DOCKETED	
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2024 Draft Zero-Emission Vehicle Infrastructure Plan (ZIP)

Thanh Lopez, Air Pollution Specialist
Fuels and Transportation Division
January 29, 2025

Workshop Agenda

- Housekeeping
- Staff presentation on Draft 2024 ZIP
- Public Discussion and Comment Period
- Next Steps
- Adjourn

Housekeeping

- Workshop is recorded on Zoom
- Presentation will be posted to the docket
- Docket 24-TRAN-03 webpage https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-TRAN-03
- Submit written comments to docket 24-TRAN-03 https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=24-TRAN-03

Deadline for Written Comment:
Friday, February 7, 2024, 5:00 pm

How to Participate

Participants are muted during staff presentation

Zoom Application

- Click "raise hand" feature

Telephone

- Press *9 to raise hand
- Press *6 to Mute/Unmute

Written Question/Comment

- Type your question in the Q&A window

Submit written comments to Docket 24-TRAN-03

Deadline: 5pm February 7, 2025

Background and Purpose of ZIP

Background and Highlights of 2022 ZIP

- Fuller description of the "Infrastructure" market pillar
- Support decision-making in the public and private sectors
- Emphasized charging and hydrogen fueling for medium- and heavy-duty (MDHD) vehicles
- Collaboration to address challenges for public hydrogen fueling for light-duty vehicles
- Maximizing access to home charging
- Phasing out public support for direct current fast chargers (DCFC) with CHAdeMO connectors
- Monitoring demonstration of emerging technologies

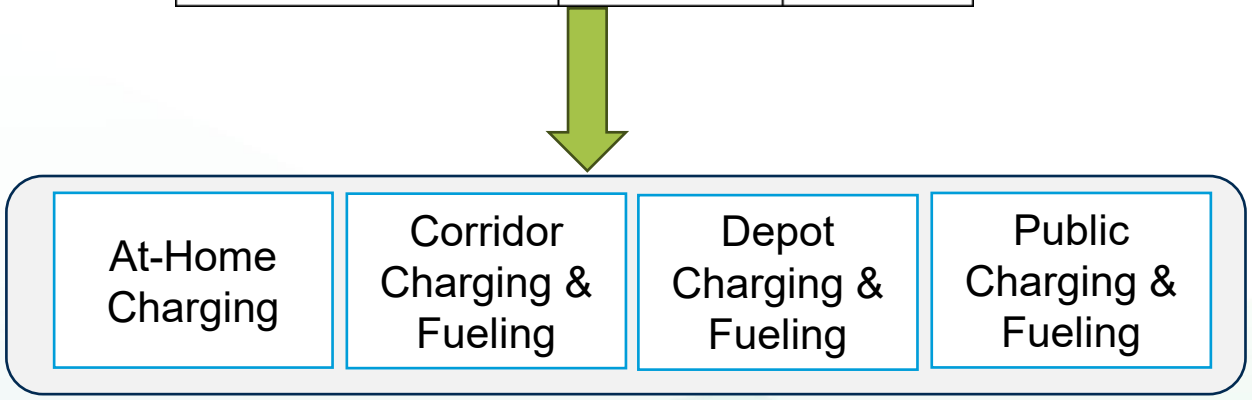
Clean Transportation Program

- Established in 2007 by Assembly Bill 118 (2007)
- Extended to January 1, 2035, by Assembly Bill 126 (2023)
- Provides approximately $100 million of funding per year
- Budget Acts of 2021, 2022, and 2023 added funding for zero-emission transportation and related activities
- Investment Plan determines funding allocations across various categories

Purpose of 2024 ZIP

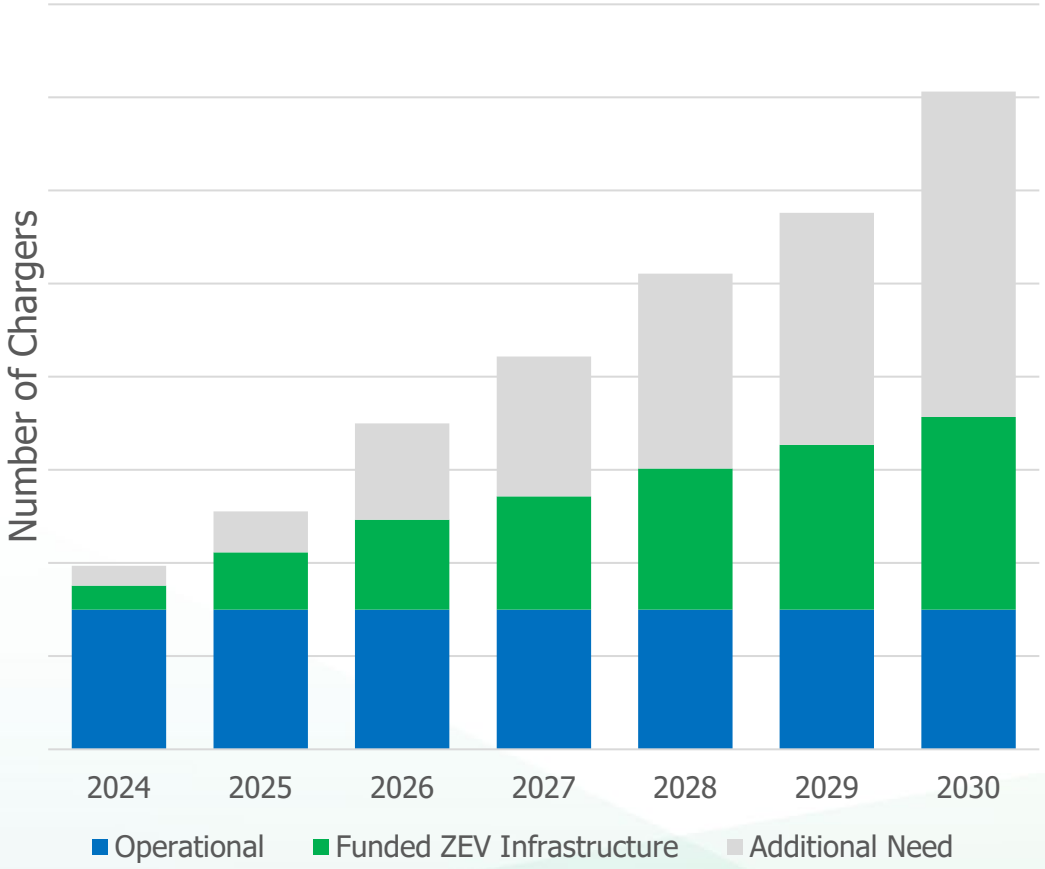
- Deployment plan to compliment the Clean Transportation Program Investment Plan Update
- Assess current state of ZEV infrastructure, analyze assessments, and propose strategies to deploy charging and fueling infrastructure

Category	Eligible Fuel Types	2024–2025
Light-Duty Charging Infrastructure	Electric	$40.0
Medium- and Heavy-Duty Charging Infrastructure	Electric	$38.2
Hydrogen Refueling*	Hydrogen	$15.0
Workforce Training and Development	Electric, Hydrogen	$2.0
	Total Base	**$95.2**

