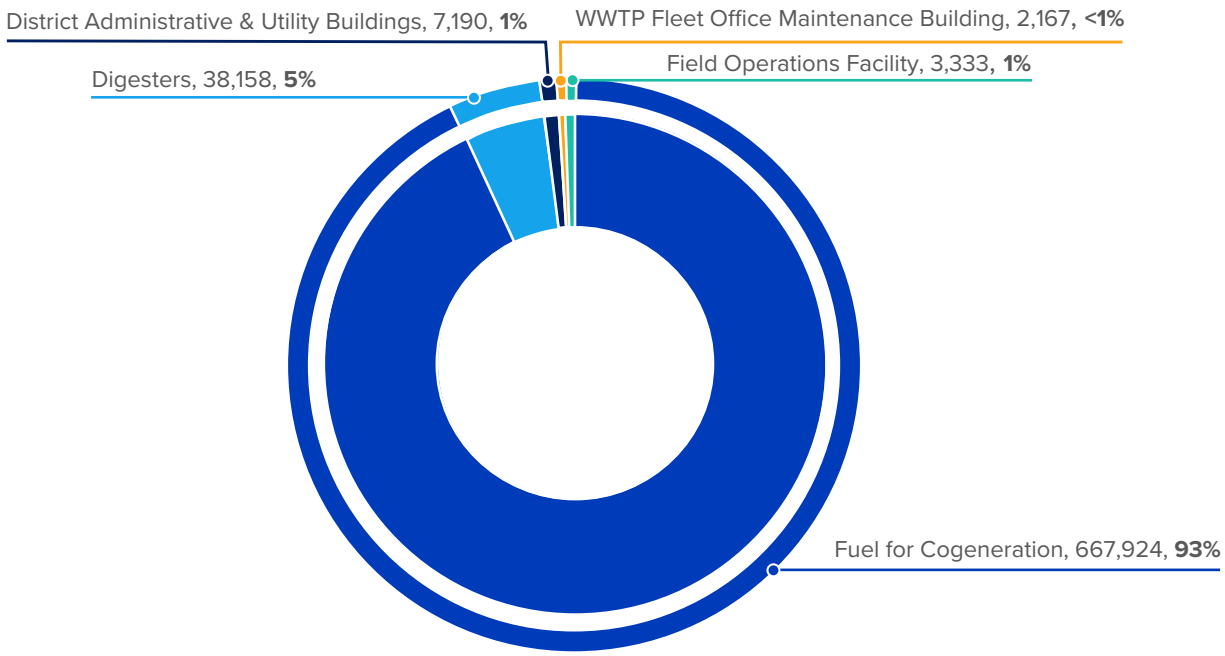



*Figure ES.5 DSRSD Facilities 2021 Natural Gas Consumption (Units in Therms)*



## The DSRSD's Guiding Principles for Energy Management and GHG Emissions

The following four guiding principles were used in evaluating alternatives for energy and GHG improvements and the priortization of future capital investments related to energy and GHG emissions.

1 - **Strive to establish a diverse, reliable, and resilient energy supply portfolio for operation of its facilities.**

2 - **Comply with all regulatory energy and GHG related mandates and strive to exceed them when related investments are cost-effective with consideration to the anticipated payback period and life cycle cost.**

3 - **Capital improvements shall consider the impact on energy demand, energy efficiency, and GHG impacts where relevant.**

4 - **Seek opportunities to offset any additional future energy demands with renewable energy production.**

## Forecasted Future Energy Demands, Energy Production and GHG Emissions

To provide a baseline comparison point for the energy opportunities evaluation, *TM 4 – Energy Demand and Production Capacity Projections* projected the energy demand, energy production and GHG emissions for the DSRSD facilities over the 25-year planning horizon of this Master Plan. These projections were then used to compare baseline conditions against alternatives to:

- Assess the estimated future energy demand and GHG emissions status quo conditions in consideration of the impact of potential future energy efficiency measures and future energy costs.
- Estimate adequate capacities for energy production equipment.
- Determine future energy supply needs and renewable energy sources to satisfy DSRSD's future energy demand and energy supply systems.

The projections assume that the wastewater influent flows and loadings will increase proportional to the population growth rate for the service area of 1.16% per year. These projections are provided in Table ES.1. It is noted that the flow projections may be conservative given additional water conservation efforts that may be implemented in the future. However, wastewater loads typically align with population and have the largest impact on energy demands.

*Table ES.1 Projected WWTP Influent Flows and Electricity Consumption*

| Year | Average Daily Annual Flow (mgd) | Annual Electricity Consumption - WWTP (MWh) | Annual Electricity Consumption Wastewater Collection System (MWh) |
|---|---|---|---|
| 2021[1][2] | 11.7 | 10,021 | 10.4 |
| 2035[3] | 13.7 | 11,777 | 11.6 |
| 2047[3] | 15.8 | 13,526 | 13.3 |

***Notes:***
*1- Baseline year for this Energy Facilities Master Plan. Electricity consumption includes electricity imported from the grid (460 MWh) and electricity from cogeneration (9,561 MWh).*
*2- Reference TM01 State of the District, Section 1.5.2, Table 1.11.*
*3- Developed based on a linear projection of the 2021 baseline using a 1.16 percent annual population growth rate.*
*Abbreviations: mgd – million gallons per day. MWh - Megawatt-hours*

Water system energy demands were projected based on the 2020 Urban Water Management Plan demand projections and using the 2021 unit electricity consumption of 1.13 MWh per million gallons. These projections are provided in Table ES.2.

*Table ES.2 Projected Potable Water Demand and Electricity Consumption*

| Year | Annual Potable Water Demand (MG) | Potable Water Demand Annual Electricity Consumption (MWh) |
|---|---|---|
| 2021[1] | 3,471 | 3,917 |
| 2035[2] | 4,499 | 5,078 |
| 2047[2] | 4,573 | 5,161 |

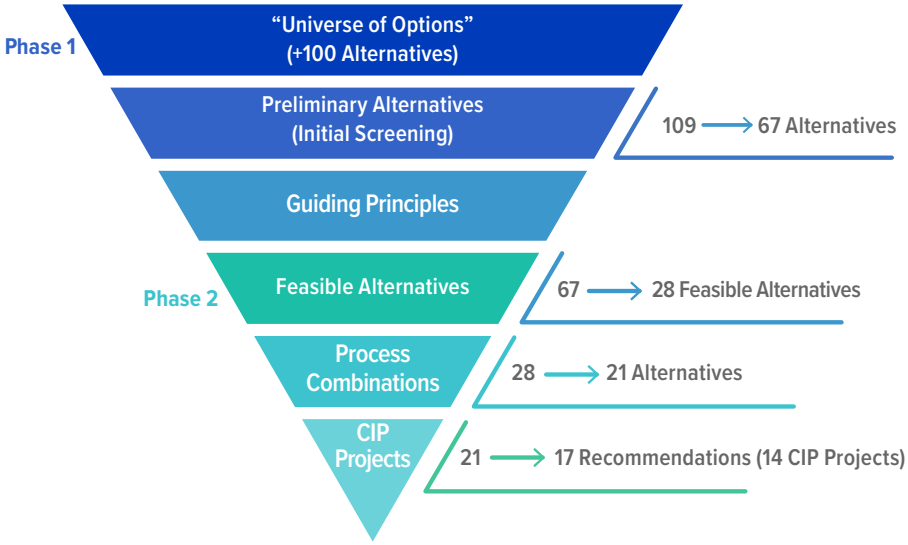
***Notes:***
*1- Baseline year for this Energy Facilities Master Plan.*
*2- Developed based on the potable water demand projections in the 2020 Urban Water Management Plan prepared for DSRSD by West Yost Associates.*

## Evaluation of Energy Saving, Energy Generation, and GHG Reduction Opportunities

Having set the baseline and future projections, the next step in the Master Plan was to evaluate potential opportunities for DSRSD to reduce their energy consumption, produce more energy from renewable sources, and reduce GHG emissions. The opportunities evaluation focused on the facilities fully owned and operated by DSRSD; the DERWA and LAVWMA facilities were excluded.

An initial list of 109 potential energy efficiency and energy generation opportunities were screened down using the Guiding Principles as the primary screening mechanism into the final seventeen (17) proposed energy recommendations, including fourteen (14) capital improvement program (CIP) projects and three (3) non-CIP recommendations. The screening was done in close collaboration with DSRSD staff through several workshops that facilitated input from all stakeholders. Figure ES.6 provides an overview of the evaluation process.

*Figure ES.6 Energy Opportunities Evaluation Process Overview*




*TM 2 – Energy and Greenhouse Gas Emissions Opportunities and Financial Impact* documents the screening of 109 potential opportunities into 67 that were carried forward for more detailed evaluation of their cost, energy, and GHG impacts. The screening used the following evaluation criteria:

**1- Implementability:**
a. Capital cost
b. Operations and maintenance costs
c. Impact on staffing resources

**2- Impact:**
a. Operational or regulatory reliability or flexibility
b. Infrastructure resilience or ability to address aging or capacity-limited infrastructure
c. Energy demand or greenhouse gas emissions
d. Energy diversification and the generation and use of renewable energy

The detailed evaluation of cost and energy impacts of the screened opportunities is documented in TM 5 and TM 6.

*TM 5 – Energy Savings and Efficiency Opportunities Assessment* evaluated multiple energy savings opportunities including WWTP liquid and solids treatment process optimizations, building heating, ventilation, and air conditioning (HVAC) and lighting improvements, pump efficiency improvements for the potable water distribution system, and energy management and advanced control opportunities.

*TM 6 – Energy Generation Opportunities and Power System Reliability Assessment* evaluated energy generation opportunities including opportunities to increase digester gas production and cogeneration capacity, solar and wind power, battery storage, and thermal energy recovery opportunities.

*TM 7 – Greenhouse Gas Reduction Opportunities and Fleet Transition to Zero-Emission Vehicles Assessment* documents the evaluation of the GHG impacts of the energy savings and generation opportunities. In addition, it developed a strategy for DSRSD to transition their medium- and heavy-duty fleets to zero-emission vehicles (ZEV), as required by recent regulations adopted by the California Air Resources Board (CARB) in April 2023. **The recommendations include opting into the High Priority & Federal Fleet regulations timeline for transitioning to ZEV's and increasing the District's timeline for vehicle replacement from 10-years to 18-years or 100,000 miles, whichever comes first.**

*TM- 8 Financing Partnerships Opportunity Assessment* evaluated opportunities for funding of energy-related projects through grants and loans as well as partnerships such as power-purchase agreements (PPA's) to assist DSRSD in funding large CIP expenditures. Opportunities identified include the Inflation Reduction Act tax credits, the Self-Generation Incentive Program (SGIP), and PG&E on-bill financing for efficiency improvements.

Based on the energy, cost, and GHG impacts evaluated in TM 5, TM 6, and TM 7, the 67 opportunities were screened down to 28 feasible alternatives.

*TM 11 – Alternatives Analysis* describes the final round of screening, where the 28 feasible alternatives were evaluated using a modeling software tool. The energy model was used to develop and compare "portfolios" consisting of various combinations of alternatives to understand the potential impacts to energy use, energy production, and GHG footprint over time. These were compared to the baseline scenario and Portfolio 2, which consisted of only projects that best aligned with the "Guiding Principles". The following scenarios where evaluated as part of this effort:

- **Baseline Portfolio:** No change scenario, no energy projects selected.
- **Portfolio 1 –** Current CIP: Only projects already included in the DSRSD CIP.
- **Portfolio 2 –** Guiding Principles: Only projects that align with the Guiding Principles.
- **Portfolio 3 –** Energy Independence: Only projects that provide independence from utility power.
- **Portfolio 4 –** Prioritized Energy Efficiency: All projects that increase efficiency.
- **Portfolio 5 –** All Renewable Energy: All projects that increase renewable energy and offset future energy demands.
- **Portfolio 6 –** GHG Neutrality: All projects that reduce GHG emissions.
- **Portfolio 7 –** Favorable Payback: Only projects that have a less than 15-year payback.

Based on the results of this analysis, the 28 feasible alternatives were screened down to the final seventeen (17) energy recommendations, including fourteen (14) CIP projects recommended for inclusion in DSRSD's CIP and three (3) non-CIP projects

*TM 12 – Recommended Capital Improvement Program* provides descriptions of the 17 recommendations. It should be noted that each of these selected projects aligns with the Guiding Principles and provides at least one of the following key benefits:

- **Regulatory compliance**
- **Energy efficiency and reliability through replacement of assets nearing the end of their useful life.**
- **Power resiliency by addressing identified deficiencies in the electrical distribution infrastructure.**
- **Diversification of energy through renewable energy generation**

In addition to the core evaluation of the opportunities described above, the WWTP's electrical system reliability and resiliency were evaluated as part of this Master Plan

*TM 3 – State of the Assets Review: Wastewater Treatment Plant* evaluated the condition of existing electrical assets at the WWTP, because understanding what assets are nearing the end of their useful life is important for prioritizing projects to provide ongoing operations reliability.

*TM 14 – Electrical Distribution Infrastructure Replacement Model Evaluation and Update* provides a detailed evaluation of the electrical distribution infrastructure which evaluated short circuit ratings and load capacities of the existing equipment. Recommendations associated with this analysis are included in the CIP as the four (4) reliability driven projects.

Figure ES.7 provides a breakdown of the CIP including costs by project type. Figure ES.8 presents the recommended CIP projects, along with their timing and associated costs. Table ES.3 presents each recommended CIP project along with justification for its implementation. Table ES.4 presents the recommended non-CIP projects.

The total budget for the projects recommended in the Master Plan is $139.4 million. The Energy Master Plan CIP includes five projects that are already included in the District's adopted Capital Improvement Program Ten-Year Plan and Two Year Budget for Fiscal Years 2024 and 2025 (estimated at $54.3M). Therefore, this Energy Master Plan CIP is expected to increase capital expenditures by approximately $85.1 million. Approximately 90.7 million of the total CIP is planned over the next 10 years (FYE 2024-2033) and an additional $48.7 million is planned over the 11-25 year planning horizon (FYE 2034-2047).

