May 28, 2024

Central San's Fleet Electrification Strategic Plan

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Introductions

Fleet Electrification Drivers

- Regulatory
  - CARB Advanced Clean Fleets Regulation
  - CARB Advanced Clean Cars II Regulation

- Greenhouse Gas (GHG) Reduction
  - Supports Central San's Net Zero initiative
  - Reduces Scope 1 direct GHG emissions

Fleet Electrification Strategic Plan

- Current strategy defers the acquisition of electric vehicles until 2025 or beyond to allow adequate time for the installation of the first phase of electric vehicle charging stations.
- The charging needs proposed by Optony, Inc. represent the minimum recommendations, based on:
  - Typical driving patterns;
  - Operational needs (+ a ~20% safety factor);
  - Emergency response

Fleet Electrification Strategic Plan Goals

CENTRAL SAN
CENTRAL CONTRA COSTA SANITARY DISTRICT

Project Updates and Timeline

September 2022 – Issued RFP for Fleet Electrification Planning Services

Early 2023 – Optony Agreement Executed and Kicked Off Project

August 2023 – Completed
Part 1: EV Replacement and Charging Needs Assessment

- Fleet Data Collection and Staff Survey
- Lifecycle Costs and Emissions
- Financing Options and Incentives

November 2023 – Completed
Part 2: EV Charging Infrastructure Evaluation

- Two-Day Electrical assessments
- Preliminary Site Designs

December 2023 – Finalized **Fleet Electrification Strategic Plan**

Early 2024 – Presented recommendations to Central San's Board

Early 2024 – Submitted PG&E EV Fleet Program applications

Summer 2024 – Issue RFP for Design/Build of Phase 1 EV Chargers

2025 – Construction of Phase 1 EV Chargers

Optony Presentation

CENTRAL SAN
CENTRAL CONTRA COSTA SANITARY DISTRICT

CENTRAL CONTRA COSTA SANITARY DISTRICT
Fleet Electrification Strategic Plan

Presented by
Rachel Lore, Optony Energy Analyst
May 29, 2024

AGENDA

1. Introductions
2. The Strategic Plan Objectives
3. Current Progress
4. Fleet Electrification Results
5. Charging Infrastructure Results
6. Final Recap
7. Q&A

CONSULTING TEAM

- Vehicle electrification timeline analysis
- Advanced Clean Fleets compliance evaluation
- Determination of EV charging infrastructure needs
- Project cost estimates for each site
- Assessment of fleet electrification impact on operations & maintenance

- Evaluation of electrical infrastructure
- Engineered site designs

OBJECTIVES

Central San's Fleet Electrification Strategic Plan is a 15-year phased plan with the following goals:

- **Compliance** with California's Advanced Clean Fleets Regulation
- **Alignment** with Central San's Environmental Stewardship goals and Net Zero Initiative
- **Minimize** additional costs for fleet electrification and charging infrastructure installation
- **Preservation** of normal operations and emergency response capabilities
- **Optimization** of charging infrastructure for electric fleet vehicles