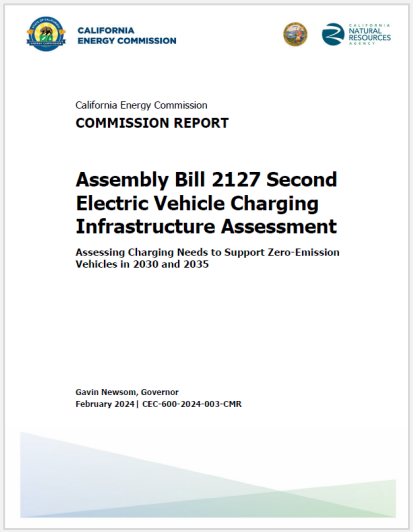


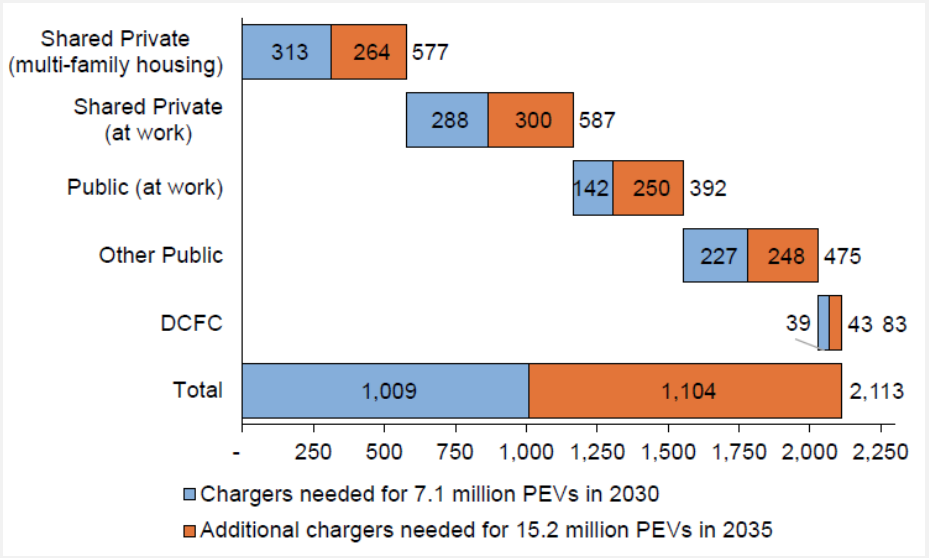
Approach for the 2024 ZIP

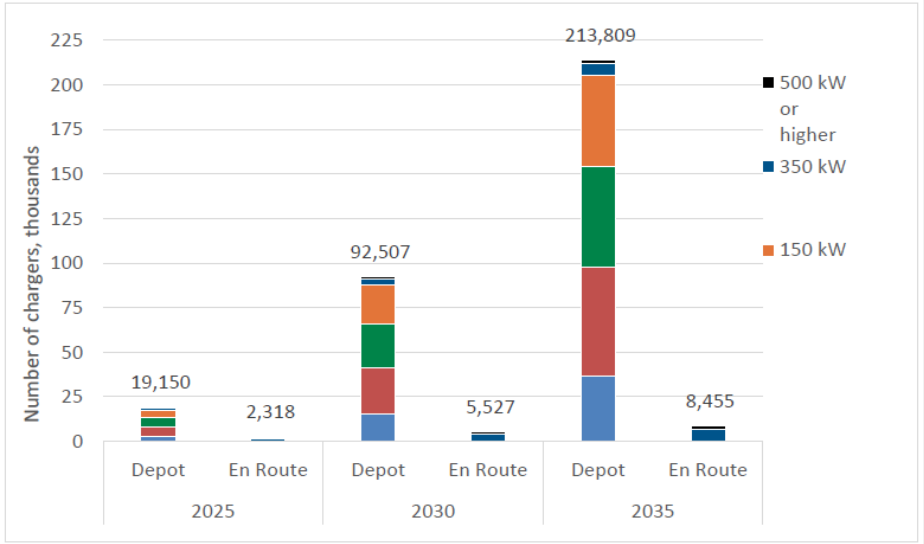
- How many chargers and hydrogen stations are in the ground?
- How many chargers and hydrogen stations are funded for the future?
- How many chargers or hydrogen stations do we need?
- Scenarios for funding different segments and technologies

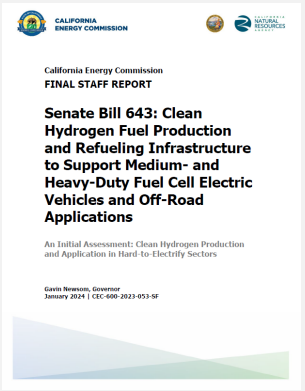


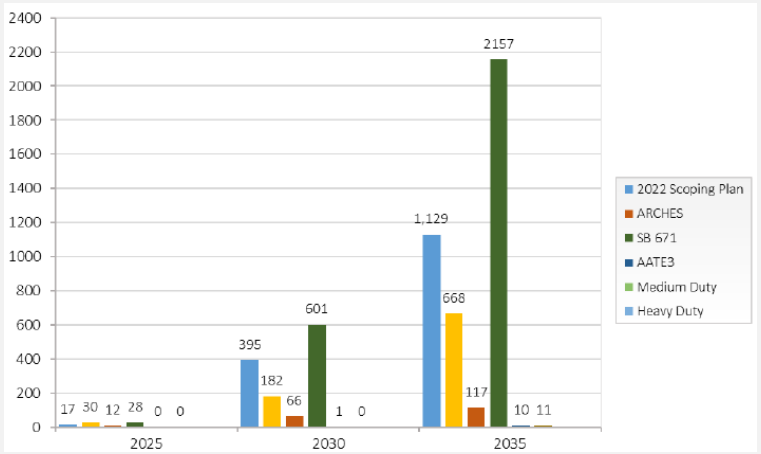
Leaning on Previous Assessments

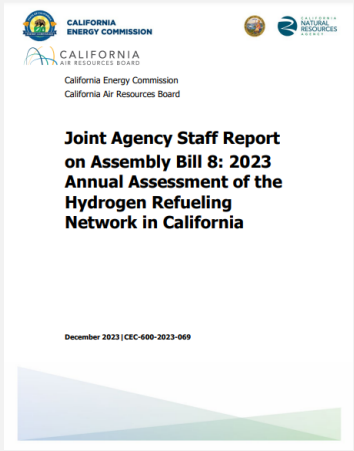


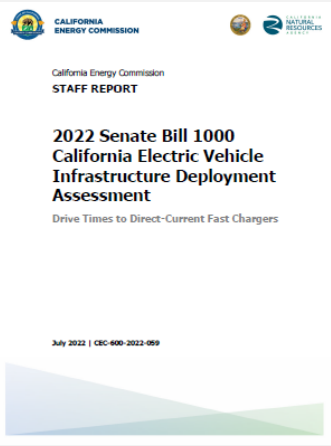












Tracking Operational Infrastructure

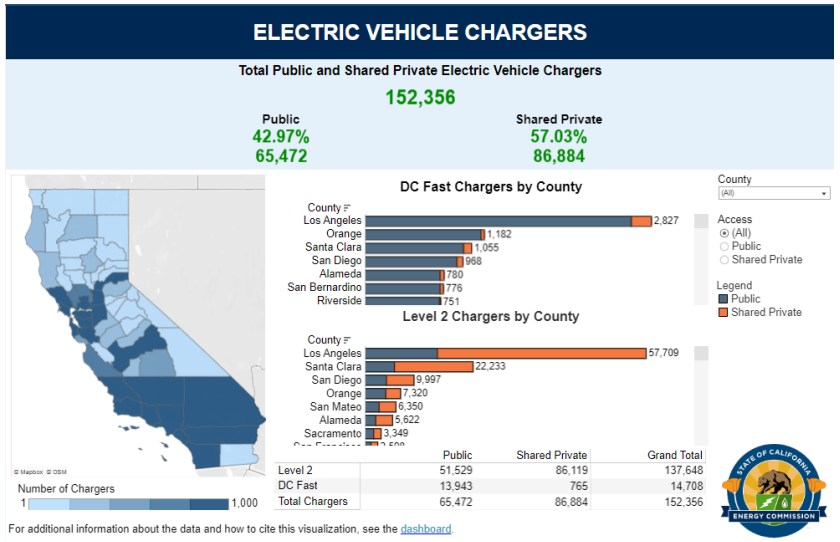
As of August 2024

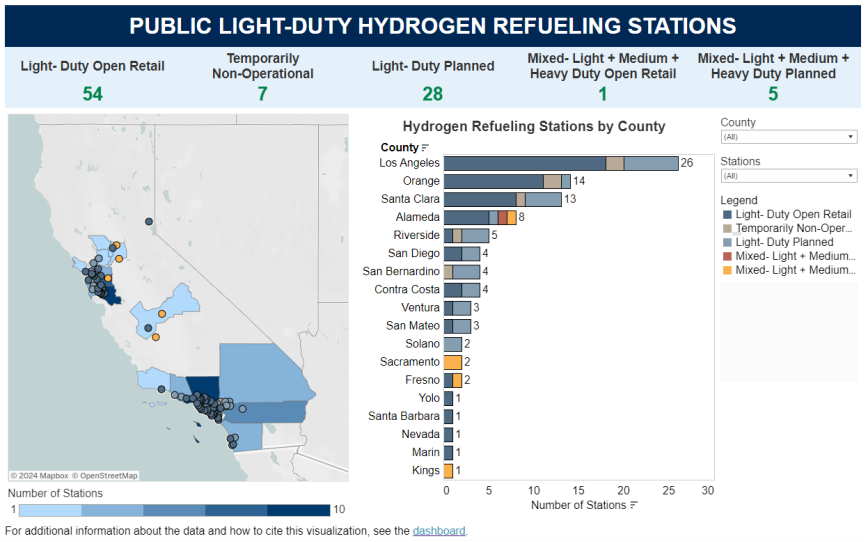
152,356
Level 2 and DC fast charging ports (LD)

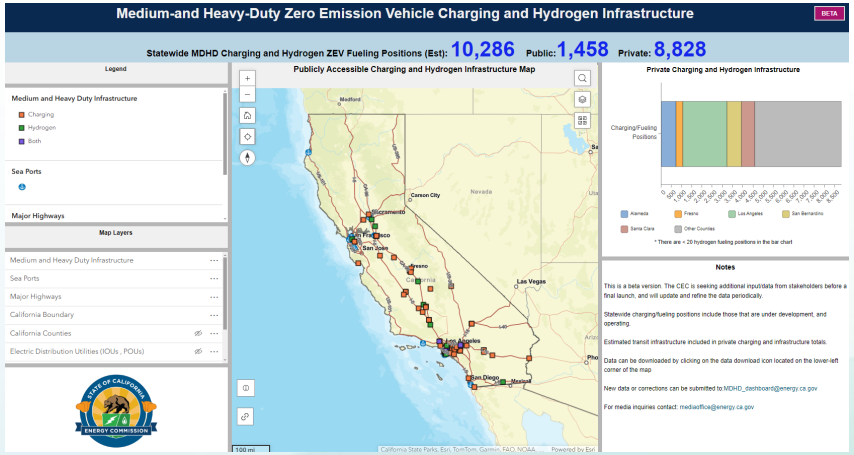
2,082
MDHD charging ports

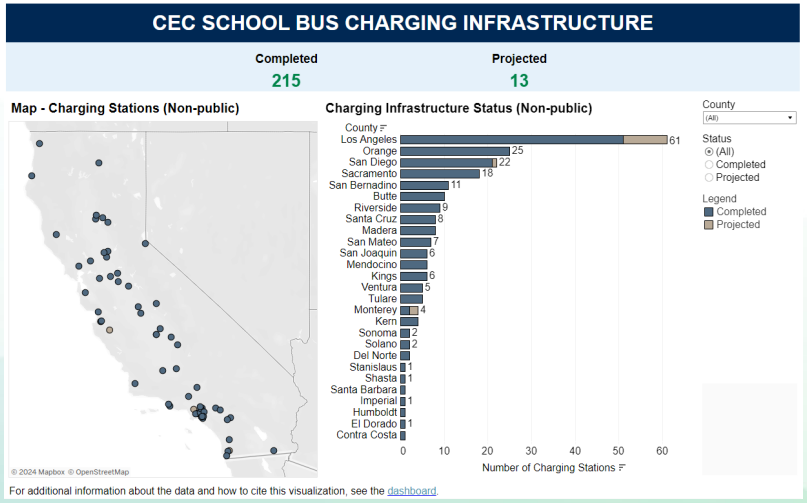
62
open retail LD hydrogen fueling stations