*Figure ES.7 CIP Cost by Project Type*

| Project Type | Total |
|---|---|
| Asset Replacement | $83,800,000 |
| Regulatory Driven | $11,700,000 |
| Resiliency Driven | $6,500,000 |
| Renewable Energy Generation/Diversification | $36,700,000 |

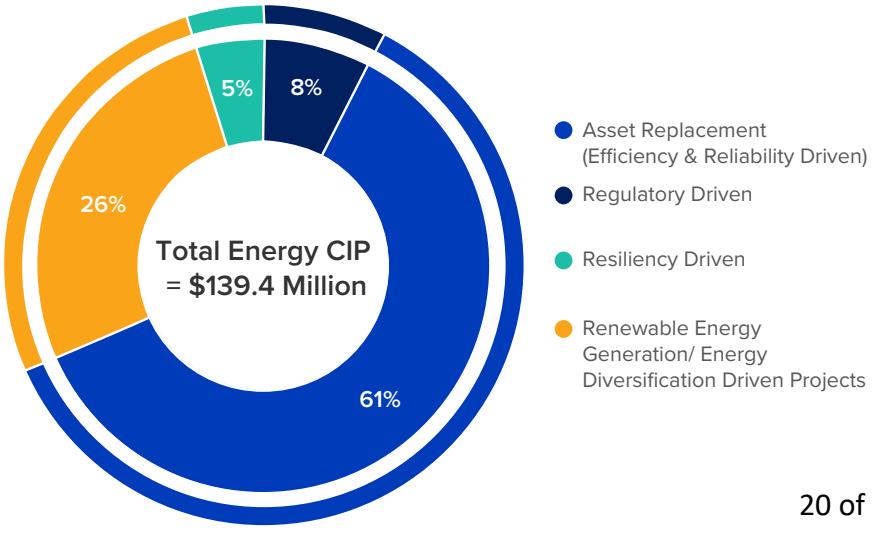


*Figure ES.8 Energy Facilities Master Plan Recommended CIP*

**DSRSD ENERGY CAPITAL IMPROVEMENTS PLAN**

**Estimated Project Cost (in 2023 dollars)**

| Project Description | FYE | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Regulatory Driven** | | | | | | | | | | | | | | | | | | | | | |
| **Project 1:** Fleet Assets Program | | $11.7 M | | | | | | | | | | | | | | | | | | | |
| **Asset Replacement (Efficiency & Reliability)** | | | | | | | | | | | | | | | | | | | | | |
| **Project 2:** Cogeneration Engine Replacement | | | | | | $44.4M | | | | | | | | | | | | | | | |
| **Project 3:** Aeration System Upgrades | | | | | | | | $9.8 M | | | | | | | | | | | | | |
| **Project 4:** DAFT Replacement with Mechanical Thickening | | | | | | | | | | | | | | | $26.7 M | | | | | | |
| **Project 5:** WWTP HVAC Replacements | | $3.5M | | | | | | | | | | | | | | | | | | | |
| **Renewable Energy Generation/ Energy Diversification Driven Projects** | | | | | | | | | | | | | | | | | | | | | |
| **Project 6:** Off-Site Solar Power | | | $9.1 M | | | | | | | | | | | | | | | | | | |
| **Project 7:** Battery Storage | | | | $4.8 M | | | | | | | | | | | | | | | | | |
| **Project 8:** On-Site Solar Power, Battery Storage and EV Charging | | | $9.3 M | | | | | | | | | | | | | | | | | | |
| **Project 9:** Codigestion of Food Waste and other High Strength Waste | | | | | $3.9 M | | | | | | | | | | | | | | | | |
| **Project 10:** Additional Cogeneration Engine | | | | | | | | | | | | | | | $9.6 M | | | | | | |
| **Resiliency Driven Projects** | | | | | | | | | | | | | | | | | | | | | |
| **Project 11:** Install Load Bank for DP-G | | | | | $300k | | | | | | | | | | | | | | | | |
| **Project 12:** Reconfigure Switchgear for Power Outages | | | | | $100k | | | | | | | | | | | | | | | | |
| **Project 13:** WWTP Electrical Improvements Phase 1 | | | $2.1 M | | | | | | | | | | | | | | | | | | |
| **Project 14:** WWTP Electrical Improvements Phase 2 | | | $100 k | | | | | | | | | $3.9 M | | | | | | | | | |
| **Total Annual Cost** | | $955,000 | $6,051,483 | $18,568,000 | $9,003,000 | $3,903,000 | $20,130,000 | $20,620,000 | $640,000 | $6,094,000 | $4,774,000 | $995,000 | $4,072,000 | $3,335,000 | $9,378,000 | $17,184,000 | $8,160,000 | $1,678,000 | $150,000 | $3,546,000 | $150,000 |
| **CIP Total in 2023 Dollars** | | $139.4M | | | | | | | | | | | | | | | | | | | |

**LEGEND**
- Planning or Design Phase
- Construction Phase

***Notes:*** *All or portions of the highlighted projects are included in the current approved CIP.*

*Table ES.3 Overview of Proposed Energy Projects Included Within the Master Plan CIP*

| Project | Alternatives Included Within Project | CAPEX ($) | OPEX ($/ Year) | Energy or GHG Impact | Justification |
|---|---|---|---|---|---|
| **Regulatory Driven Projects** | | | | | |
| **Project 1: Fleet Assets Program** | Transition to zero-emission vehicle (ZEV) fleet. | 11.7M | See TM – 07 | Saves 94,000 gallons of gasoline and 6,000 gallons of diesel fuel over 20 years | Compliance with California Air Resources Board (CARB) regulations. |
| **Asset Replacement Projects (Efficiency & Reliability Driven)** | | | | | |
| **Project 2: Cogeneration Engine Replacement** | Replace aging cogeneration engines with new higher efficiency cogeneration engines | 44.4M | -560k | Increased onsite energy production of 2.5 MWh/yr | Near the end of useful life and newer engines have improved efficiency. Potential 16-year payback with IRA incentives.<br>Due to higher efficiency, new engine expected to produce approximately 20% more power; additional power will offset future energy demands associated with new customers. |
| **Project 3: Aeration System Upgrades** | Model Predictive Aeration Control<br>Low DO Operation<br>Upgrade Aeration Diffusers<br>Upgrade Aeration Blowers | 100k<br>100k<br>1.0M<br>7.6M | -95k<br>-190k<br>-95k<br>-38k | Energy efficiency savings of approximately 1 MWh/yr | Blower equipment is nearing the end of useful service life (10 years remaining) and newer blowers have improved efficiency. Diffuser and control improvements timed with blower replacement for added efficiency improvements. |
| **Project 4: DAFT Replacement with Mechanical Thickening** | Mechanical Thickening instead of DAFT<br>Real time SRT control | 26.6M<br>50k | 630k<br>10k | Energy efficiency savings of approximately 1.4 MWh/yr | DAFT structure and equipment nearing the end of its useful life (15-20 years remaining) and a significant improvement in energy efficiency is expected. |
| **Project 5: WWTP HVAC Improvements** | Replacement of HVAC components for various buildings at the WWTP | 3.5M | Not evaluated | Replaces aging assets with new more efficient equipment. | Units are near the end of their useful life (<5 years remaining) and newer models have improved efficiency. |
| **Renewable Energy Generation/Energy Diversification Driven Projects** | | | | | |
| **Project 6: Off-site Solar Power** | Off-Site Solar Installation (At LAVWMA site) | 9.1M | -$311k | Renewable energy production of approximately 1 MWh/yr | Estimated 14-year payback with IRA incentives. Increased energy independence and increased diversity of renewable energy are also beneficial outcomes of these projects. The project also offers advantageous return on investments through a purchase power agreement structure. |
| **Project 7: Battery Storage** | Battery Storage for Peak Demand Charges (At WWTP) | 4.8M | -$480k | Saves approximately $430,000/yr in electricity costs | Estimated 7-8 year payback. Offsets peak demand charges and improves energy independence. |
| **Project 8: On-site Solar Power, Battery Storage, and EV Charging** | On-Site Solar Installation<br>Solar Power for EV Fleet Recharging Stations (At WWTP, FOF, and Admin Bldg) | 9.3M | -191k | Renewable energy production of 3.2 MWh/yr | Estimated 20-year payback with IRA incentives. Increased energy independence and increased diversity of renewable energy. |
| **Project 9: Codigestion of FW and other HSW** | Co-digest Food Waste Slurry and HSW | 3.9M | Not evaluated | Over 3,400 MTCO2e reduction in GHG emissions per year through offsetting NG useage with renewable biogas production. Additional renewable energy production of approximately 761,000 KWh/yr | Gas production associated with these facilities will offset future energy demands associated with new customers. |
| **Project 10: Additional Cogeneration Engine** | Increase Cogen Capacity for Peak Demand and Redundancy | 9.6M | Not evaluated | Over 600,000 KWh/yr in additional onsite power generation. | Provides redundancy if an engine is out of service and allows for meeting future and peak demands with onsite renewable energy production. |
| **Resiliency Driven Projects** | | | | | |
| **Project 11: Install Load Bank for DP-G** | Install load bank to protect Standby Generator G5 and provide reliable operation. | 300k | Not evaluated | NA | Adding an automatic load bank to DPG would allow sufficient load on G5 whenever it's running, whether due to a PG&E outage or routine exercising of the generator. |
| **Project 12: Reconfigure Switchgear for Power Outages** | Reconfigure the switchgear at the WWTP to allow for automatic restoration of power after a PG&E power outage | 100k | Not evaluated | NA | Improves performance and provides reliability of existing assets. |
| **Project 13: WWTP Electrical Improvements Phase 1** | Upgrade WWTP's electrical equipment with inadequate short circuit ratings. | 2.1M | Not evaluated | NA | Improves performance and provides reliability of existing assets. |
| **Project 14: WWTP Electrical Improvements Phase 2** | Upgrade WWTP's electrical equipment with marginal or overloaded performance. | 4M | Not evaluated | NA | Improves performance and provides reliability of existing assets. |

***Notes:*** *All or portions of the highlighted projects are included in the current approved CIP.*
*Abbreviations: AHU - air handling unit; CAPEX - capital expenses; DERWA - Dublin San Ramon Services District - East Bay Municipal Utility District Recycled Water Authority; DLD - dedicated land disposal; FOG - fats, oils, and grease; FSL - facultative sludge lagoon; FW - food waste; HSW – high strength waste; k - thousand; M - million; NG - natural gas; OPEX - operating expenses; PPA - power purchase agreement.*

*Table ES.4 Recommended Non-CIP Energy Projects*

| Project | Opportunities Included | Justification |
|---|---|---|
| **Project 15: Fats, Oils, and Grease (FOG) Facility Activation** | Co-digest FOG | Reduction of 1,230 metric tons in carbon dioxide equivalents for a slight increase in operating costs ($300k). |
| **Project 16: Potable Water Distribution System Improvements** | Address pump performance issues identified. | Efficiency issues associated with poor pump performance not only impact energy use but reduce the life of equipment and impact system reliability. |
| **Project 17: Energy Management Improvements** | Renewable Energy Generation Partnerships<br>Alternative Power Monitoring<br>Energy Decision Management Tools<br>Staff Focus on Energy Management | Allows for better energy management decisions by understanding where power is consumed. |

This is a sizable effort for the District to undertake and will strain its staffing resources. Although the scope of the Master Plan did not include a staffing analysis, it is likely that DSRSD will need to employ additional engineering staff to manage the implementation of the recommended energy projects. Additionally, because the food waste and FOG receiving facilities will demand significant operator attention, DSRSD may also need to consider bolstering its operational staffing.

The proposed CIP will provide significant benefits to the District over the next 25 years, including regulatory compliance, diversification of energy supplies with more renewable energy, stabilization of long-term energy costs by minimizing the use of grid power and natural gas, and offsetting future energy demands with renewable energy generation. It will also increase energy efficiency (25% reduction by 2030 and 50% by 2047), and significantly reduce the District's carbon footprint (57% reduction by 2030 and 66% by 2047).

## Energy CIP Key Points

Total Energy Facilities CIP
$139.4 M ($85.1 M to be added to Capital Improvement Program)

### 14 Projects:

- Regulatory Compliance
- Energy Efficiency through Asset Replacement
- Energy Diversification through Renewable Energy Sources
- Electrical Reliability

### Key Benefits:

Improved Energy Reliability

Energy Efficiency
25% reduction by 2030,
50% reduction by 2047

GHG Emissions Reduction
57% by 2030, 66% by 2047

Regulatory compliance for vehicle fleet

Diversification of energy supplies with more renewable energy

Stabilization of long-term energy costs

carollo.com

Dublin San Ramon Services District
Water, wastewater, recycled water

# Policy

| | |
|---|---|
| **Policy No.:** | **Type of Policy:** General |
| **Policy Title:** Energy | |
| **Policy Description:** Provides guidance for improving long-term energy efficiency and reliability for the District | |
| **Approval Date:** | **Last Review Date:** 2024 |
| **Approval Resolution No.:** | **Next Review Date:** 2028 |
| **Rescinded Resolution No.:** N/A | **Rescinded Resolution Date:** N/A |

DRAFT

The purpose of this policy of the Board of Directors of Dublin San Ramon Services District is to provide an adaptable framework to establish a resilient energy supply, optimize energy efficiency, increase renewable energy generation, and foster environmental sustainability.

It is the Board's policy to:

1. Establish and manage a diverse, reliable, and resilient energy supply portfolio that protects the District's operations from unplanned electrical outages and stabilizes long-term energy costs.

2. Pursue initiatives that endeavor to reduce energy consumption, enhance energy efficiency, increase energy generation, and mitigate greenhouse gas emissions, while considering factors such as anticipated payback period, life cycle costs, resource requirements, and other District policies and strategic goals.

3. Comply with all regulatory energy and greenhouse gas related mandates and strive to exceed them when related investments are cost-effective.

4. Seek opportunities to increase the use and generation of renewable energy to offset additional future energy demands and reduce greenhouse gas emissions.

    a. By 2030, utilize 100% of the biogas generated at the District's Regional Wastewater Treatment Facility.

    b. By 2030, implement a food waste recycling program that supports the efforts of local jurisdictions to reduce organic waste in landfills.

5. In the operation of its facilities, promote and adopt cost-effective operational practices, programs, and initiatives to manage energy costs and minimize impacts on the environment.

6. Assess opportunities to include cost-effective features that enhance energy reliability and resiliency, reduce energy demand, increase energy efficiency, and reduce greenhouse gas impacts during the planning and implementation of the District's capital improvement projects.

7. Implement a fiscally responsible fleet management program that meets the District's core operational needs and supports industry efforts to reduce petroleum-based fuels and tailpipe emissions.

8. Evaluate and pursue, when favorable, funding opportunities such as grants, low-interest loans, utility incentive programs and rebates, and strategic partnerships, to subsidize energy-related capital and operating expenditures.