CURRENT PROGRESS

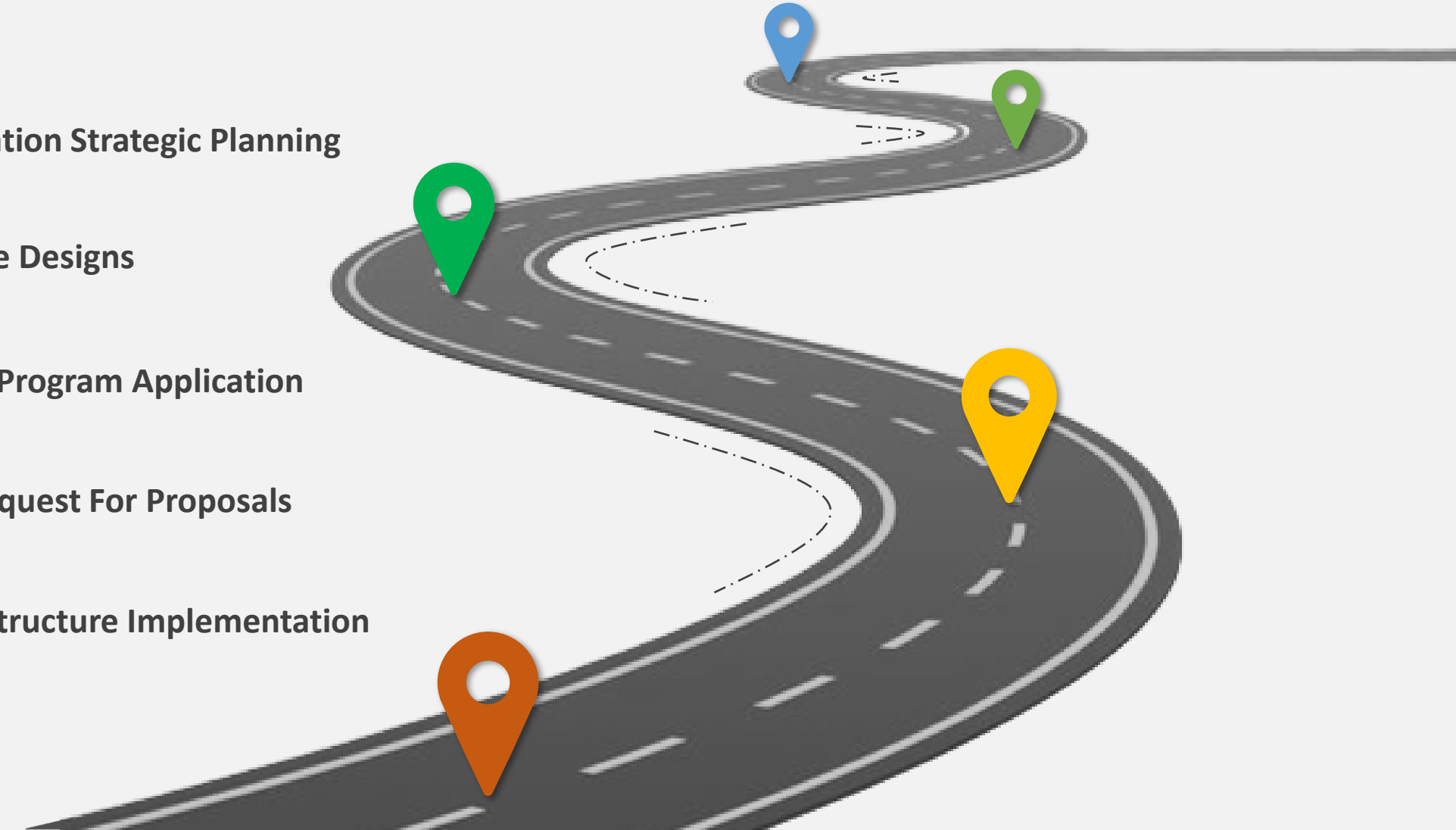
01
Fleet Electrification Strategic Planning

02
Preliminary Site Designs

03
PG&E EV Fleet Program Application

04
EV Charging Request For Proposals

05
Charging Infrastructure Implementation



CALIFORNIA: THE CARROT AND THE STICK

 There are various federal, state, and local **incentives, rebates, and tax credits** that Central San can take advantage of to reduce the cost of electric vehicles (EVs) or electric vehicle charging infrastructure

 As a special district in the State of California, Central San is subject to the **Clean Cars II Initiative** and the **Advanced Clean Fleets Regulation**

ADVANCED CLEAN FLEETS

- The **Advanced Clean Fleets (ACF) Regulation** applies to fleets performing drayage operations, those owned by State, Local, and Federal government agencies, and high priority fleets
- State and Local Government requirements:
  - Starting 2024, 50% of new **medium- or heavy-duty vehicle** purchases must be zero-emission vehicles (ZEVs)
  - Starting 2027, 100% of new **medium- or heavy-duty vehicle** purchases must be ZEVs
- There are **exemptions to ACF** that Central San should take advantage of for vehicles that do not have a viable electric replacement option available on that market

ADVANCED CLEAN FLEETS

IMPLEMENTATION OPTIONS

- Central San has two options to maintain compliance with CARB:

Default: ZEV Purchase Schedule

- Central San must replace impacted fleet vehicles with zero emission vehicles according to their business-as-usual replacement
  - **50% of new medium- and heavy-duty vehicle purchases** are zero-emission beginning in 2024
  - **100% of new medium- and heavy-duty vehicle purchases** are zero-emission by 2027

Alternative: ZEV Milestones Option (ZMO)

- Central San must meet certain percentages in each year according to Milestone Groups of vehicle body types.