23
MDHD hydrogen fueling nozzles









Tracking In-Progress (Non-CEC Funding)

- **Federal Funding**
  - National Electric Vehicle Infrastructure Formula Program
  - Charging and Fueling Infrastructure Discretionarily Grant Program
  - US EPA Clean Ports and EPA Climate Pollution Reduction Grants

- **Other State/Local Government Funding Programs**
  - Low Carbon Fuel Standard
  - Community Air Protection Incentives

- **Investor-Owned-Utility (IOU)/Publicly Owned Utility (POU) Programs**
  - CPUC Authorized IOU Transportation Electrification Programs

- **Settlement Agreements**
  - Electrify America
  - Stellantis

Estimating Future ZEV Infrastructure: Clean Transportation Program Base Funding

Estimated Potential Future Clean Transportation Program Fiscal Year (FY) Funding

Category	FY 24/25	FY 25/26	FY 26/27	FY 27/28	Total
LD EV	$37.0	$37.0	$37.0	$37.0	$148.0
MDHD EV	$40.2	$40.2	$40.2	$40.2	$160.8
Hydrogen	$15.0	$15.0	$15.0	$15.0	$60.0
Total	$92.2	$92.2	$92.2	$92.2	$368.8

- Assumes 3-years from FY funding availability to charging/fueling infrastructure is operational
- Utilizes the block grant and targeted solicitation funding mechanisms
- Estimated costs based on recent solicitations and block grant projects

Estimating Future ZEV Infrastructure: ZEV Package GGRF and General Fund

Category	2024-2025	2025-2026*	2026-2027*	2027-2028*
Light-Duty Charging Infrastructure (GGRF)	$0	$140	$80	$219
Equitable At-Home Charging Infrastructure (GGRF)	$0	$60	$40	$80
Drayage Truck Infrastructure (GGRF)	$0	$50	$49	$50
School Bus Infrastructure (General Fund)	$0	$125	$0	$0
Clean Trucks, Buses, and Off-Road Equipment Infrastructure (GGRF)	$0	$89	$0	$137
Port ZEV Infrastructure (GGRF)	$0	$0	$130	$0
Emerging Opportunities (GGRF)	$0	$46	$0	$0
Total	$0	$510	$299	$486

*Subject to future budget act appropriations. The anticipated GGRF amounts in these fiscal years has not been reduced to reflect administrative costs. Those fiscal year allocations will be reduced following direction in the associated budget act.

Green Building Code Impacts for Level 2

- Use CARB's methodology to estimate number of future Level 2 that could result from the code
- Relies heavily on future building/parking estimates
- Different requirements for non-residential new construction/retrofits/additions and for multifamily and hotels.
- Code includes requirement for installation of Level 2
- Code includes requirements for Level 2 receptacles at multifamily

- Monitoring current code cycle to determine future impacts
- Analysis has not been conducted for future estimated MDHD chargers resulting from code compliance

Estimated Charging/Fueling Infrastructure by 2030

Light-Duty EV Charging Ports by 2030:

- 43,000 from state funding
- 7,500 from federal funding
- 21,000 from utility ratepayer programs
- 161,000 from green building code requirements
- 800 from settlement agreements

Roughly 385,000 total charging ports by 2030

Light-Duty Hydrogen Stations by 2030:

- 67 hydrogen stations (129 total stations by 2030)

MDHD Charging Ports by 2030:

- 20,000 from state funding
- 10,000 from utility ratepayer programs

MDHD Hydrogen Station by 2030:

- 60 hydrogen fueling nozzles from CEC block grants
- 1 hydrogen fueling station (Tri-State Corridor Project)

Light-Duty Electric Vehicle Charging Funding Scenarios

2nd AB 2127 Results (Light-Duty)

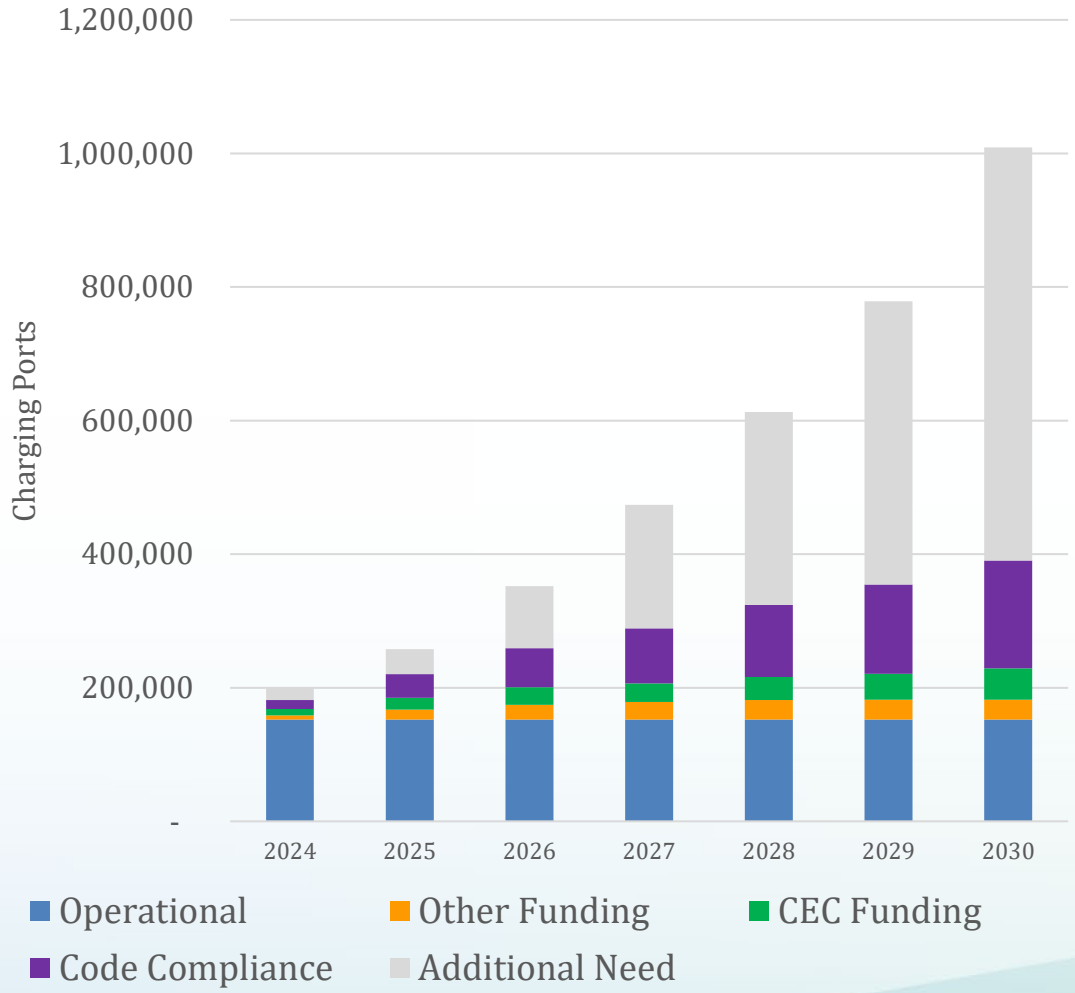
- To support 7.1 million battery electric and plug-in hybrid electric vehicles in 2030, California will need to install:
  - 1.01 million chargers, including 39,000 DCFC (base case)

- Increased DCFC Alternative Future Scenario*
  - Over 660,000 chargers, including 96,082 DCFC