DRAFT

# Energy Facilities Master Plan

January 16, 2024

Dublin San Ramon Services District
*Water, wastewater, recycled water*

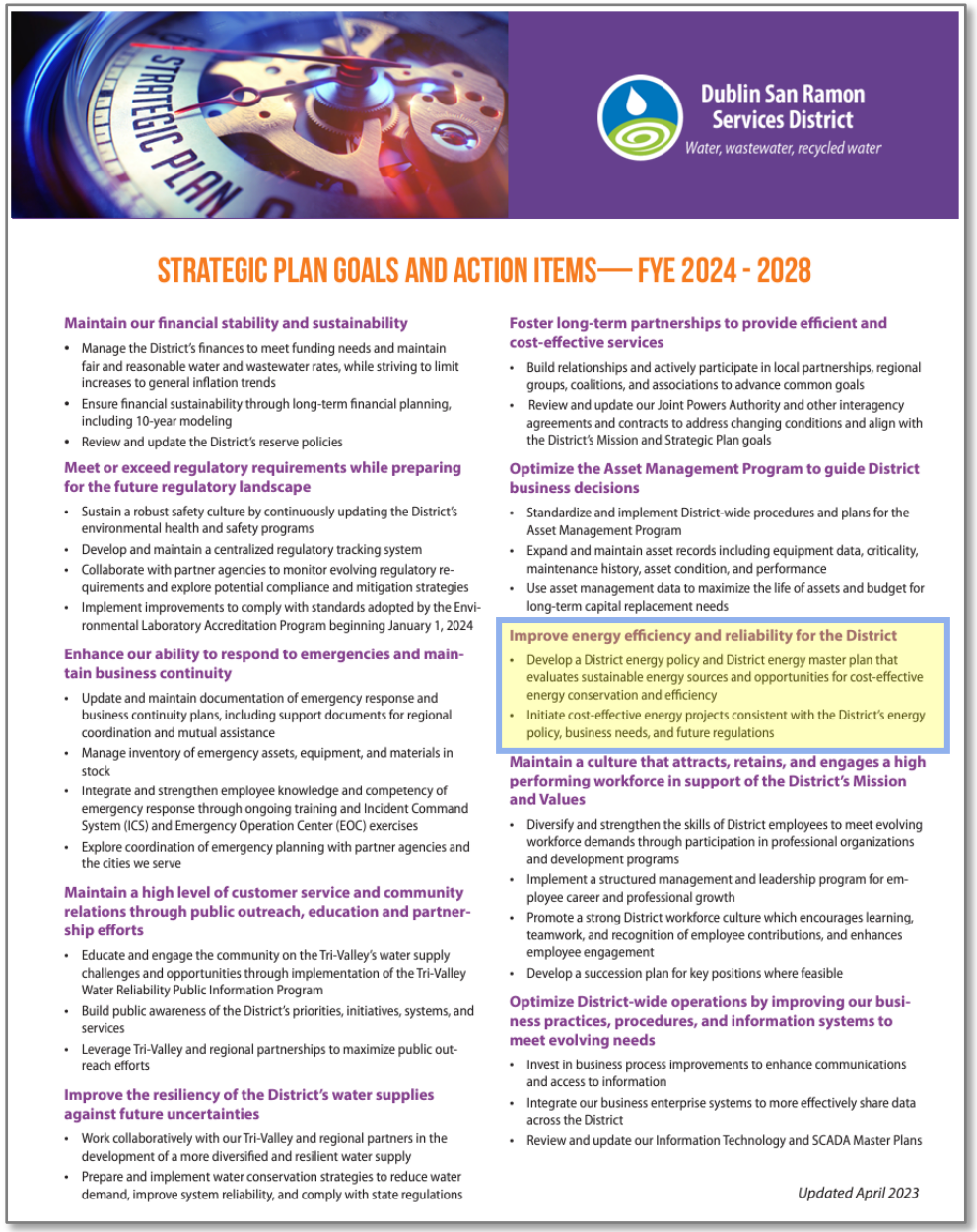
# Agenda

- Overview
- Projects and Timing
- Energy and GHG Reductions
- Next Steps

# Strategic Plan

## Improve energy efficiency and reliability for the District

- Develop a District **energy policy** and District **energy master plan** that evaluates sustainable energy sources and opportunities for cost-effective energy consumption and efficiency
- Initiate cost-effective **energy projects** consistent with the District's energy policy, business needs and future regulations



Dublin San Ramon Services District
*Water, wastewater, recycled water*

### STRATEGIC PLAN GOALS AND ACTION ITEMS— FYE 2024 - 2028

**Maintain our financial stability and sustainability**

- Manage the District's finances to meet funding needs and maintain fair and reasonable water and wastewater rates, while striving to limit increases to general inflation trends
- Ensure financial sustainability through long-term financial planning, including 10-year modeling
- Review and update the District's reserve policies

**Meet or exceed regulatory requirements while preparing for the future regulatory landscape**

- Sustain a robust safety culture by continuously updating the District's environmental health and safety programs
- Develop and maintain a centralized regulatory tracking system
- Collaborate with partner agencies to monitor evolving regulatory requirements and explore potential compliance and mitigation strategies
- Implement improvements to comply with standards adopted by the Environmental Laboratory Accreditation Program beginning January 1, 2024

**Enhance our ability to respond to emergencies and maintain business continuity**

- Update and maintain documentation of emergency response and business continuity plans, including support documents for regional coordination and mutual assistance
- Manage inventory of emergency assets, equipment, and materials in stock
- Integrate and strengthen employee knowledge and competency of emergency response through ongoing training and Incident Command System (ICS) and Emergency Operation Center (EOC) exercises
- Explore coordination of emergency planning with partner agencies and the cities we serve

**Maintain a high level of customer service and community relations through public outreach, education and partnership efforts**

- Educate and engage the community on the Tri-Valley's water supply challenges and opportunities through implementation of the Tri-Valley Water Reliability Public Information Program
- Build public awareness of the District's priorities, initiatives, systems, and services
- Leverage Tri-Valley and regional partnerships to maximize public outreach efforts

**Improve the resiliency of the District's water supplies against future uncertainties**

- Work collaboratively with our Tri-Valley and regional partners in the development of a more diversified and resilient water supply
- Prepare and implement water conservation strategies to reduce water demand, improve system reliability, and comply with state regulations

**Foster long-term partnerships to provide efficient and cost-effective services**

- Build relationships and actively participate in local partnerships, regional groups, coalitions, and associations to advance common goals
- Review and update our Joint Powers Authority and other interagency agreements and contracts to address changing conditions and align with the District's Mission and Strategic Plan goals

**Optimize the Asset Management Program to guide District business decisions**

- Standardize and implement District-wide procedures and plans for the Asset Management Program
- Expand and maintain asset records including equipment data, criticality, maintenance history, asset condition, and performance
- Use asset management data to maximize the life of assets and budget for long-term capital replacement needs

**Improve energy efficiency and reliability for the District**

- Develop a District energy policy and District energy master plan that evaluates sustainable energy sources and opportunities for cost-effective energy conservation and efficiency
- Initiate cost-effective energy projects consistent with the District's energy policy, business needs, and future regulations

**Maintain a culture that attracts, retains, and engages a high performing workforce in support of the District's Mission and Values**

- Diversify and strengthen the skills of District employees to meet evolving workforce demands through participation in professional organizations and development programs
- Implement a structured management and leadership program for employee career and professional growth
- Promote a strong District workforce culture which encourages learning, teamwork, and recognition of employee contributions, and enhances employee engagement
- Develop a succession plan for key positions where feasible

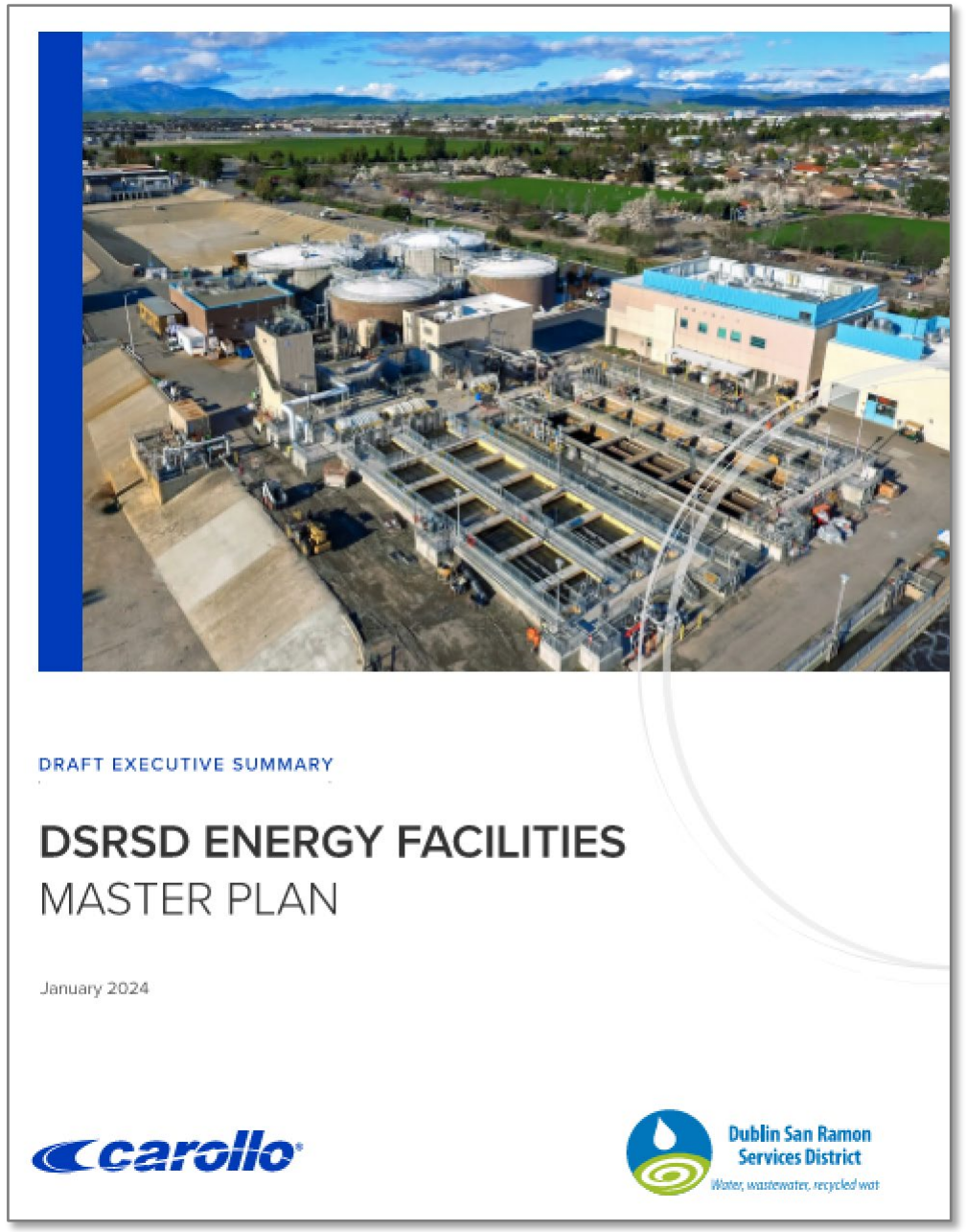
**Optimize District-wide operations by improving our business practices, procedures, and information systems to meet evolving needs**

- Invest in business process improvements to enhance communications and access to information
- Integrate our business enterprise systems to more effectively share data across the District
- Review and update our Information Technology and SCADA Master Plans