ZEV Purchase Schedule is Optony's recommended approach for ACF compliance due to cost effectiveness and relative ease of implementation

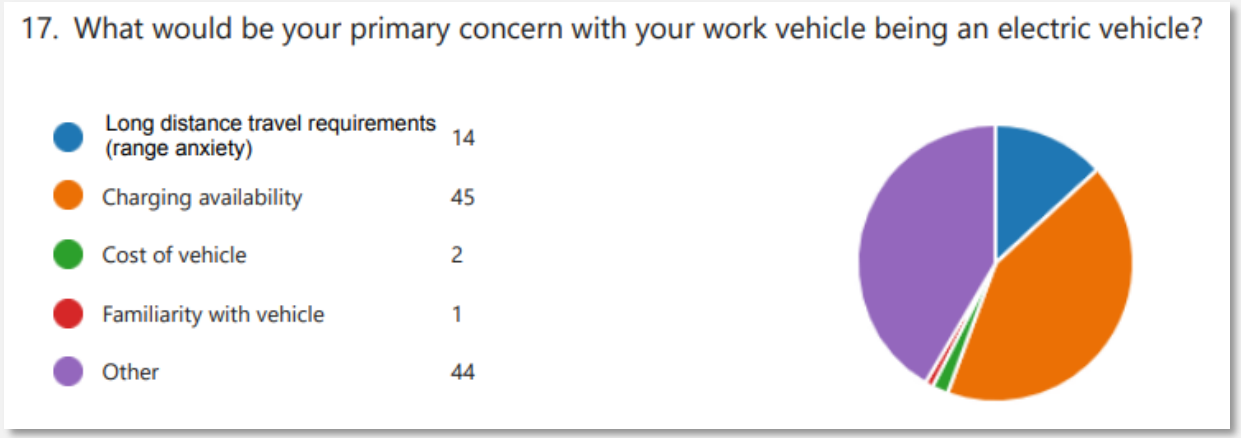
https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary

FLEET ELECTRIFICATION STUDY

- Staff Survey
- Electrification Timeline
- GHG Emissions Reductions
- EV Suitability
- Capital Budget
- Total Cost of Ownership