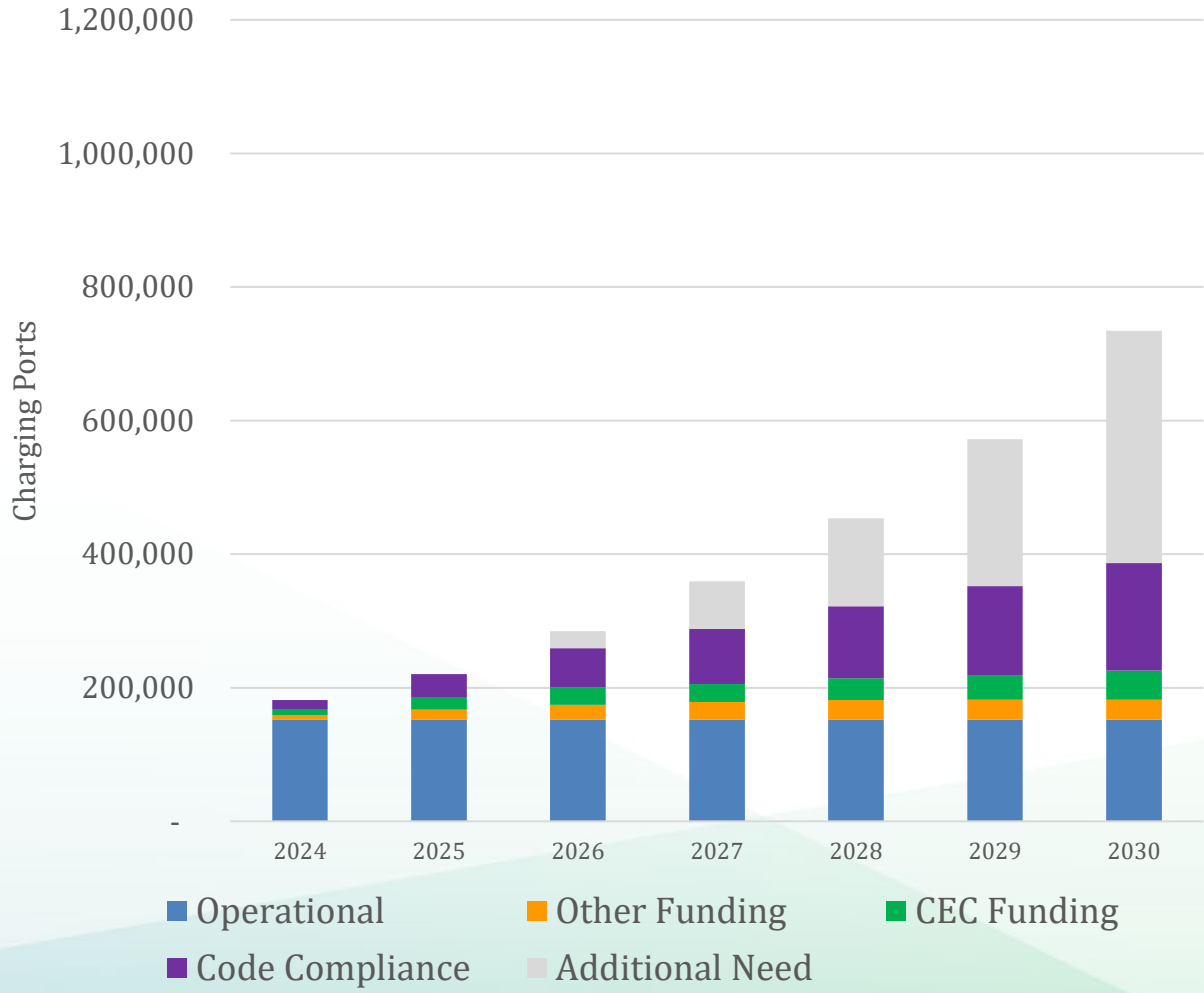
*Titled “Gas Station” scenario in 2nd AB 2127 Report

Two Proposed Funding Scenarios for Light-Duty EV Charging

1) Primary AB 2127 Funding Scenario



2) Increased DC Fast Charger Funding Scenario



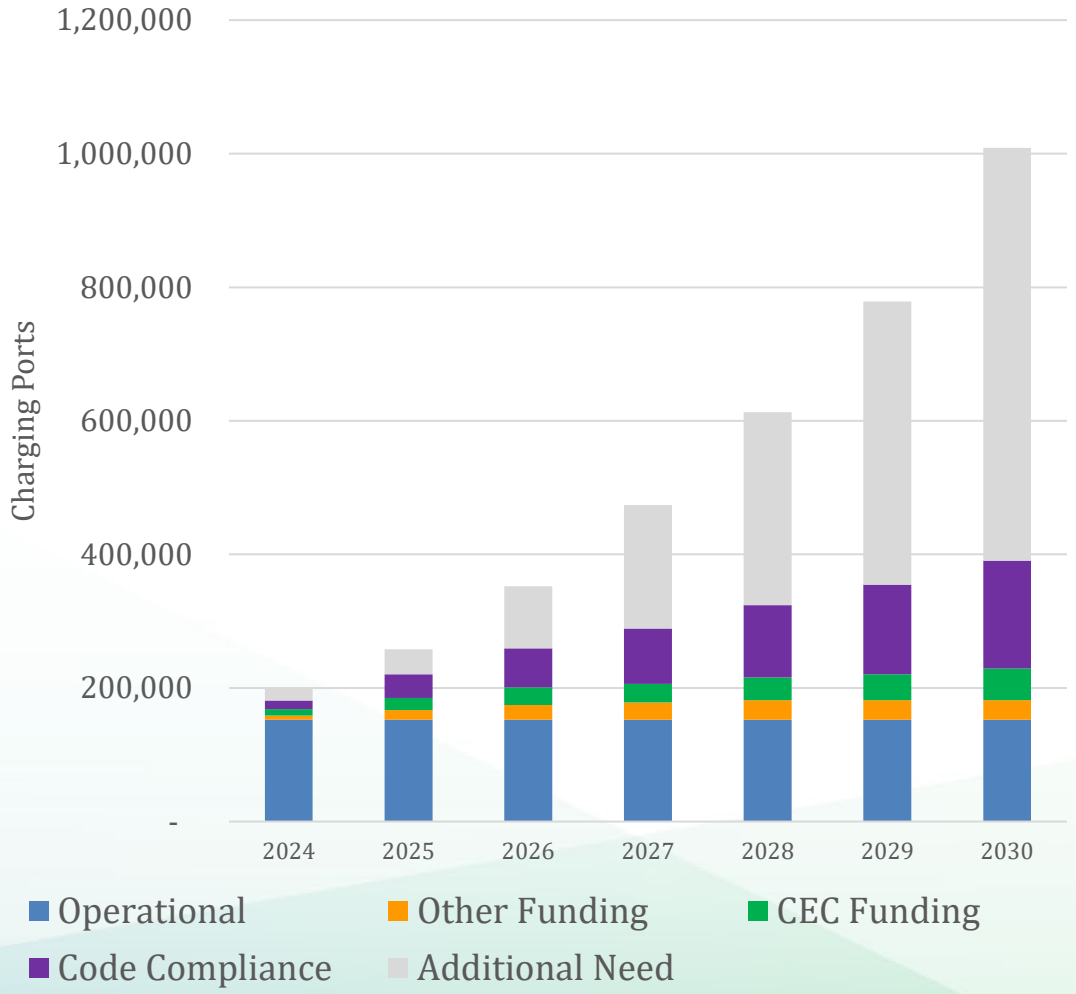
1) Primary AB 2127 Funding Scenario

Clean Transportation Program Base Funding:

- 50% funding for DCFC
- 50% funding for Level 2
  - 50% workplaces, 50% multifamily

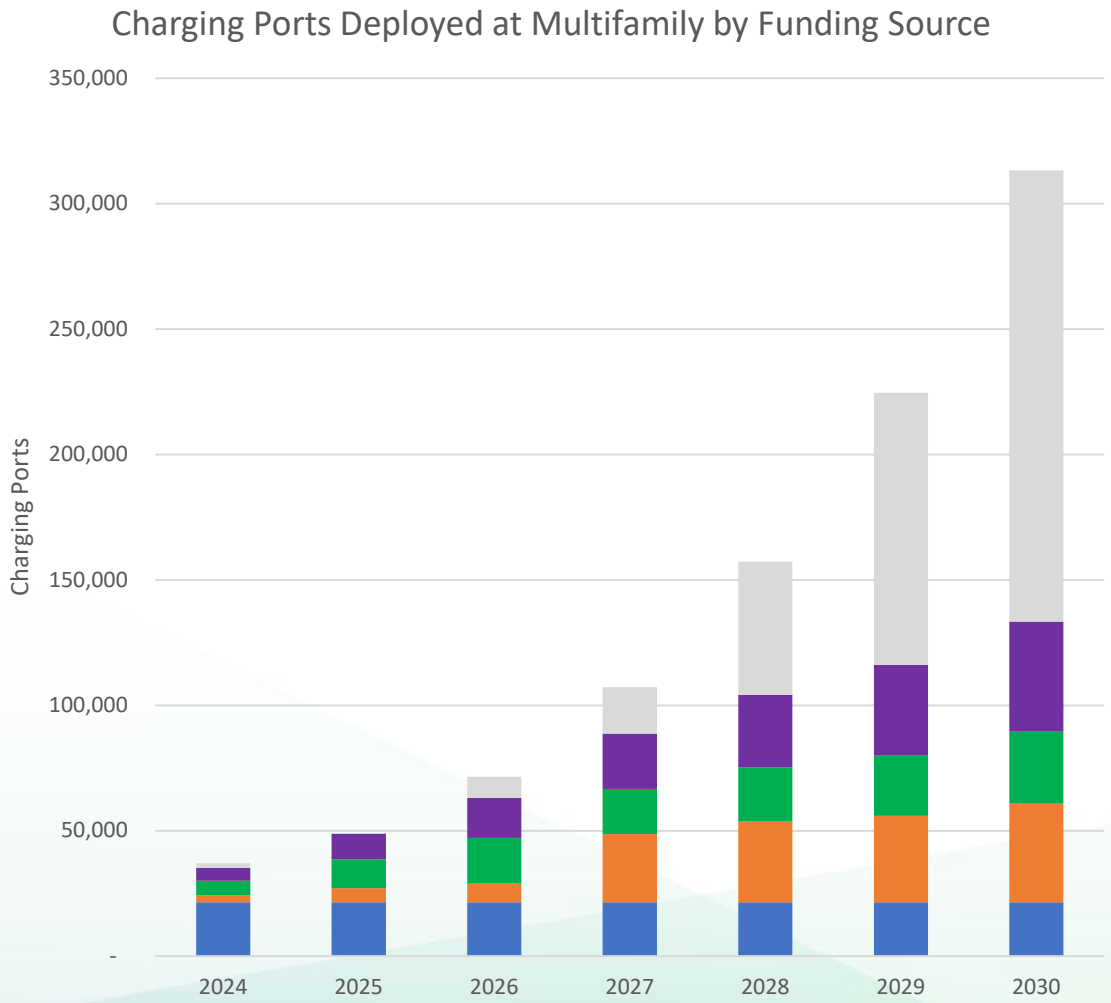
Prioritize the following:

- Level 2 serving multifamily households (MFH)
- Harder-to-reach workplaces and commute destinations
- DC fast charging in rural areas
- Increase presence of DC fast charging in low-income and disadvantaged communities



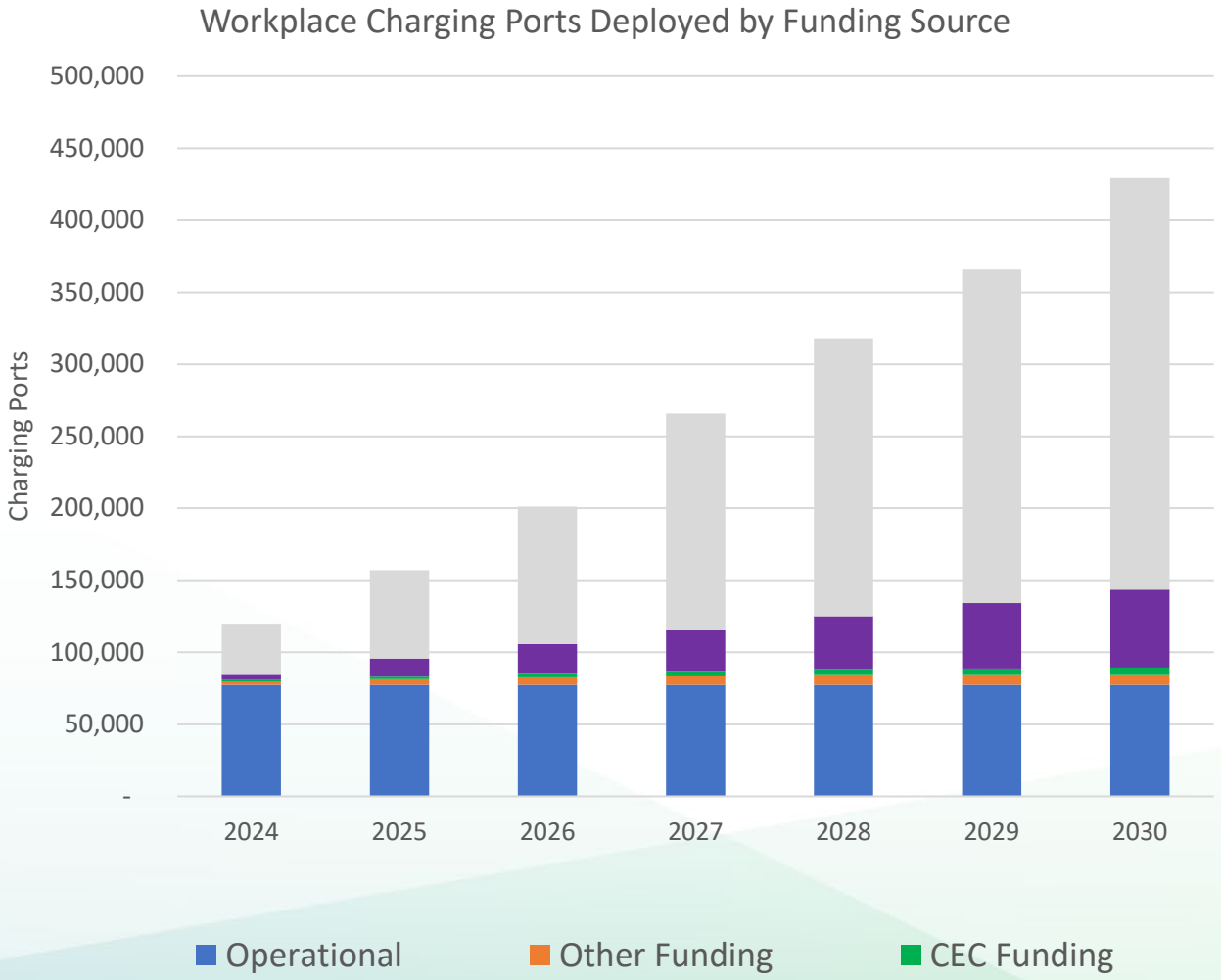
1) Primary AB 2127 Funding Scenario: Prioritize Level 2 Deployments at MFH

- State will continue to have long-term role in deploying charging at MFH
- Several existing programs with funding targeted towards MFH sector
- Green Building Code could have large impact on new/retrofits for MFH
- Estimated 180,000 charging ports will be needed from additional funding/programs and private sector investments in 2030



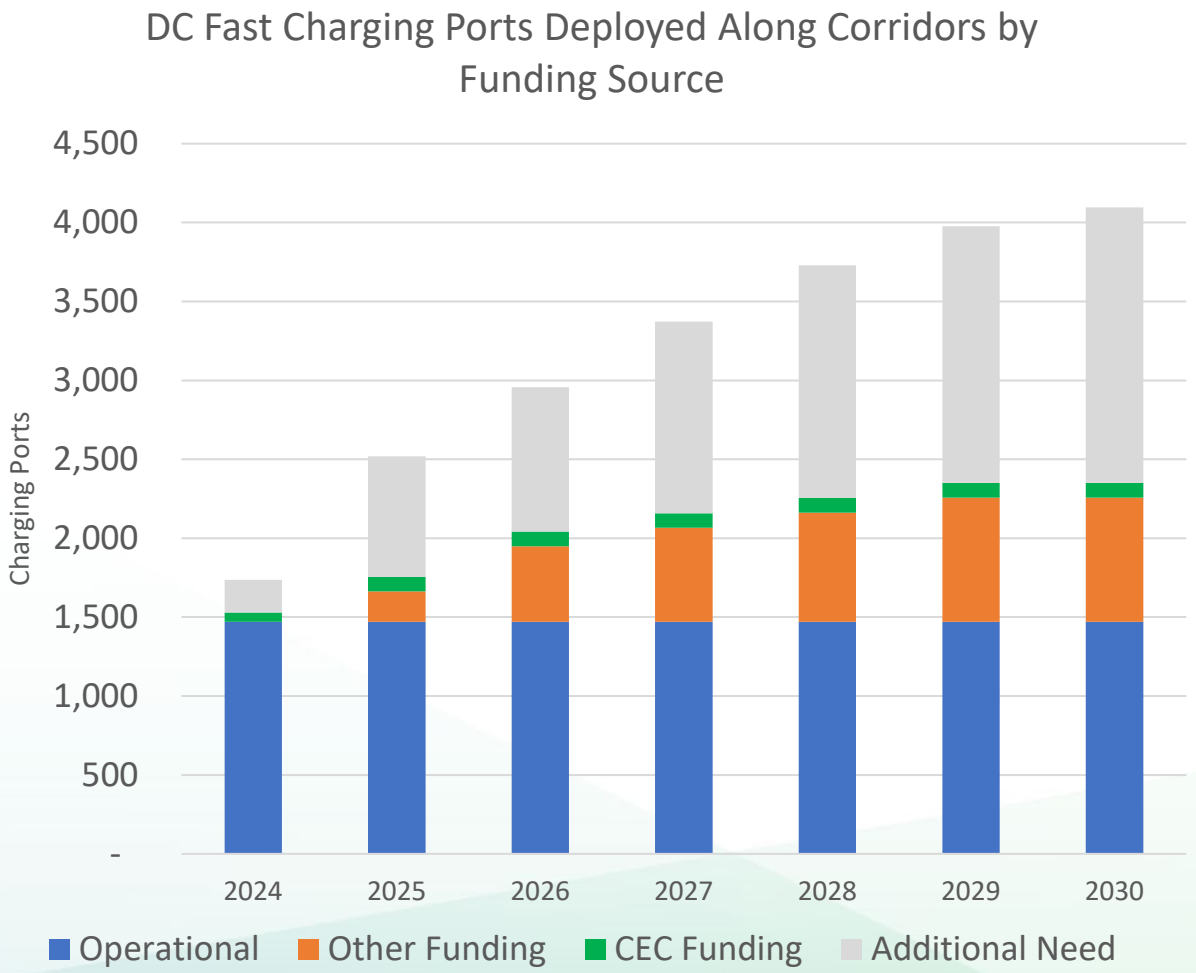
1) Primary AB 2127 Funding Scenario: Prioritize Harder-to-Reach Workplaces