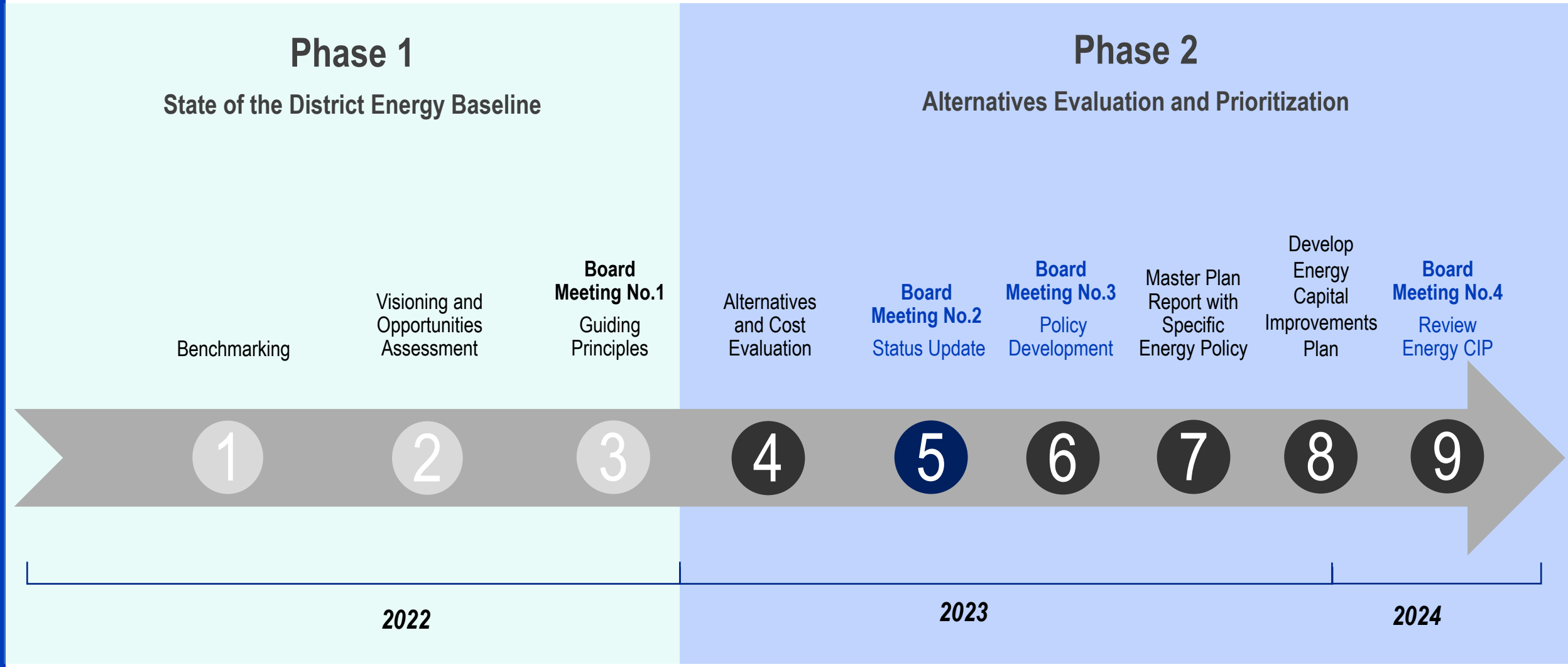
*Updated April 2023*

# Overview

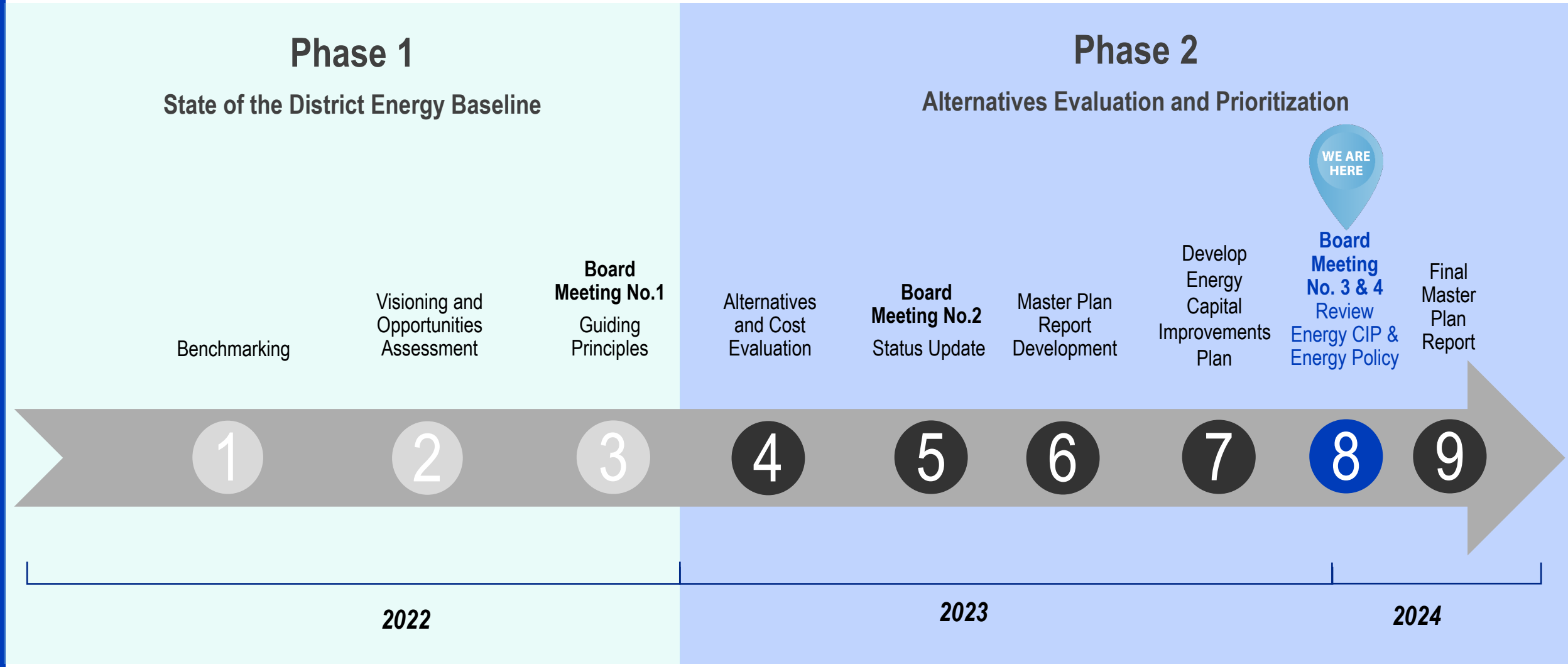
- All-Encompassing Review of All District Facilities
- Energy Master Plan
- Energy Policy
- Capital Improvement Program



# Scope of Phase 1 and 2 of this Planning Project



# Scope of Phase 1 and 2 of this Planning Project



# Phase 1 Summary

# Summary of the Baseline Findings

Electricity demand is ~15 M kWh/year (~2,500 homes)

Thermal energy demand is ~720,000 therms/year (~2,100 homes)

Fuel consumption is comparable to ~60 vehicles driven in the United States

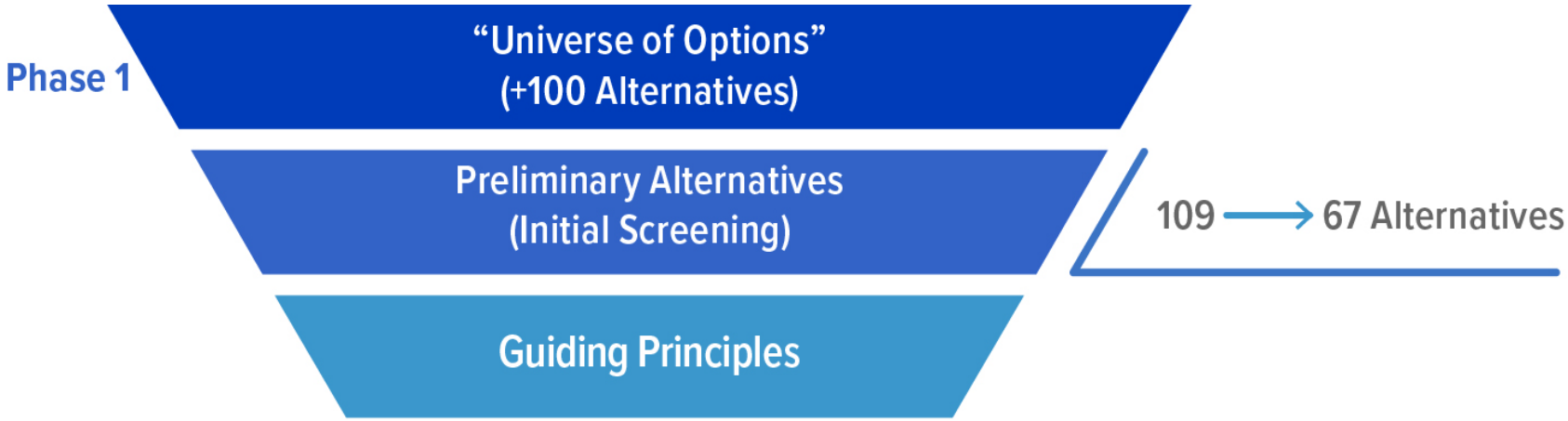
~94% of the District's electrical energy demands are associated with the operation of its wastewater treatment and water distribution facilities

The District's GHG footprint is ~4,400 metric tons CO2e(~140 homes)


96% of the power required for the WWTP is generated on-premise via the cogeneration system

Nearly 100% of the thermal energy demands for the WWTP are met through thermal energy recovered from the on-premise cogeneration system

# Master Planning Process

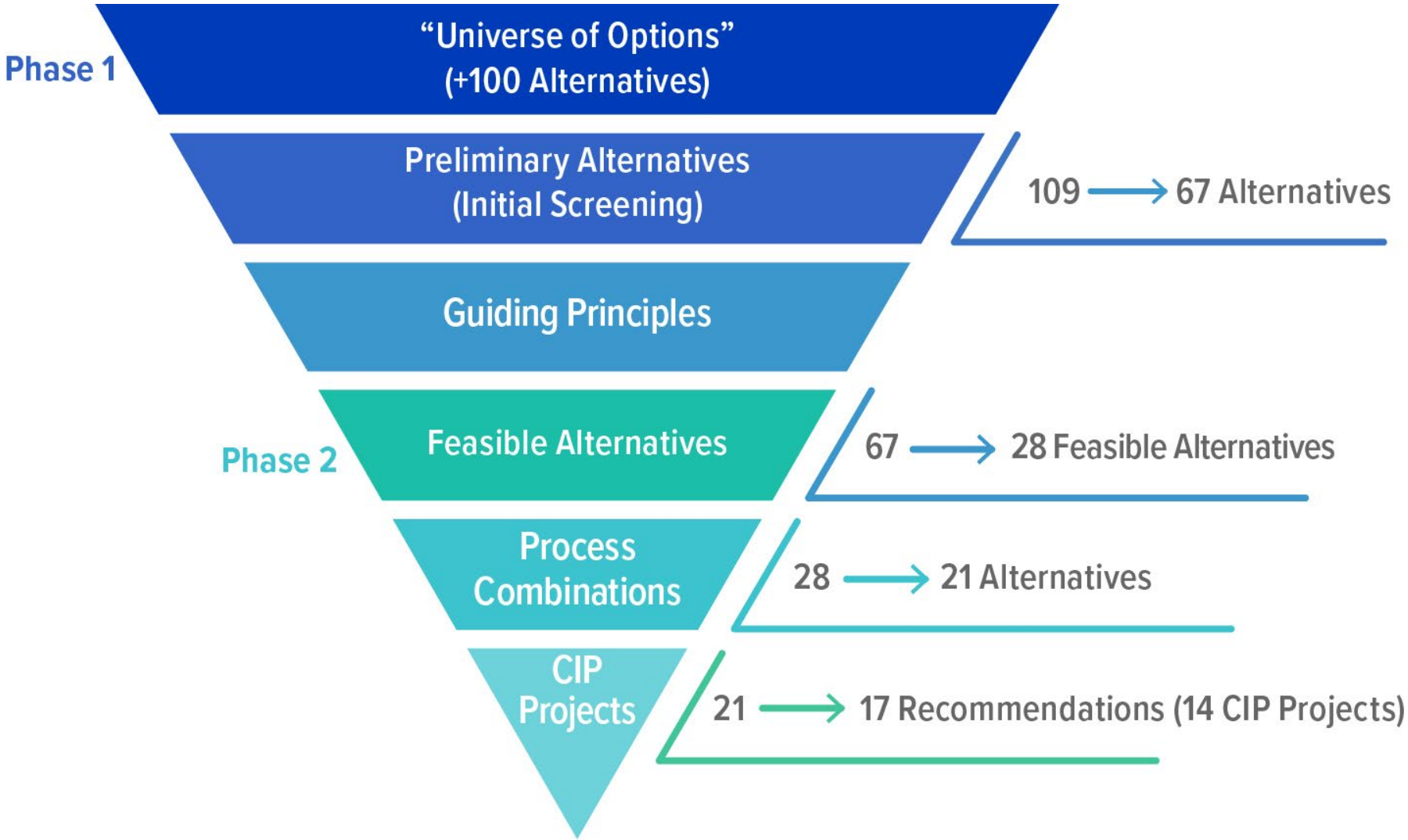


# Energy Guiding Principles Review

1. Strive to establish a **diverse, reliable, and resilient energy** supply portfolio for operation of its facilities.
2. **Comply with all regulatory energy and GHG related mandates** and strive to exceed them when related investments are cost-effective with consideration to the anticipated payback period and life cycle cost.
3. **Capital improvements shall consider the impact on energy demand, energy efficiency, and GHG impacts** where relevant.
4. Seek opportunities to **offset any additional future energy demands** with renewable energy production.

# Phase 2 Summary – Proposed CIP

# Master Planning Process



# Projects

# CIP Project Summary

## Regulatory Compliance

1. Fleet Assets Program

## Renewable Energy Generation/Energy Diversification

6. Off-Site Solar Power
7. Battery Storage
8. On-Site Solar Power, Battery Storage and EV Charging Stations
9. Co-Digestion of Food Waste
10. Additional Cogeneration Engine

## Asset Replacement (Efficiency)

2. Cogeneration Engine Replacement
3. Aeration System Upgrades
4. DAFT Replacement with Mechanical Thickening
5. WWTP HVAC Replacements

## Electrical Resiliency/Reliability

11. Install Load Bank for DP-G
12. Reconfigure Switchgear for Power Outages
13. WWTP Electrical Improvements – Phase 1
14. WWTP Electrical Improvements – Phase 2

*Projects in current, adopted CIP

# CIP Project Summary

## Regulatory Compliance

1. **Fleet Assets Program**

## Renewable Energy Generation/Energy Diversification

6. Off-Site Solar Power
7. Battery Storage
8. On-Site Solar Power, Battery Storage and EV Charging Stations
9. Co-Digestion of Food Waste
10. **Additional Cogeneration Engine**

## Asset Replacement (Efficiency)

2. **Cogeneration Engine Replacement**
3. Aeration System Upgrades
4. DAFT Replacement with Mechanical Thickening
5. **WWTP HVAC Replacements**

## Electrical Resiliency/Reliability

11. Install Load Bank for DP-G
12. Reconfigure Switchgear for Power Outages
13. **WWTP Electrical Improvements – Phase 1**
14. WWTP Electrical Improvements – Phase 2