STAFF SURVEY

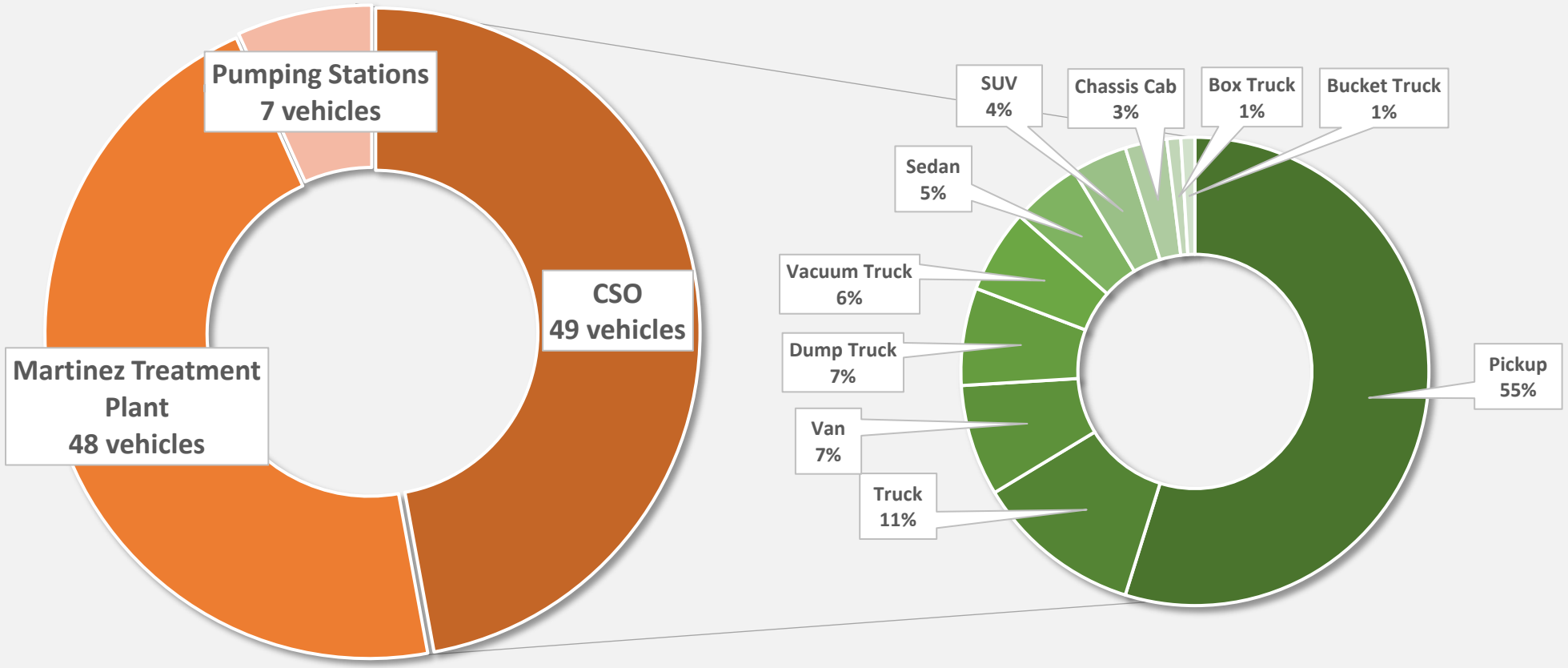
- Central San administered a mandatory **District-wide Fleet Electrification survey** to gain insight into vehicle operational needs and understand staff concerns
  - Survey Findings:
    - The responses suggest that staff members are open to transitioning to EVs, but have concerns about **charging availability** and the ability of EVs to perform the same duties as the current fleet
    - As the market continues to develop, Central San will select EV models that meet the specific needs, range and cargo capacity requirements of the current fleet
    - Finally, the recommended quantity and power rating of charging ports should be **more than sufficient** for an all-electric fleet



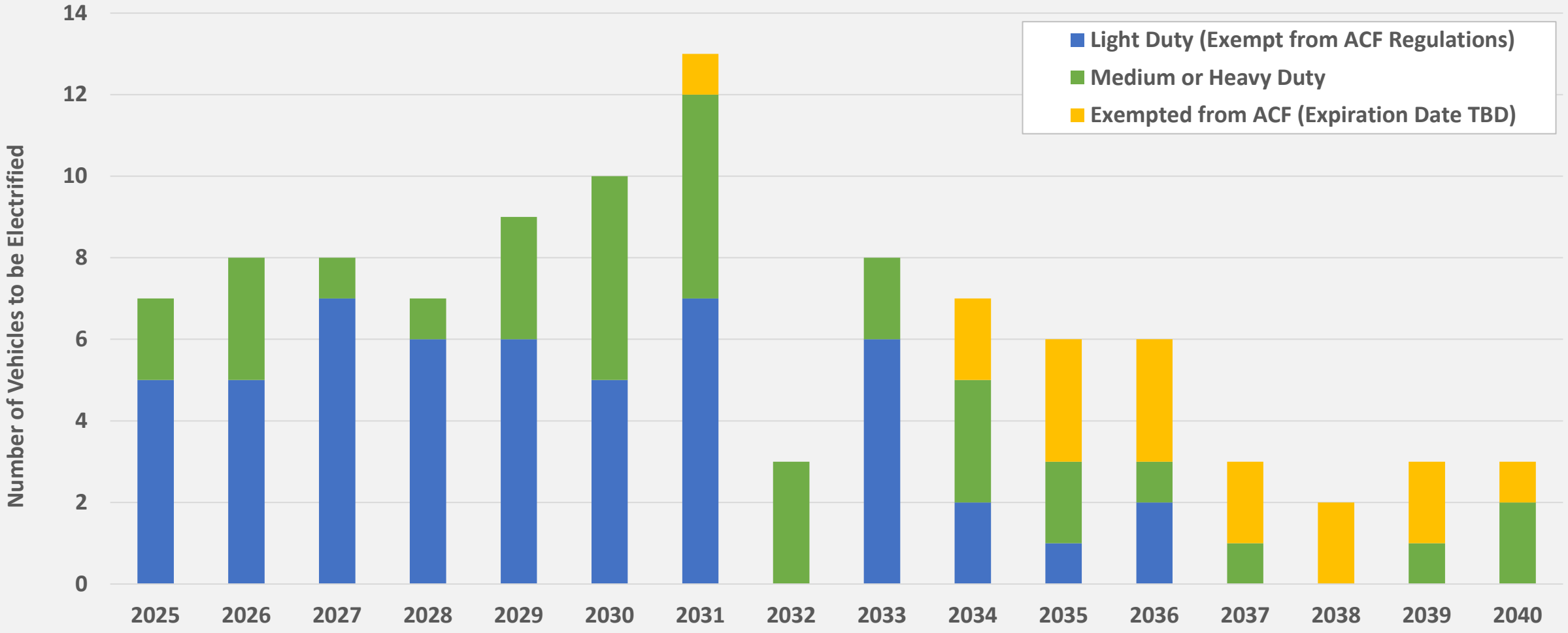
NOTE: "Other" can be divided into two primary concerns: (1) EV suitability as compared to current ICE vehicle and (2) range anxiety.