- State to prioritize harder-to-reach workplaces; commute destinations
- Green Building Code could have large impact on new/retrofits for workplaces
- Estimated 143,000 charging ports will be needed from additional funding/programs and private sector investments in 2030



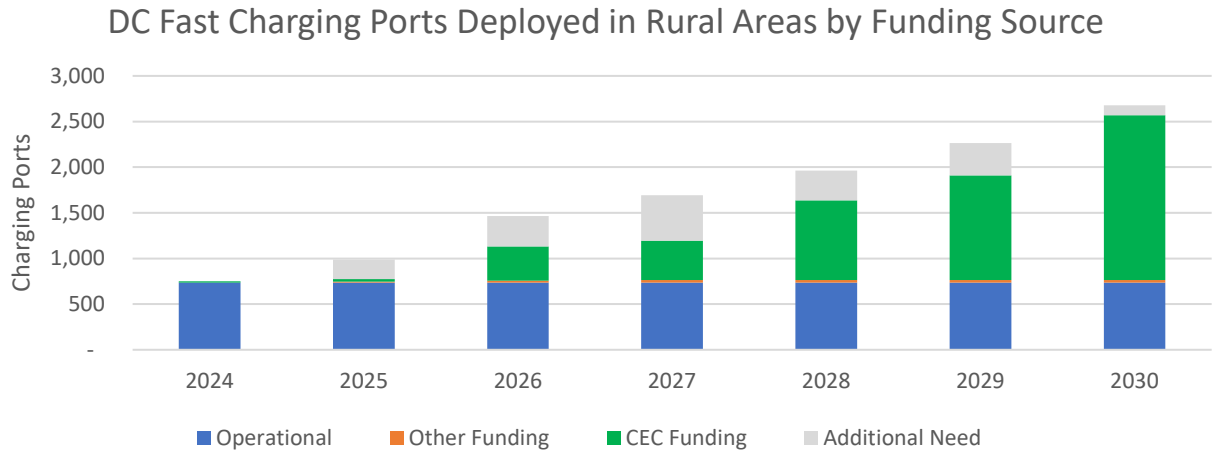
1) Primary AB 2127 Funding Scenario: Focus Federal Funding for Corridor Deployments

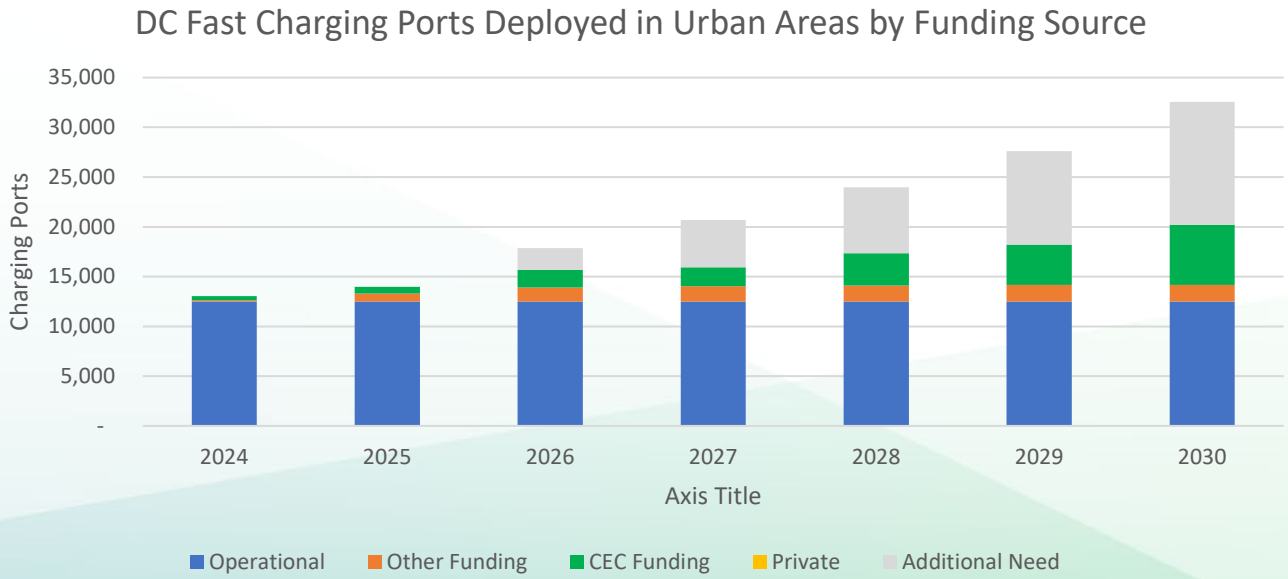
- Leverage National Electric Vehicle Infrastructure (NEVI) Formula Funding for buildout of fast charging along state's travel corridors
- Anticipate private sector to contribute much of the additional need (estimated 1,700 fast chargers in 2030)
- Focus CEC funding towards rural and low-income and disadvantaged communities (LIC/DAC)



1) Primary AB 2127 Funding Scenario: Focus Fast Charging in Rural and LIC/DAC Areas

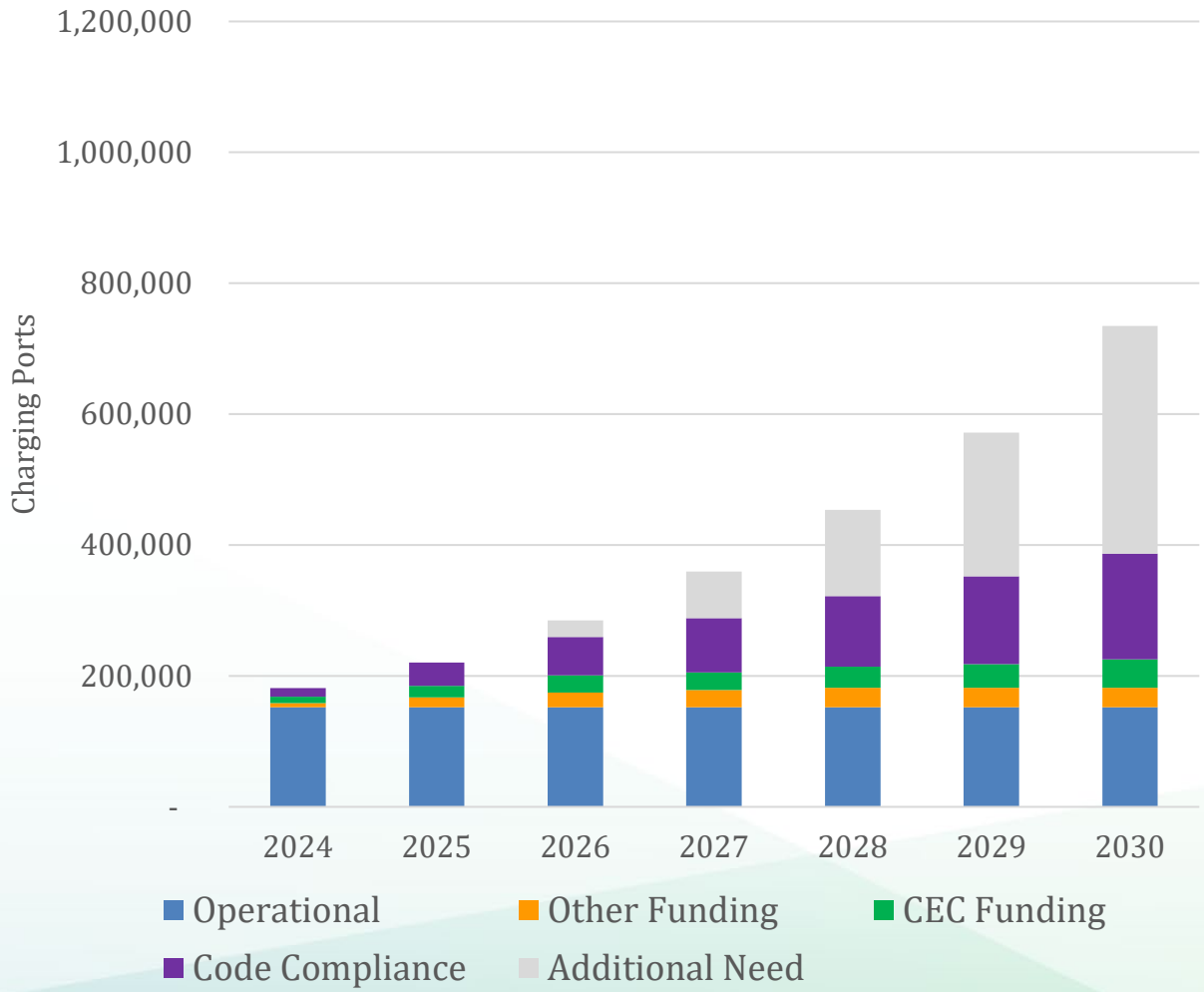
- Rural communities had less public fast charging station coverage than urban communities
- Anticipate private sector to fulfil remaining additional need (roughly 12,000 fast chargers in urban areas)
- Increase the presence of DC fast charging in LIC/DAC areas
- Provide support for transportation network company drivers and drivers who cannot charge at home