# Regulatory Compliance

**Project 1:** Fleet Assets Program

## Description

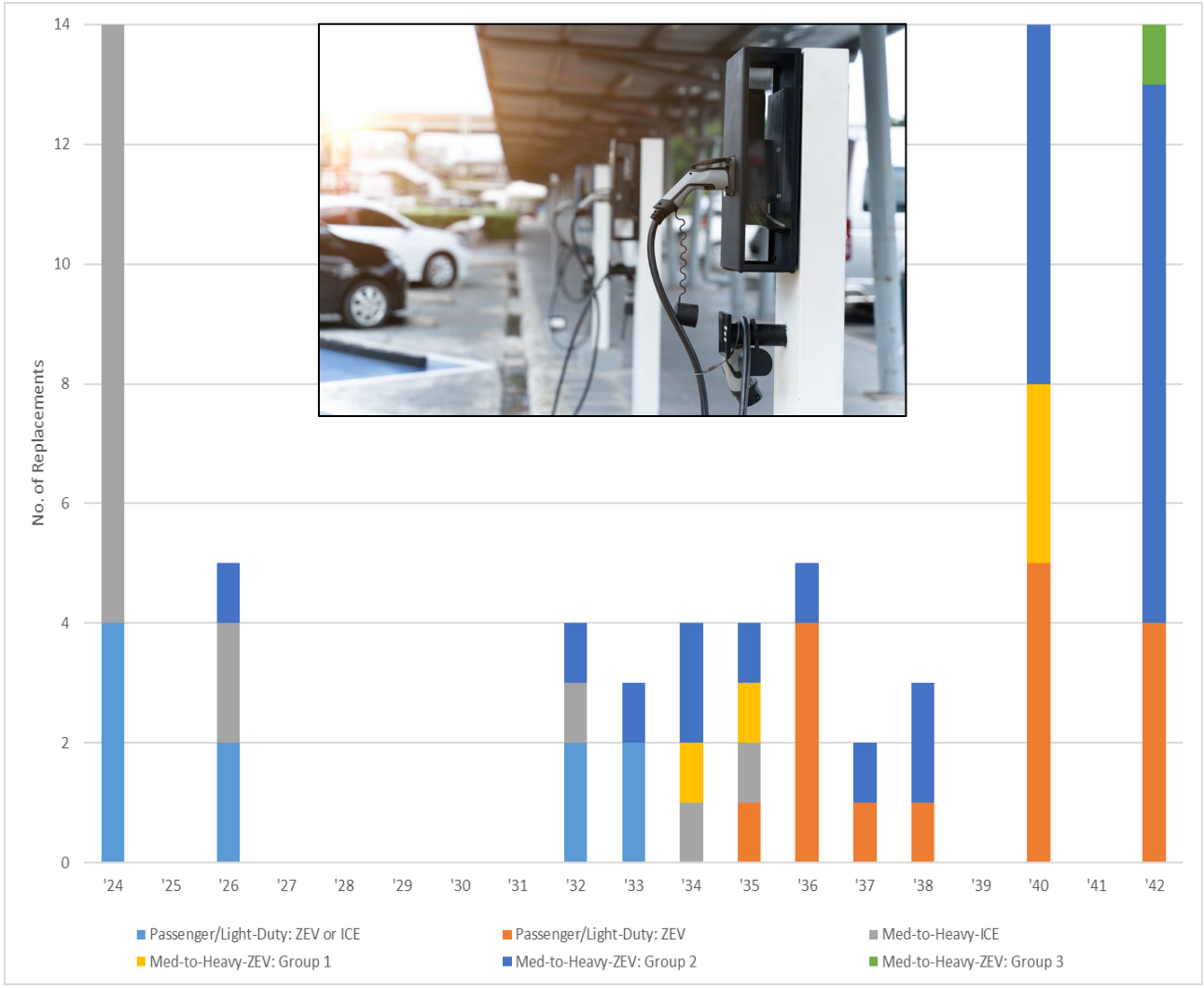
- Timeline and costs for fleet vehicle replacements to comply with new regulations
- Recommends opting into High Priority Fleet with 18-year replacement

## Justification

- Required to comply with regulations

**Capital Cost:** $13.0 M over 20 years

**Project Implementation:** FYE 2024 thru 2043



# Asset Replacement

**Project 2:** Cogeneration Replacement

**Description:**

- Two 700 kW engines in a new building

**Justification:**

- Cogeneration equipment nearing end of useful service life (30-40 years old)
- Newer engines will provide 20% more power to offset future demands

**Capital Cost:** $44.4 M

**Project Commencement :** FYE 2026 to maximize IRA funding incentives

**Funding:** Up to 30% available through IRA

# Renewable Energy Generation & Energy Diversification

**Project 6 & 8:** On-Site/Off-Site Solar, Battery Storage and EV Charging Stations

## Description

» New solar facilities on DSRSD properties, including battery storage and EV charging

## Justification

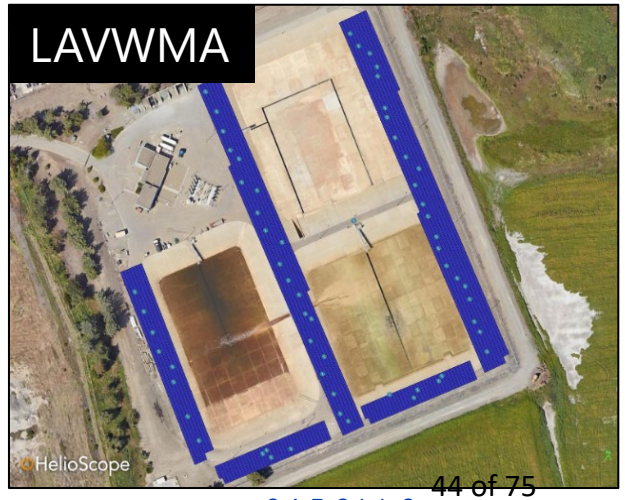
» Stabilization of energy costs

» Offsets future energy demands with renewable energy source

» Supports next generation of Zero Emission Vehicles (ZEVs)

**Capital Cost:** $18.4 M



# Renewable Energy Generation & Energy Diversification

**Project 6 & 8:** On-Site/Off-Site Solar, Battery Storage and EV Charging Stations

## Description

- New solar facilities on DSRSD properties, including battery storage and EV charging

## Justification

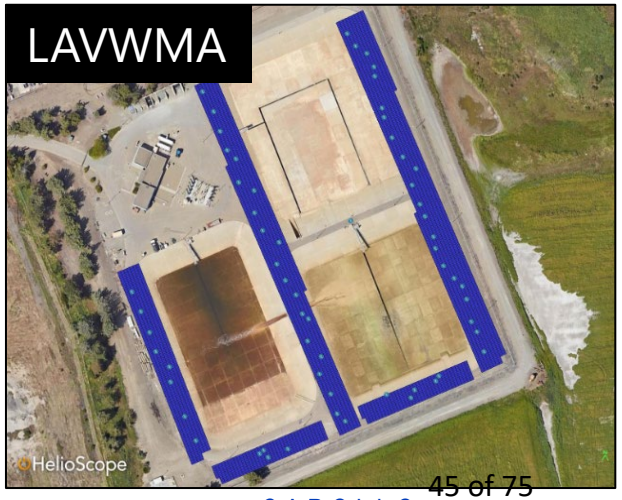
- Stabilization of energy costs
- Offsets future energy demands with renewable energy source
- Supports next generation of Zero Emission Vehicles (ZEVs)

**Capital Cost:** ~~$18.4 M,~~ Purchase Power Agreement

**Project Commencement:** FYE 2025

**Funding:** PPA funding



# Renewable Energy Generation & Energy Diversification

**Project 9:** Co-Digestion of Food Waste & Other High-Strength Wastes

**Description:**

- Waste receiving facility for feeding digesters

**Justification:**

- Regional Partnerships to help jurisdictions meet requirements of SB 1383
- Offsets future energy demands

**Capital Cost:** $3.9 M

**Project Commencement :** FYE 2026 to maximize IRA funding incentives and customer base

**Funding:** Up to 30% available through IRA

# Energy Resiliency & Reliability

**Project 13 & 14:** WWTP Electrical Improvements

**Description**

- Improvements to address issues with load and short circuit deficiencies
- Implemented in 2 phases

**Justification**

- Provides for resiliency of equipment by preventing failures due to overloads

**Capital Cost:** $6.2 M

**Project Commencement :** FYE 2025 to address immediate needs and provide continued reliability of electrical distribution infrastructure

# Non-CIP Project/Initiative Summary

| Project | Opportunities Included | Justification |
|---|---|---|
| **Project 15: Fats, Oils, and Grease (FOG) Facility Activation** | Co-digest FOG | Reduction of 1,230 metric tons in carbon dioxide equivalents for a slight increase in operating costs ($300k). |
| **Project 16: Potable Water Distribution System Improvements** | Address pump performance issues identified. | Efficiency issues associated with poor pump performance not only impact energy use but reduce the life of equipment and impact system reliability. |
| **Project 17: Energy Management Improvements** | Renewable Energy Generation Partnerships<br>Alternative Power Monitoring<br>Energy Decision Management Tools<br>Staff Focus on Energy Management | Allows for better energy management decisions by understanding where power is consumed. |



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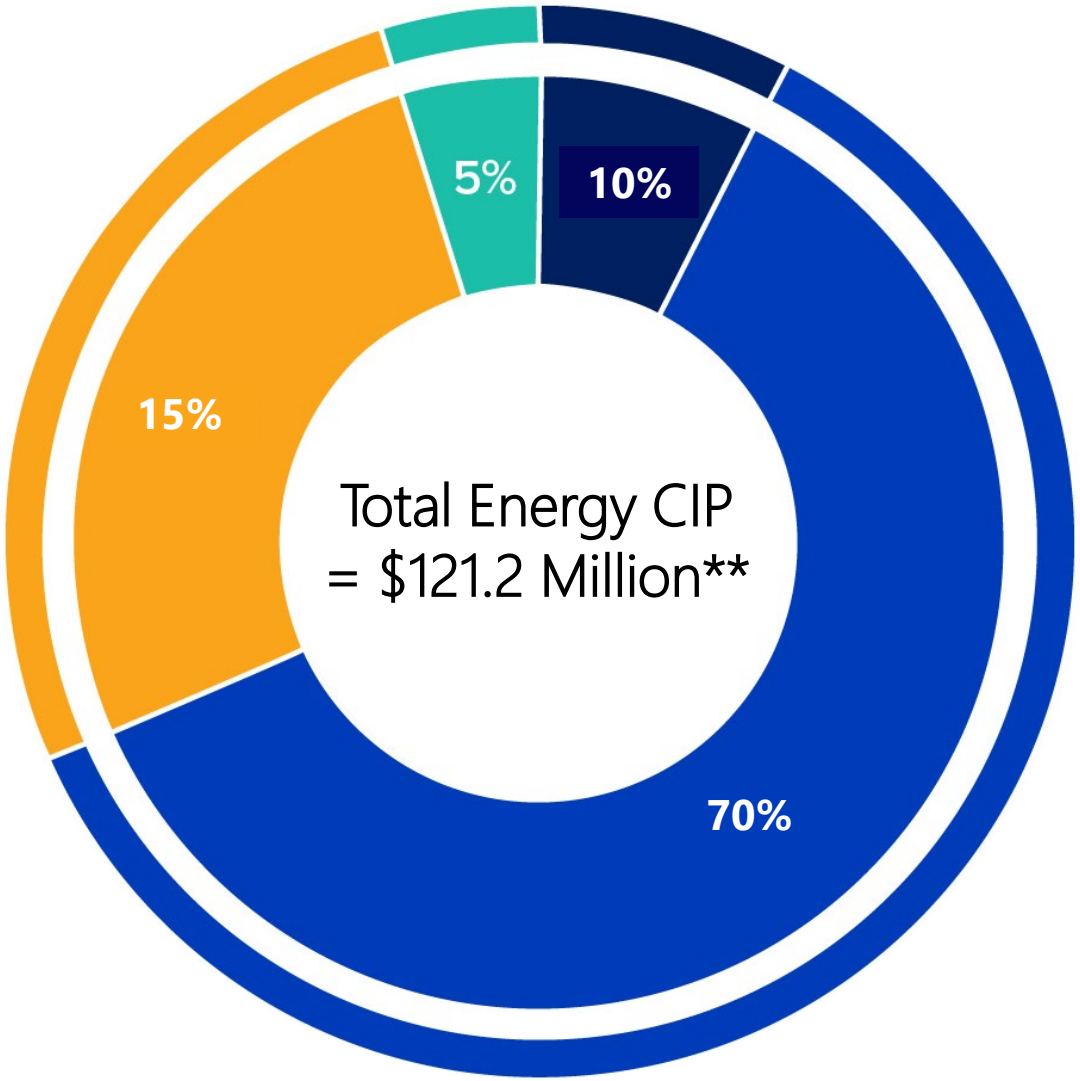
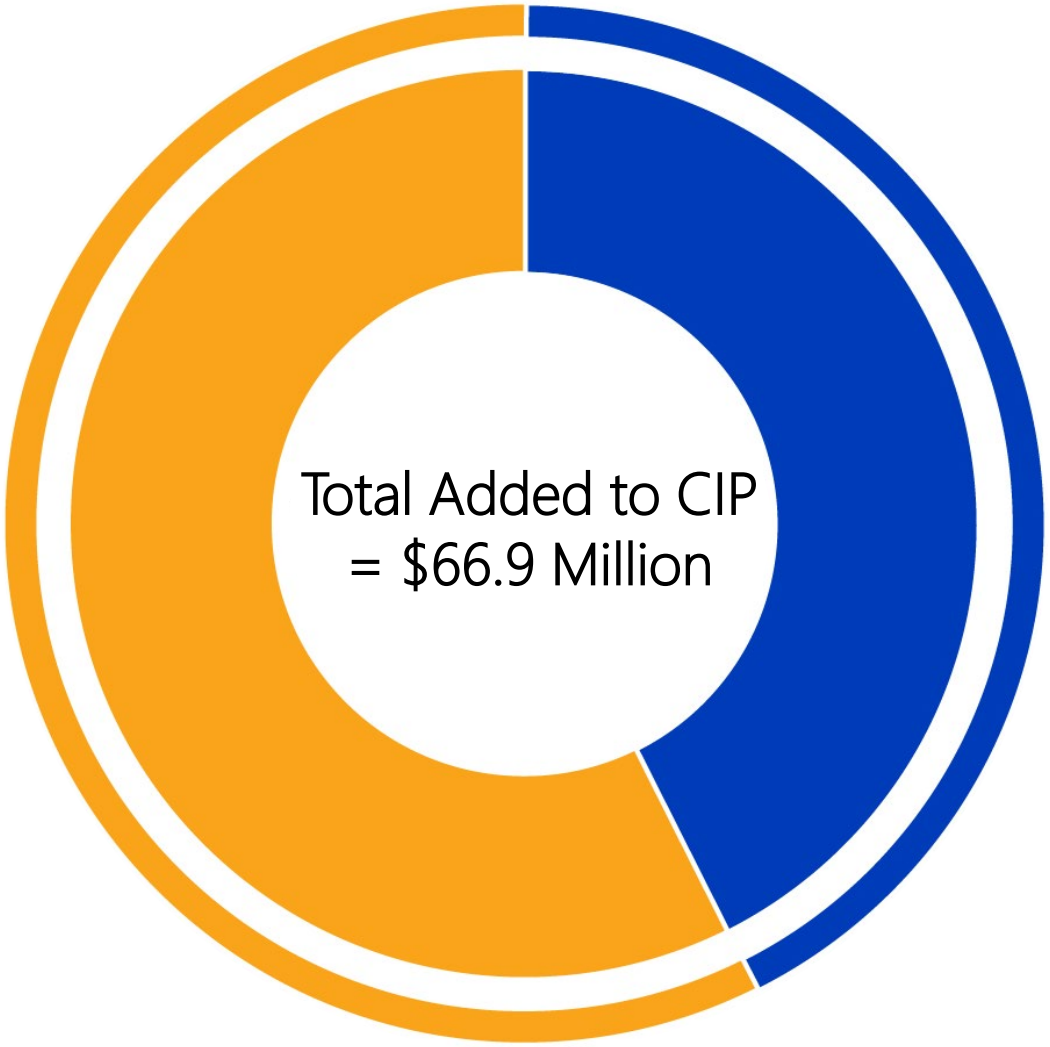
# $121.2 Million Energy Capital Improvement Program




| Project Type | Total |
|---|---|
| Asset Replacement | $84,500,000 |
| Regulatory Compliance | $11,700,000 |
| Energy Resiliency | $6,500,000 |
| Renewable Energy Generation/Diversification | $18,500,000 |
| Solar Projects funded through PPA | **$121,200,000**** |