CURRENT FLEET COMPOSITION

- Central San's fleet of over **100 vehicles** were studied for electrification

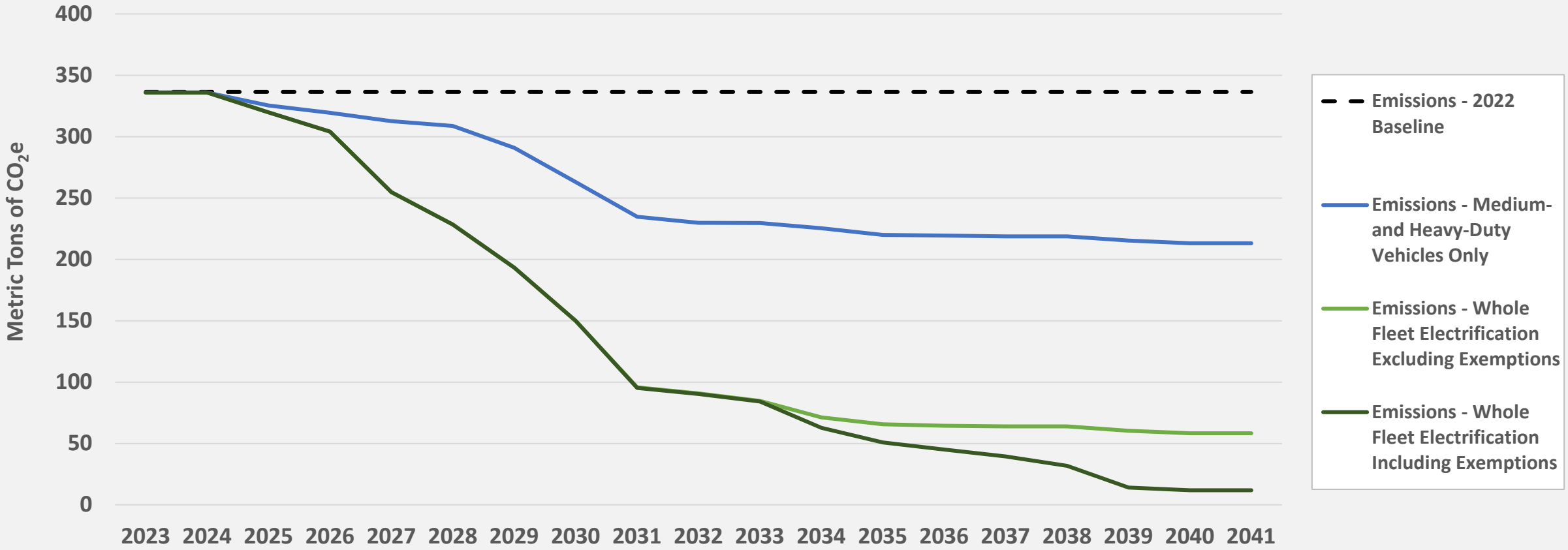


2040 FLEET ELECTRIFICATION TIMELINE



GHG EMISSIONS

- Central San's **electricity sources** include Marin Clean Energy, PG&E, and a natural gas-fired Cogeneration unit at the Martinez Treatment Plant.