2) Increased DC Fast Charger Funding Scenario

- All base Clean Transportation Program Funding allocated towards DCFC deployments
- Deploy DCFC in urban city centers, rural communities, and low-income and disadvantaged communities
- ZEV Package funding still dedicated towards multifamily Level 2



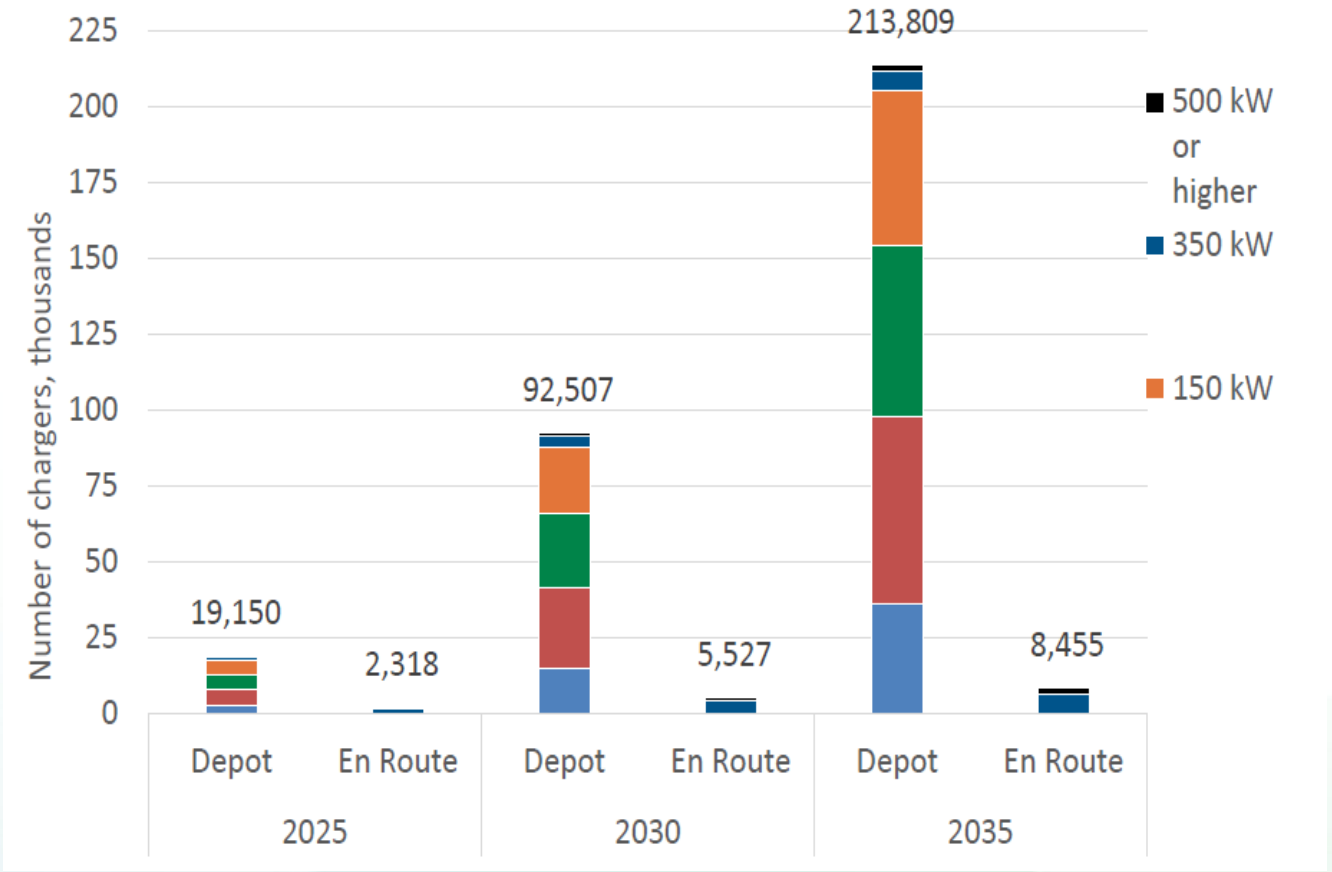
Medium- and Heavy-Duty Electric Vehicle Charging Funding Scenarios

2nd AB 2127 Results (MDHD)

To support 155,000 MDHD EVs in 2030:

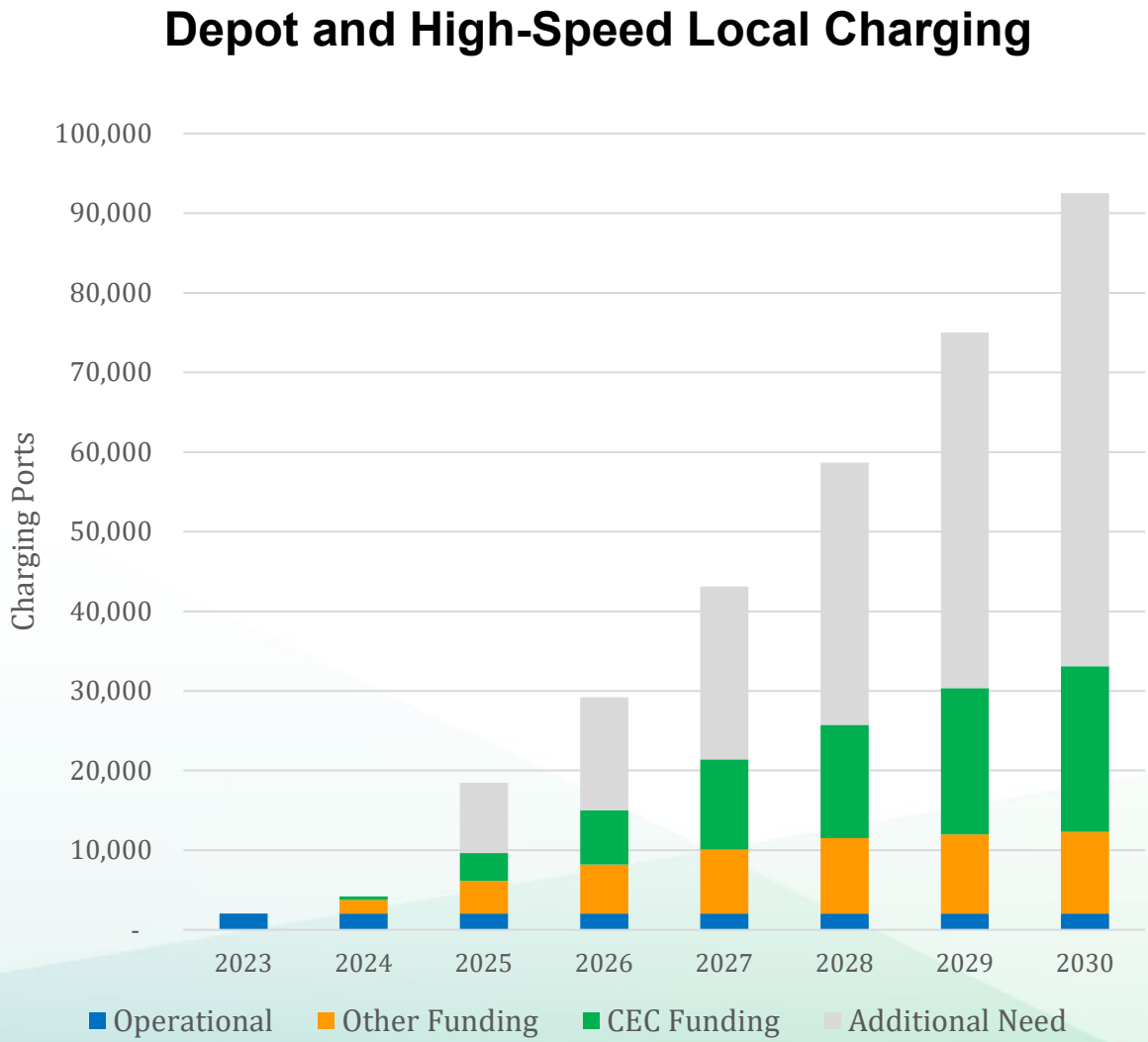
- High-Speed Depot Alternative Future Scenario
  - 20% of depot charging demand shifted to faster (350 kW to 1,500 kW) high-speed local charging
  - 92,507 depot and 5,527 en route chargers