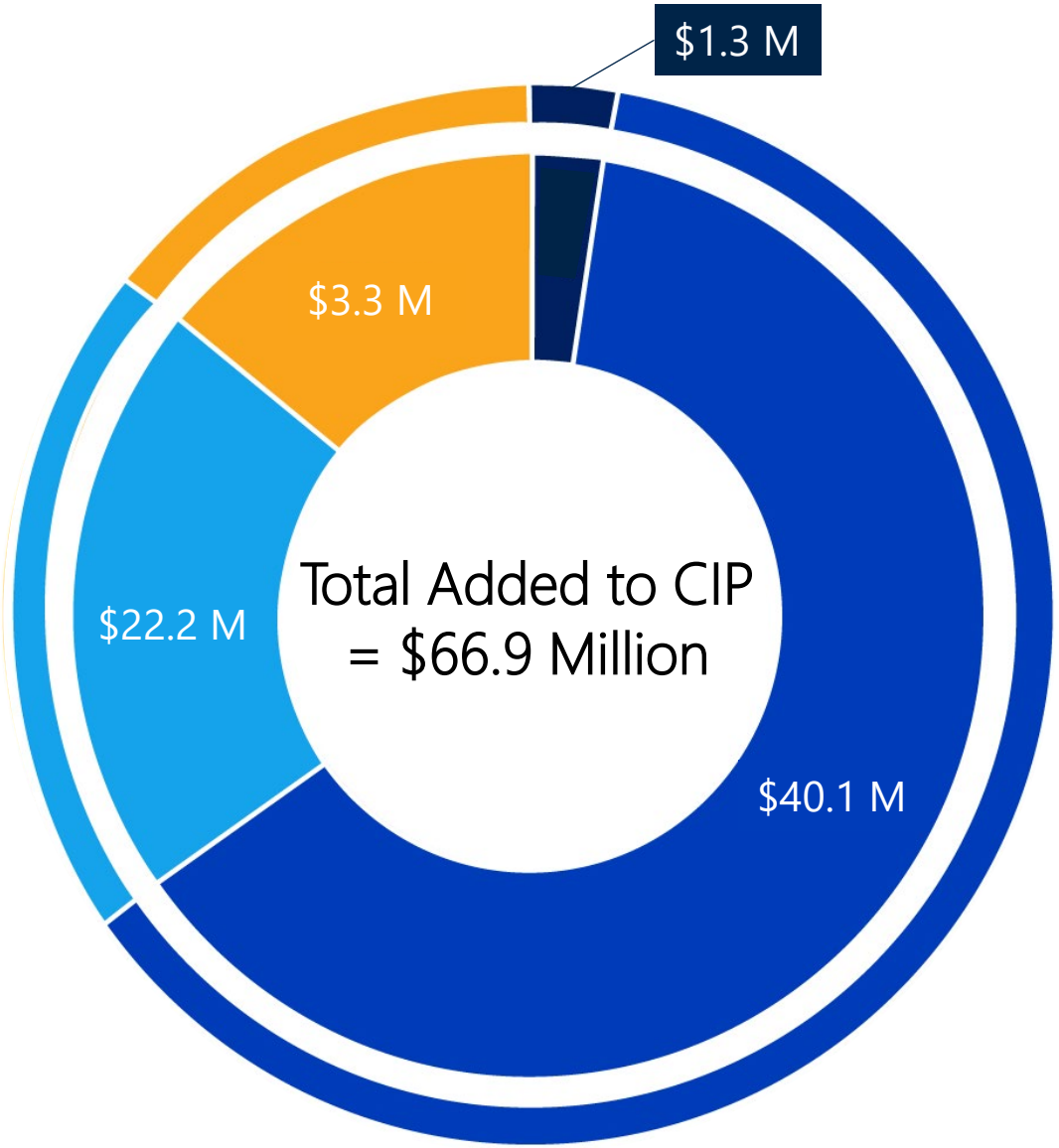
**Total Energy CIP without Solar Projects Funded through PPA is approximately $139.4 million

# $66.9 Million Added to Capital Improvement Program




- **$500,000** increase to **2-Year CIP Budget** (<1% increase)
- **$19.7 Million** increase to **10-Year CIP Plan** (6% increase)
- **$47.2 Million** increase to **11-25 Year CIP**

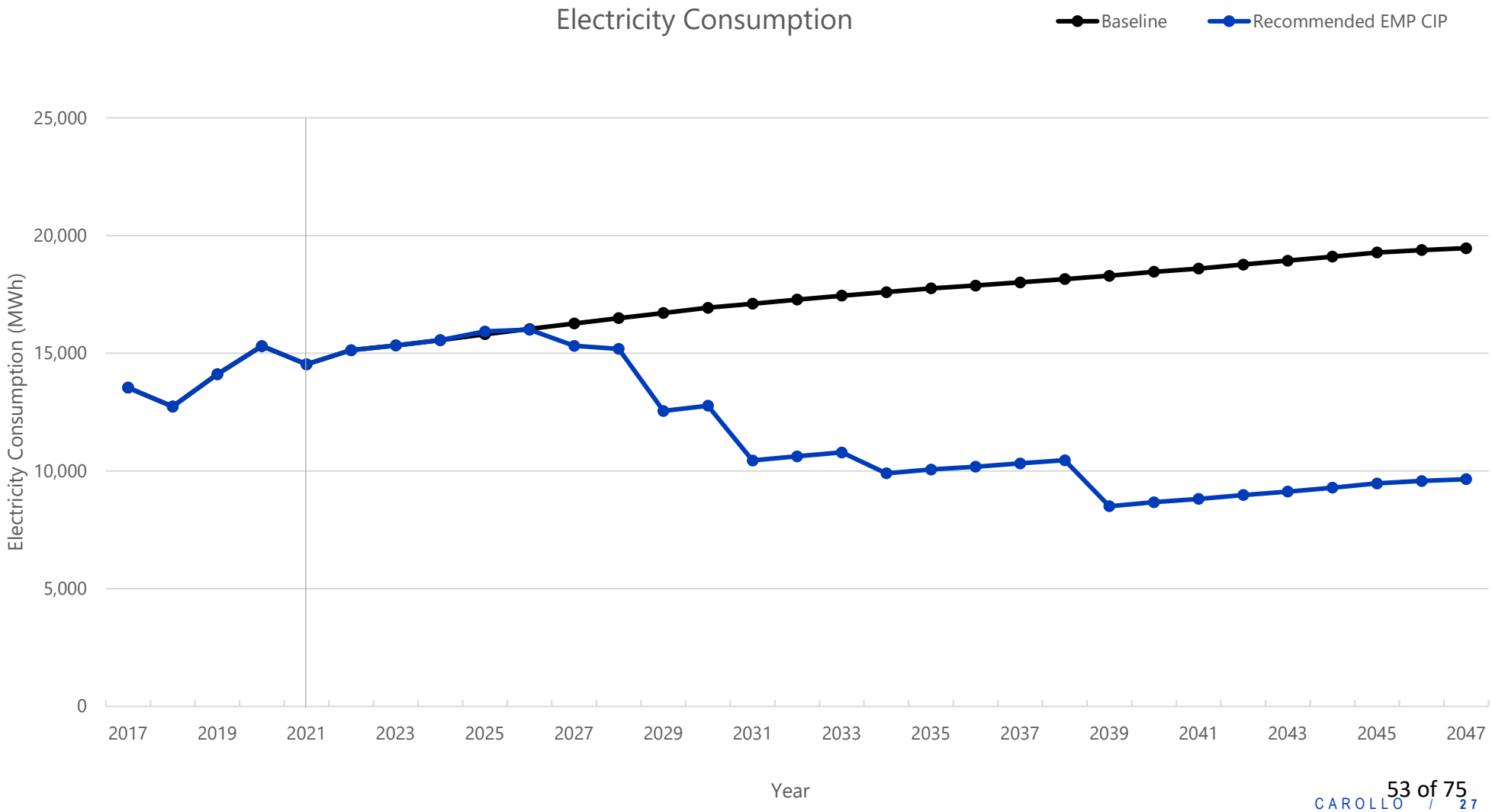
# $66.9 Million Added to Capital Improvement Program




- Fund 210: **+$1.3 Million**
- Fund 310: **+$40.1 Million**
- Fund 320: **+$22.2 Million**
- Fund 610: **+$3.3 Million**

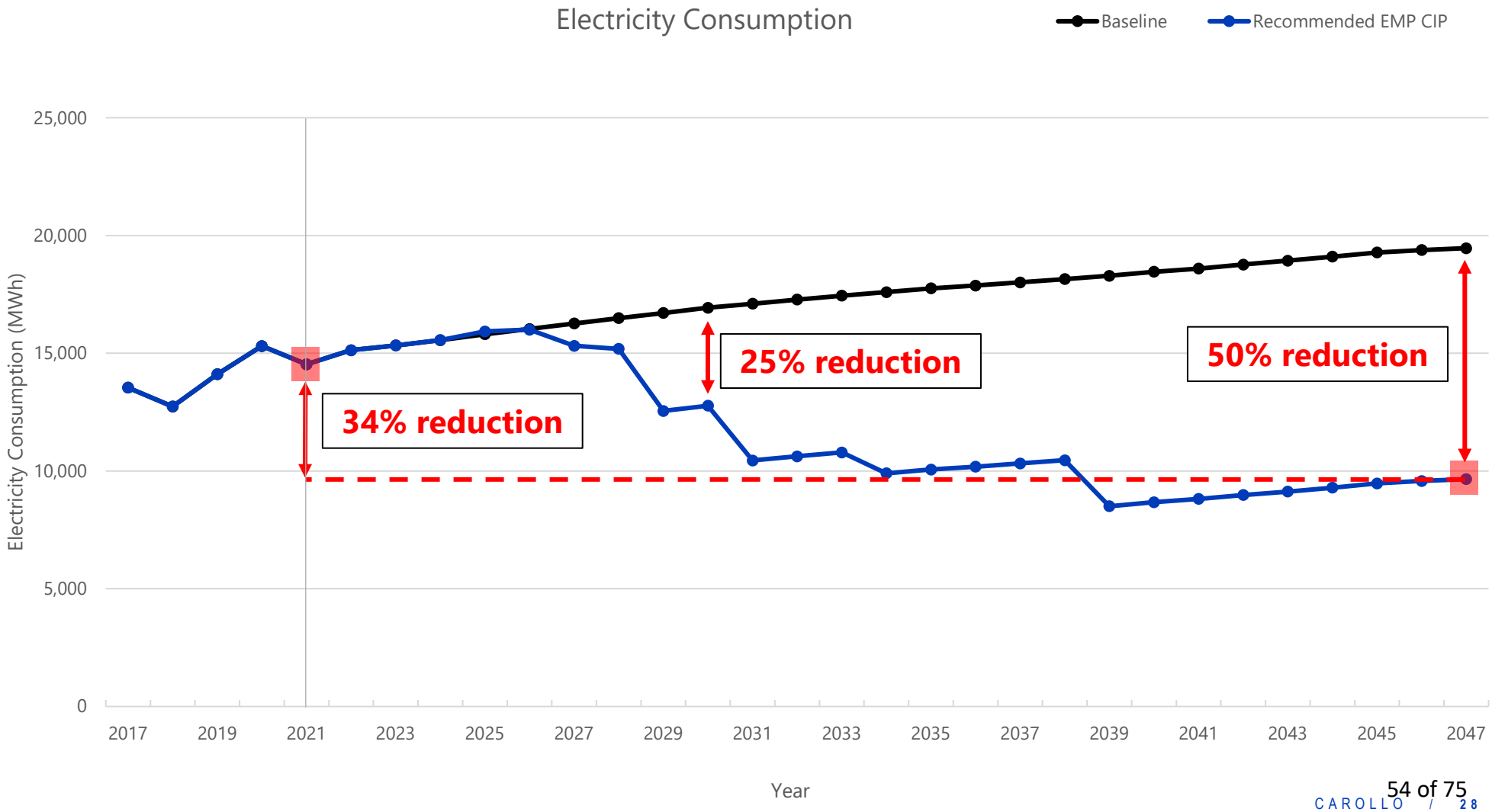
# Energy and GHG Reductions

# Energy Impacts



# Energy Impacts

- 34% reduction from 2021 baseline
- 25% reduction in electricity consumption by 2030
- 50% reduction by 2047
- $21 million total savings