EV SUITABILITY ASSESSMENT

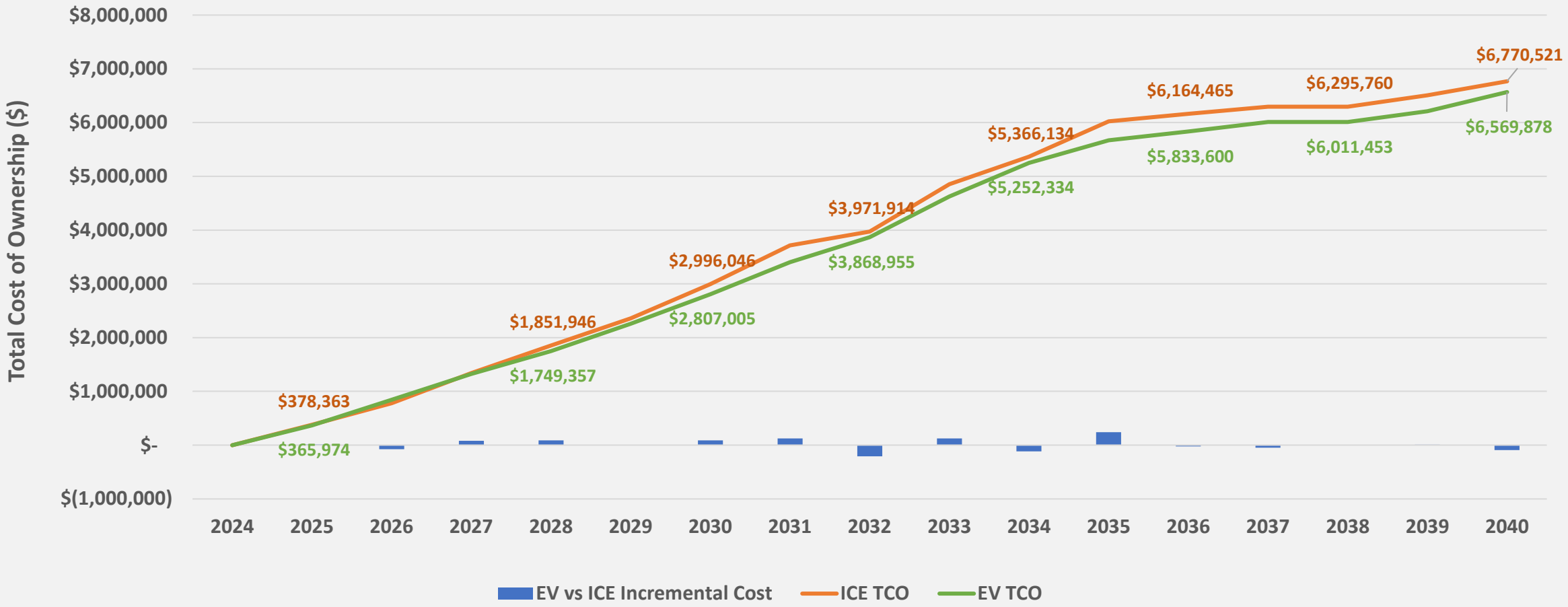
Motiv Electric Utility Truck
MSRP: $190,000+

Ford F-150 Lightning XLT
MSRP: $63,000+

Ford E-Transit
MSRP: $51,500+

TOTAL COST OF OWNERSHIP

- Whole Fleet Electrification Excluding Exemptions **maximizes fueling savings, operations and maintenance savings, and available EV incentives**



EV CHARGING STUDY

A phased installation approach is recommended for these priority sites:

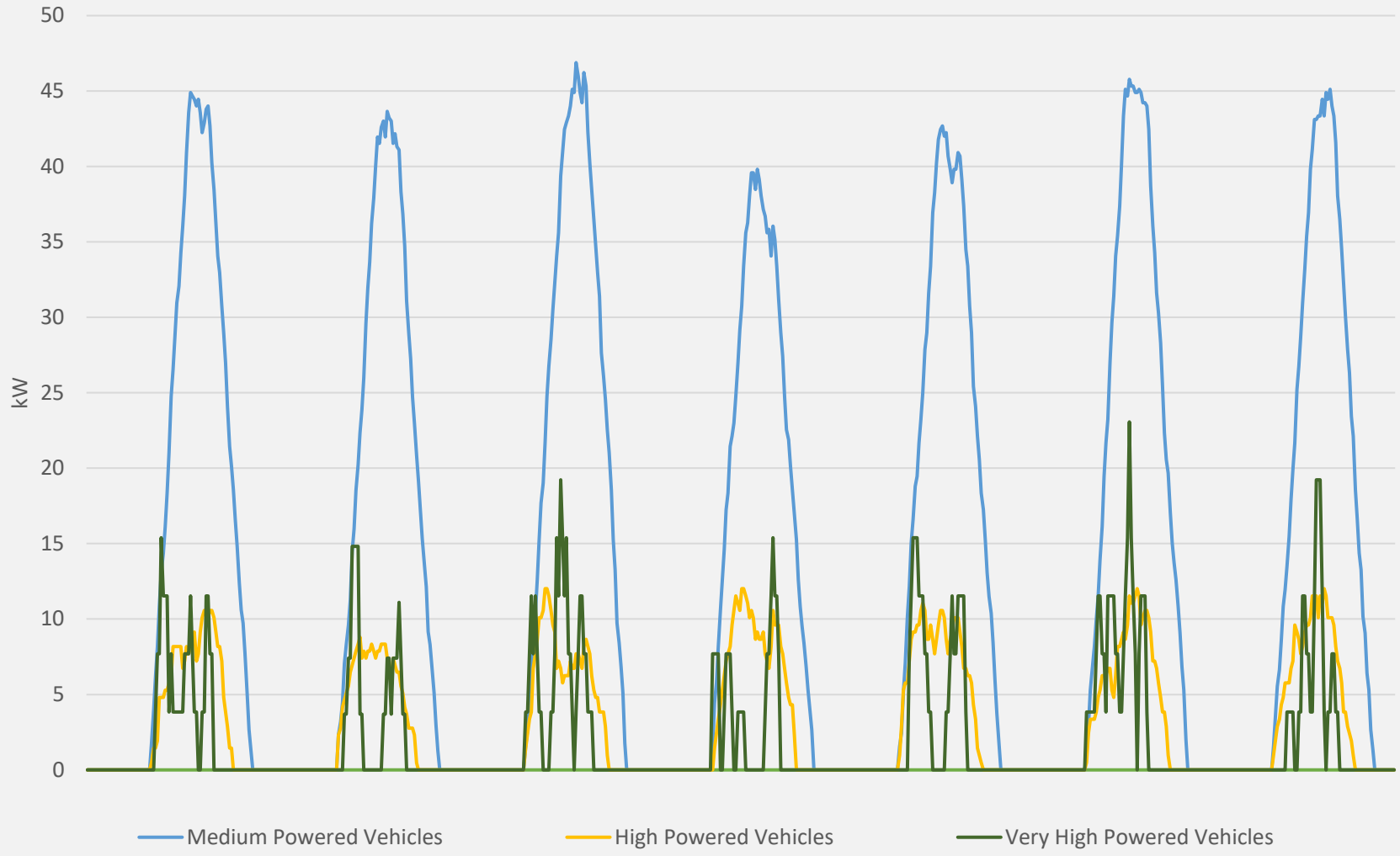
- Collection System Operations (CSO)
- Martinez Treatment Plant
- 4 Key Pumping Stations:
  - Martinez
  - Moraga
  - Orinda Crossroads
  - San Ramon