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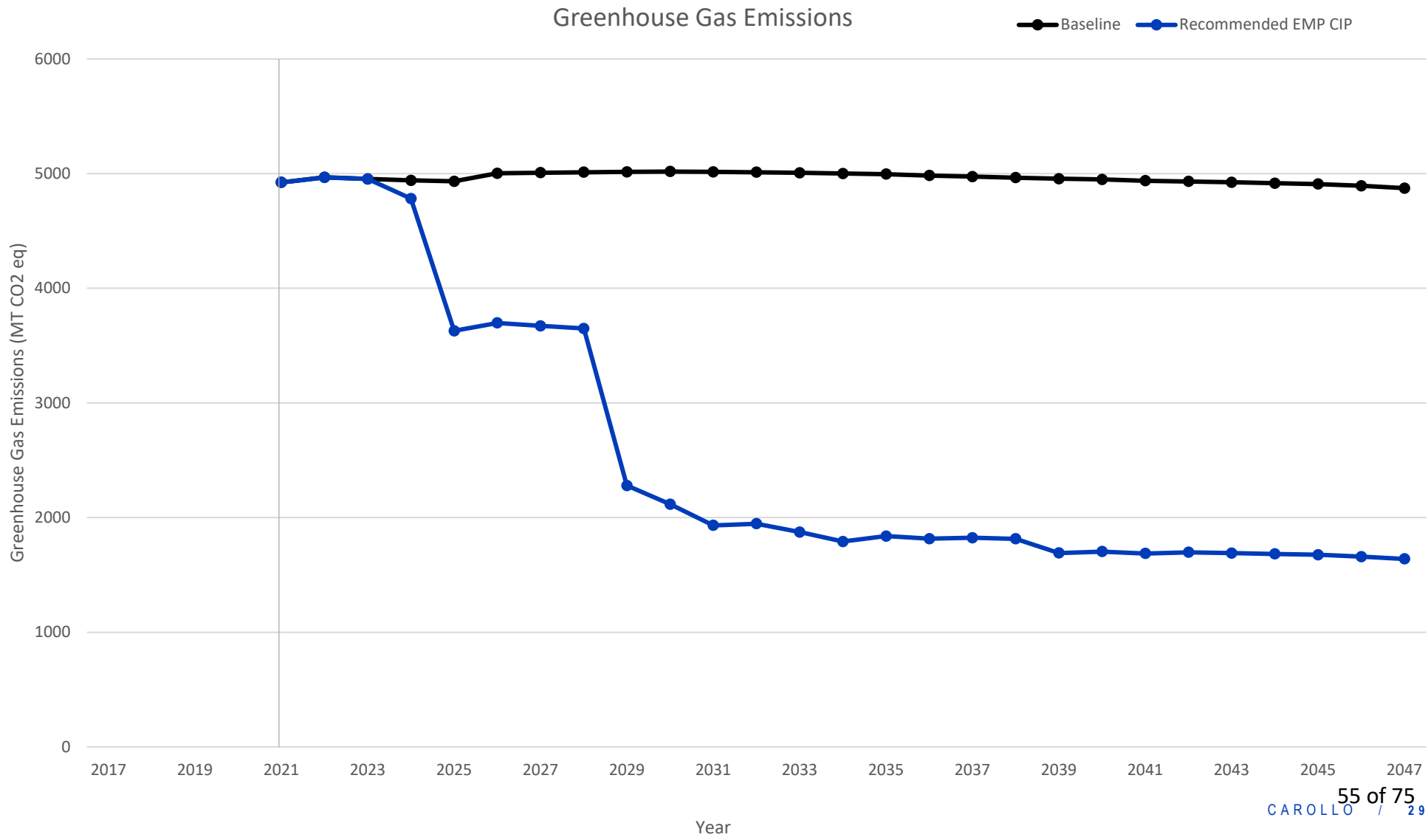
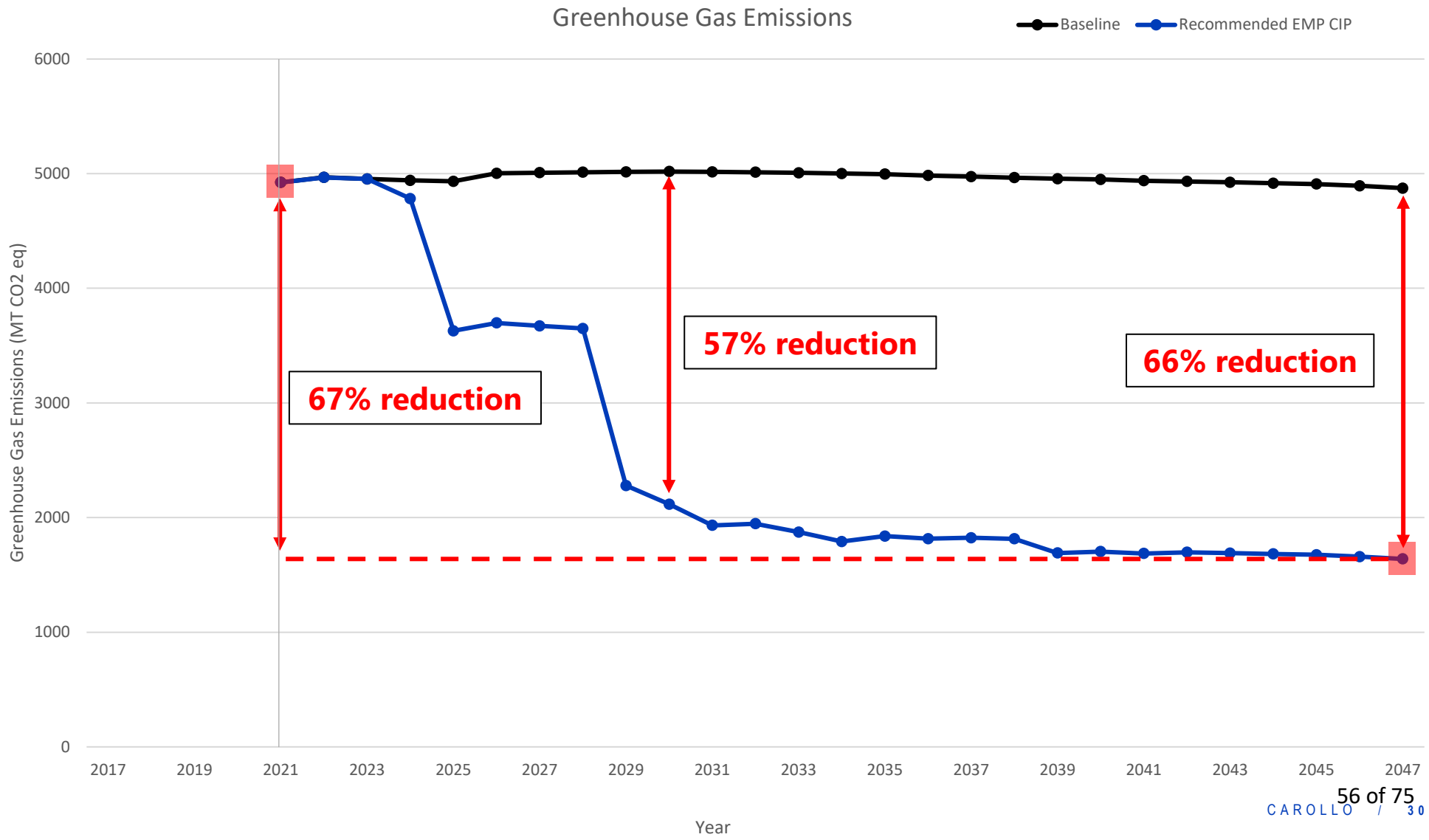
# GHG Emissions Impacts



# GHG Emissions Impacts

- 67% reduction from 2021 baseline
- 57% reduction by 2030
- 66% reduction by 2047



# Summary and Next Steps

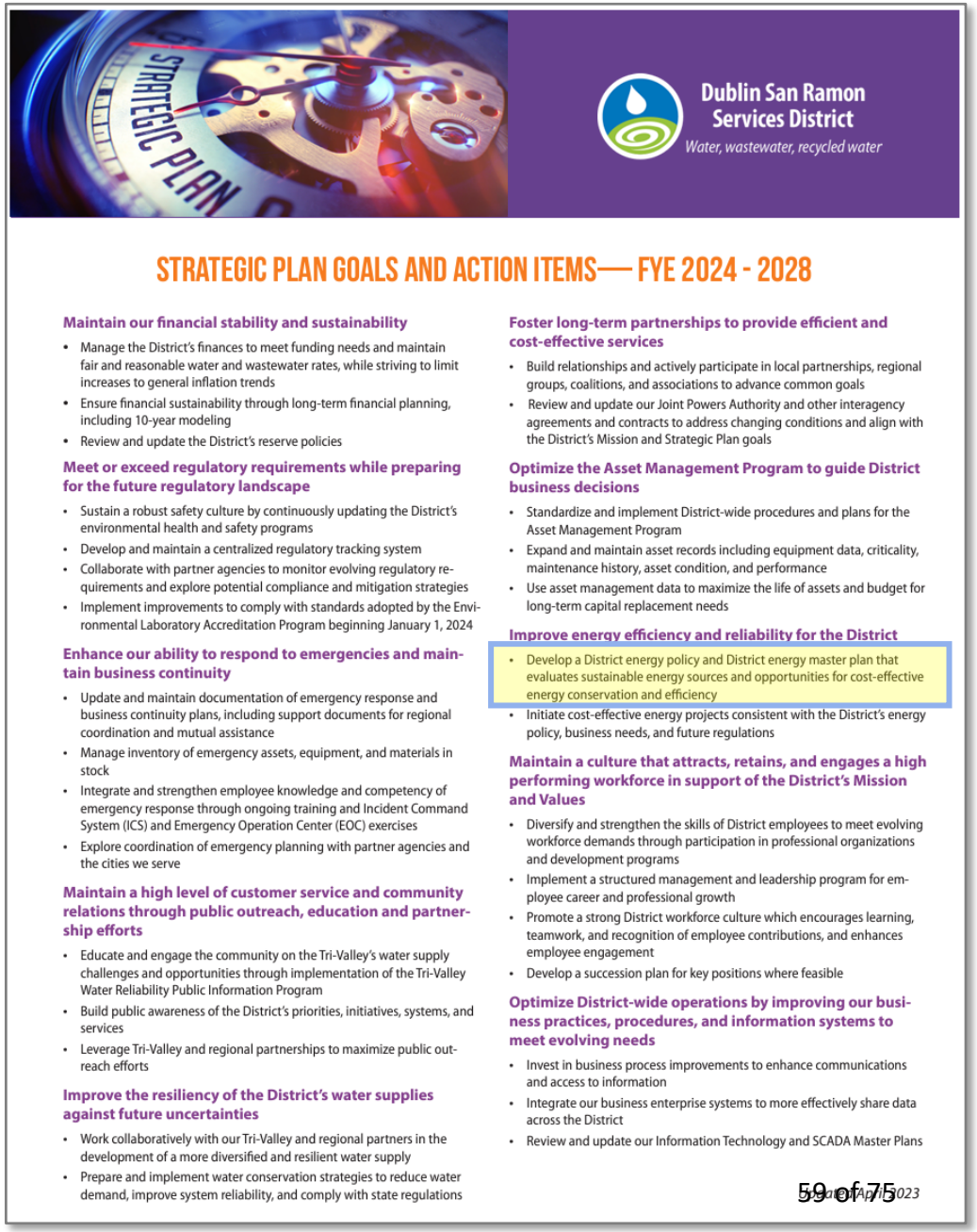
# Energy CIP Key Points

- **17 Projects – 14 CIP and 3 Non-CIP**
- **$121.2 Million (Total Energy Master Plan CIP)**
  - Additional **$66.9 million** to overall **CIP**
  - Increase of **$500,000** (<1% increase) to **2-year CIP** budget
  - Increase of **$19.7 million** (6% increase) to **10-year CIP** plan
- **Energy and GHG Impacts**
  - Reduce **energy** consumption by **50%**
  - Reduce **GHG** Emissions by **66%**
- **Other Major Benefits**
  - Stabilizes and reduces energy costs
  - Diversifies of energy supplies with renewable energy
  - Ensure regulatory compliances for District's fleet
  - Improves energy reliability

# Energy Policy

## Improve energy efficiency and reliability for the District

- Develop a District **energy policy** and District **energy master plan** that evaluates sustainable energy sources and opportunities for cost-effective energy consumption and efficiency
- Initiate cost-effective **energy projects** consistent with the District's energy policy, business needs and future regulations



# Energy Policy

- Energy Diversification, Reliability and Resiliency
- Regulatory Compliance
- Reduce energy consumption, enhance energy efficiency, and reduce greenhouse gas emissions
- Offset future energy demands and GHG emissions through renewable energy
- Fleet management
- Funding Opportunities

# Next Steps

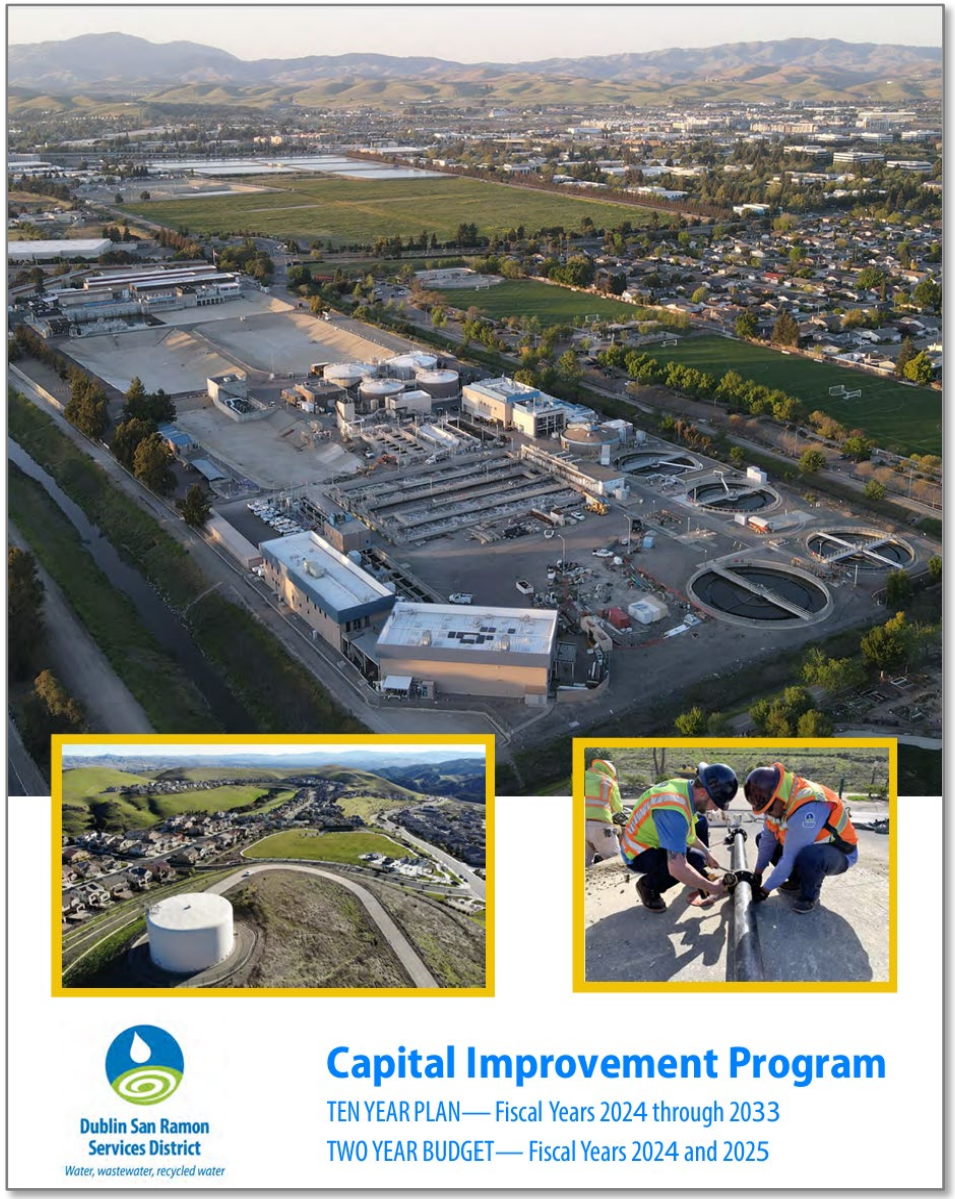
**Finalize** the **Energy Facilities Master Plan**