CHARGER ASSIGNMENTS

- Based on **historical fuel usage** and **mileage data**, vehicles are assigned charger ports appropriate to their power requirements and duty cycles
- Different levels of charging are used to meet the varied power needs:
  - Level 2 mid-power (11.5 kW) — **6 – 8 hours**
  - Level 3 high-power (25 kW, DC Fast Charger) — **4 – 6 hours**
  - Level 3 very high-power (200 kW DC Fast Charger) — **15 – 45 minutes**

LOAD PROFILE BUILDER

- This sample Load Profile shown visualizes the weekly charging load distribution on average at the CSO Division in 2035, based on vehicle duty cycles.
- The line graph represent periods of the day in which each category of vehicles are likely to charge.
- For very high-powered vehicles, charging events are infrequent and short due to large batteries and high-power chargers.
- LPB ensures sufficient charging needs by domicile location.



CHARGING INFRASTRUCTURE NEEDS

- Charging infrastructure will cost Central San approximately $5.1M

SITE	2025		2030		2035		TOTAL	
	EVs (% OF TOTAL)	PORTS	EVs	PORTS	EVs	PORTS	EVs	PORTS
COLLECTION SYSTEM OPERATIONS (CSO)	2 (4%)	12 x 11.5 kW 4 x 25 kW 2 x 200 kW	17 (35%)	5 x 25 kW	37 (76%)	--	49 (100%)	12 x 11.5 kW 9 x 25 kW 2 x 200 kW
MARTINEZ TREATMENT PLANT	5 (10%)	2 x 11.5 kW 10 x 25 kW 2 x 200 kW	27 (56%)	8 x 11.5 kW 12 x 25 kW	42 (88%)	2 x 200 kW	48 (100%)	10 x 11.5 kW 22 x 25 kW 4 x 200 kW
5 PUMPING STATIONS	--	4 x 25 kW	5 (71%)	4 x 25 kW	7 (100%)	--	7 (100%)	8 x 25 kW
TOTAL DIRECT PURCHASE COST		**$2,645,000**		**$2,224,000**		**$274,000**	**104**	**$5,143,000**

EMERGENCY RESPONSE

- There are some vehicles in Central San's fleet which are required to **respond to emergency events**. These vehicles must ensure that they are **fully charged** and can respond **on time**, with full power.
- Emergency Response Solutions:
  - 1:1 ratio of vehicles to dedicated chargers for essential emergency vehicles
  - CARB's Advanced Clean Fleets Backup Vehicle Exemption
  - Optional mobile charging and/or off-grid charging infrastructure

EVSE FINANCING OPTIONS

Options for procuring EVSE:

- **Direct Purchase** - Central San purchases outright and owns all charging stations
  - To take greater advantage of available charging infrastructure incentives, rebates, and credits, Central San is recommended to pursue Direct Purchase
- **Charging-as-a-Service (CaaS)** - Central San essentially leases charging stations for a monthly fee
  - Based on the feasibility assessment, CaaS may be a cost-effective alternative to Direct Purchase, depending on contract terms as compared to Central San's low cost of capital
  - CaaS may reduce the initial capital expenditures and may ensure Central San is able to take advantage of modern charger stations as technology continues to advance
  - **NOTE**: These are preliminary estimates and are subject to change with market conditions

FINAL RECAP

- Advanced Clean Fleets, effective January 1st, 2024, is a **major regulatory driver** for Central San's fleet electrification.
- Central San's fleet of over 100 vehicles has **many viable EV replacement** options available on the market, and more to come as the market and technology develops.
- Charging infrastructure will be developed through a **phased transition** to ensure sufficient charging at the Collection System Operations Division and Martinez Treatment Plant, with **supplemental charging** at the four key Pumping Stations.
- **The marginal cost to Central San is estimated to be ~$5M**, accounting for electrifying the whole fleet except for Advanced Clean Fleets exemptions and installing fleet charging stations. However, this cost may increase or decrease based on available charging infrastructure incentives, rebates, or tax credits.
    - The EV cost estimates include incentives, rebates, and tax credits from PG&E, Clean Vehicle Credit, and HVIP, but the charging infrastructure cost estimate does not account for any incentives, rebates, or tax credits. Should EVSE funding opportunities arise, Central San is encouraged to expedite charging infrastructure installation plans to reduce capital expenses.

APPENDIX