**Adopt the Energy Policy**

**Amend the current CIP** to add two new projects, and advance one existing project

- Onsite Solar, Battery Storage, EV Charging
  *PPA/$100,000 in FYE 25*
- Offsite Solar Power
  *PPA/$100,000 in FYE 25*
- WWTP Electrical Improvements
  *$300,000 in FYE 25*

Staff to assess strategies to incorporate **other projects** into CIP; recommendations will be made as part of the development of the **next CIP**



# Questions

# Reference: Project Slides

# Regulatory Compliance

**Project 1:** Fleet Assets Program

## Description

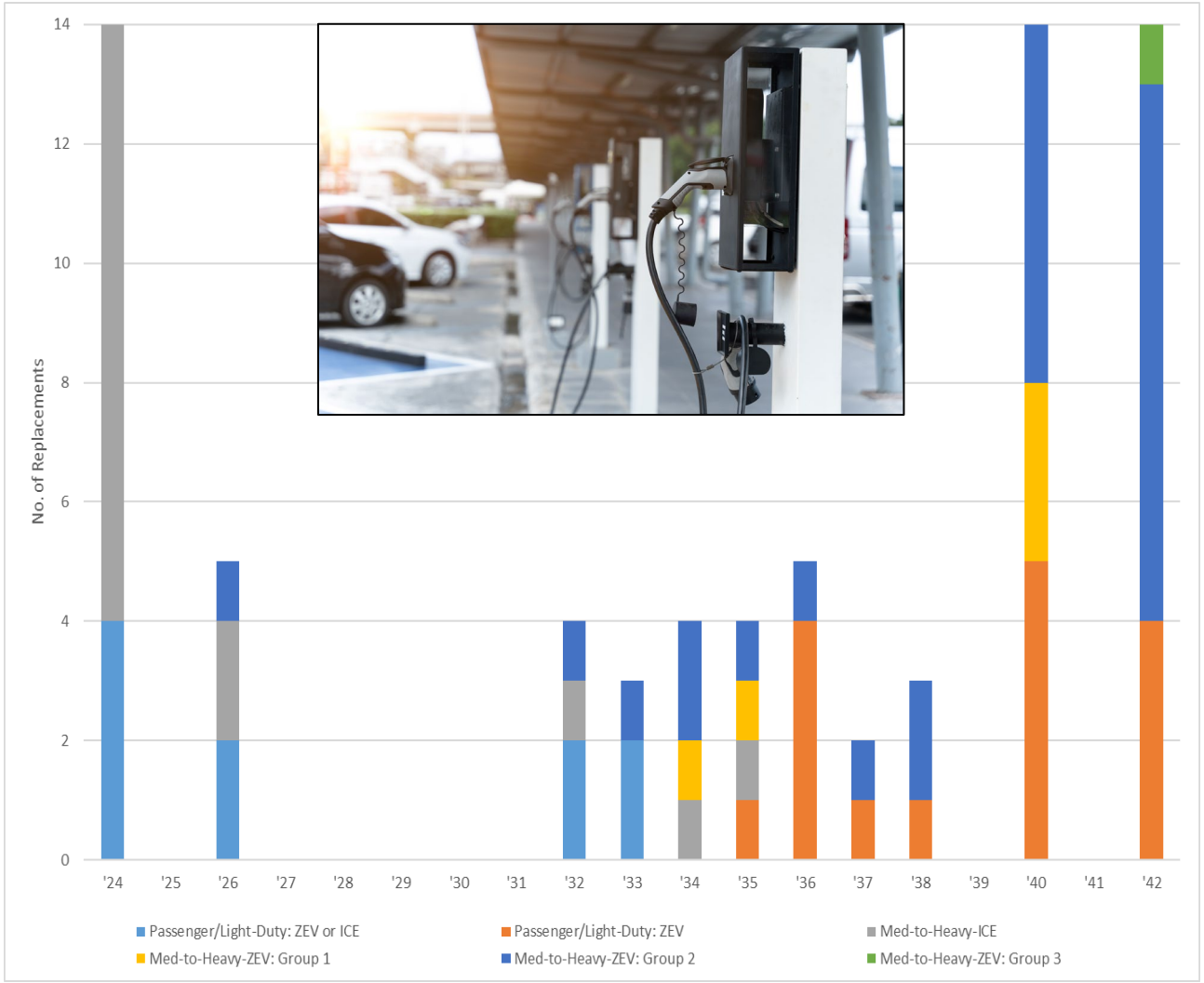
- Timeline and costs for fleet vehicle replacements to comply with new regulations
- Recommends opting into High Priority Fleet with 18-year replacement

## Justification

- Required to comply with regulations

**Capital Cost:** $13.0 M over 20 years

**Project Implementation:** FYE 2024 thru 2043



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# Asset Replacement

**Project 2:** Cogeneration Replacement

**Description:**

- Two 700 kW engines in a new building

**Justification:**

- Cogeneration equipment nearing end of useful service life (30-40 years old)
- Newer engines will provide 20% more power to offset future demands

**Capital Cost:** $44.4 M

**Project Commencement :** FYE 2026 to maximize IRA funding incentives

**Funding:** Up to 30% available through IRA

# Asset Replacement

**Project 3:** Aeration System Upgrades

## Description

» Upgrade of aeration blowers and air diffusers; implementation of predictive aeration controls

## Justification

» Existing blowers and diffusers nearing end of useful service life (10 year remaining)

» Substantially increase energy efficiency of the aeration system

**Capital Cost:** $9.8 M

**Project Commencement:** FYE 2030

# Asset Replacement

**Project 4:** DAFT Replacement w/ Mechanical Thickening

## Description

- Replaces DAFT with mechanical thickening technology (i.e., rotary drum thickeners)
- Implementation of real-time SRT control
- New building and demolition of existing DAFT facility

## Justification

- Existing DAFT is nearing end of useful service life (15-20 years remaining)
- Compared to DAFT, mechanical thickening is less energy intensive and will substantially decrease energy costs

**Capital Cost:** $26.7 M

**Project Commencement:** FYE 2036

# Asset Replacement

**Project 5:** WWTP HVAC Replacements

## Description

- Replaces HVAC system components in WWTP Buildings A, C, and T; and fume/exhaust hoods for WWTP laboratory

## Justification

- HVAC systems and components are nearing the end of their useful service lives
- Increase in energy efficiency with new HVAC systems and components

**Capital Cost:** $3.5 M

**Project Commencement:** FYE 2024


# Renewable Energy Generation & Energy Diversification

**Projects 6 & 8:** On-Site/Off-site Solar, Battery Storage and EV Charging Stations

## Description

- New solar facilities on DSRSD properties, including battery storage and EV charging

## Justification

- Stabilization of energy costs
- Offsets future energy demands with renewable energy source
- Supports next generation of Zero Emission Vehicles (ZEVs)

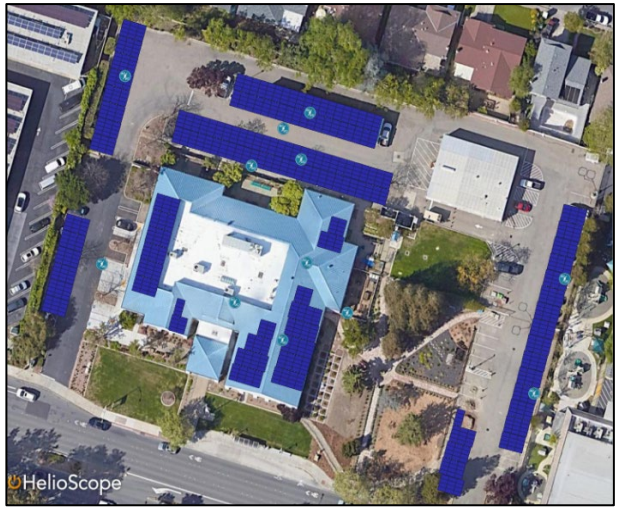
**Capital Cost:** $200,000/Purchase Power Agreement

**Project Commencement:** FYE 2025

**Funding:** PPA funding

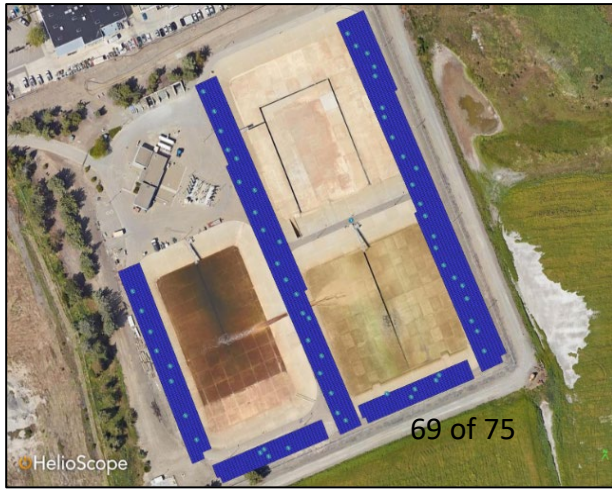
Field Office Facility

Administration Bldg




WWTP


LAVWMA



# Renewable Energy Generation & Energy Diversification

**Project 7:** Battery Storage

**Description**

- Installation of 1 MW battery storage system at the WWTP
- Stores power generated by cogeneration engines and future solar facilities

**Justification**

- Enhances energy resiliency
- Offsets peak demand charges rather than exporting to the grid (~7-yr payback)

**Capital Cost:** $4.8 M

**Project Commencement:** FYE 2026

**Funding:** Up to 30% available through IRA

# Renewable Energy Generation & Energy Diversification

**Project 9:** Co-Digestion of Food Waste & Other High-Strength Wastes

**Description:**

- Waste receiving facility for feeding digesters

**Justification:**

- Regional Partnerships to help jurisdictions meet requirements of SB 1383
- Offsets future energy demands

**Capital Cost:** $3.9 M

**Project Commencement :** FYE 2026 to maximize IRA funding incentives and customer base

**Funding:** Up to 30% available through IRA

# Renewable Energy Generation & Energy Diversification

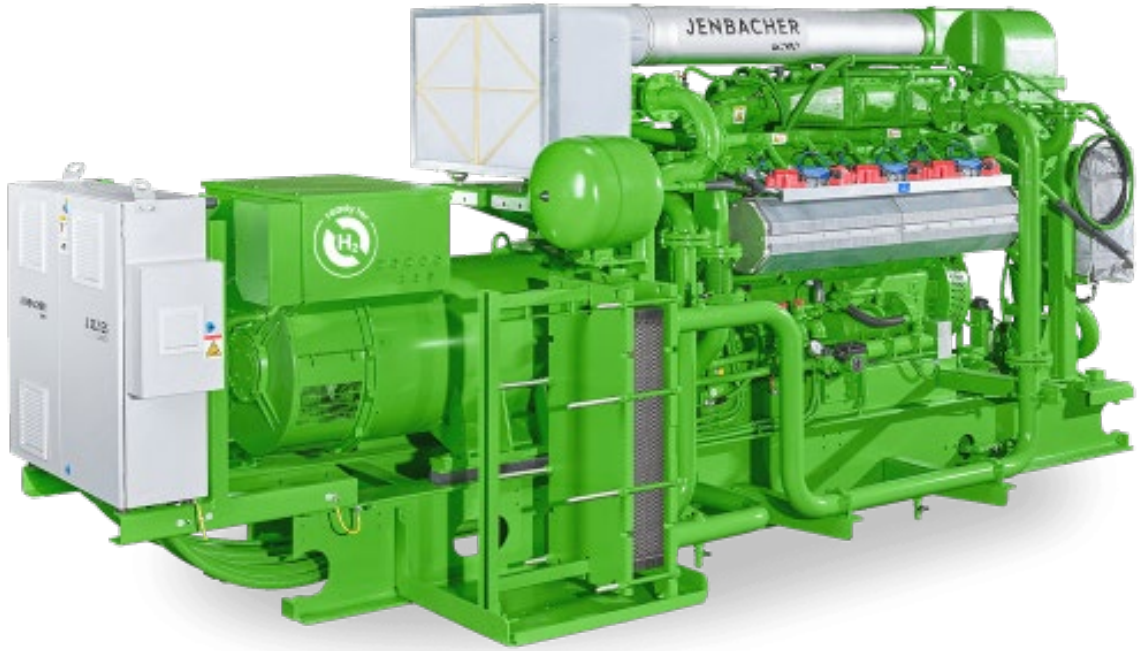
**Project 10:** Additional Cogeneration Engine

## Description

- Permit and Install additional cogeneration capacity

## Justification

- Redundancy for when other engines are out of service for maintenance
- Increased biogas generation from FOG and co-digestion of food waste; additional cogeneration facilities provide ability to beneficially re-use biogas to generate additional power.




**Capital Cost:** $9.6 M

**Project Commencement:** FYE 2037

# Energy Resiliency & Reliability

**Project 11:** Install Load Bank for Distribution Panel G

## Description

- 400 kW automatic load bank
- Allows sufficient load Improvements to address issues with load and short circuit deficiencies

## Justification

- Provides for resiliency of equipment by preventing failures due to overloads
- Automatically return to PG&E after outage
- Prolongs life of Generator G5

**Capital Cost:** $300K

**Project Commencement:** FYE 2027

# Energy Resiliency & Reliability

**Project 12:** Reconfigure Switchgear for Power Outages

## Description

» Consists of reconfiguring switchgear at the WWTP to allow for automatic restoration of power after a utility power outage. Presently this needs to be performed manually.

## Justification

» Provides for resiliency of WWTP operations allowing for automatic power restoration without manual intervention.

**Capital Cost:** $100K

**Project Commencement:** FYE 2027

# Energy Resiliency & Reliability

**Project 13 & 14:** WWTP Electrical Improvements

**Description**

- Improvements to address issues with load and short circuit deficiencies
- Implemented in 2 phases

**Justification**

- Provides for resiliency of equipment by preventing failures due to overloads

**Capital Cost:** $6.2 M

**Project Commencement :** FYE 2025 to address immediate needs and provide continued reliability of electrical distribution infrastructure