- In baseline scenario, 109,000 depot and 5,500 en route chargers



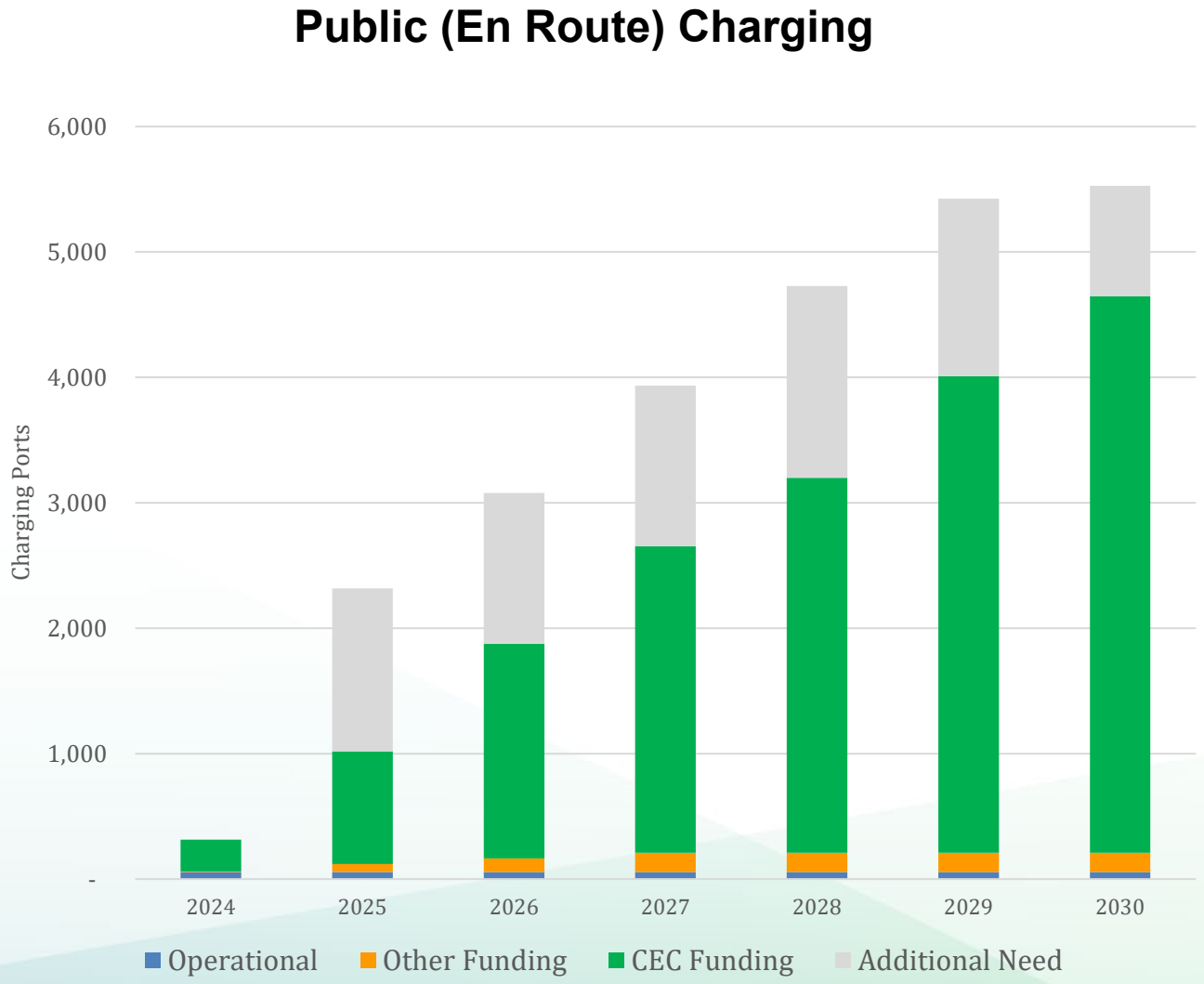
Fund Depot and High-Speed Local Charging

- Expect lower speed depot charging to provide majority of charging for most MDHD EVs
- High-speed local charging to serve those without dedicated overnight depot, or depots that cannot install depot charging on-site
- State role to ensure fleets can successfully transition to zero emission.
- Anticipate private sector to contribute large portion of additional need



Fund Public (En Route) Charging

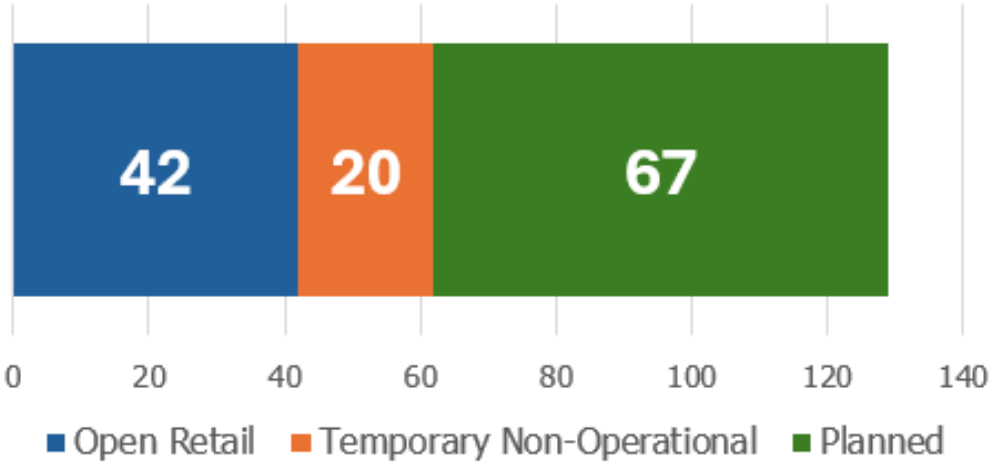
- Vital to ensure long-distance freight transportation is possible
- Early priority investment for the state to build out baseline network of public charging
- Senate Bill 671 identified freight corridors to support efficient goods movement



Hydrogen Fueling Station Funding Scenario

Light-Duty Hydrogen Fueling Station Deployment Strategy

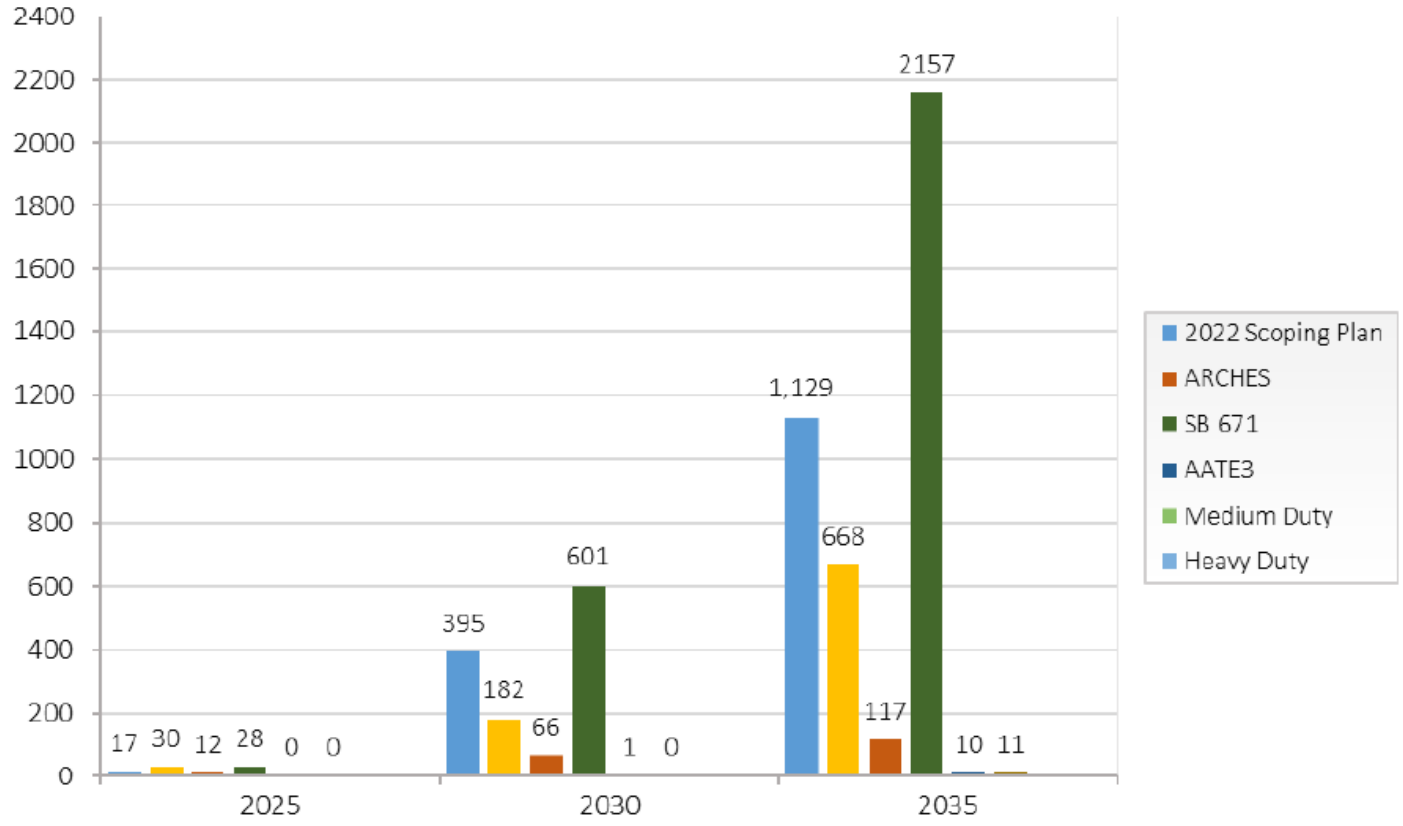
- Continue to monitor light-duty FCEV market and make infrastructure investments accordingly.
  - Anticipated to have 129 total stations by 2030
- Focus on improving the driver experience and fueling supply



As of August 2024

Fund Depot and Publicly Accessible MDHD Hydrogen Network

- Uncertainty in types of zero-emission technology fleet owners will choose
- Estimating future demand for MDHD hydrogen fueling stations is challenging
- Encourage development of depot and publicly accessible MDHD hydrogen fueling network



Source: SB 643 Clean Hydrogen Fuel Production and Refueling Infrastructure to Support MDHD FCEV and Off-Road Applications

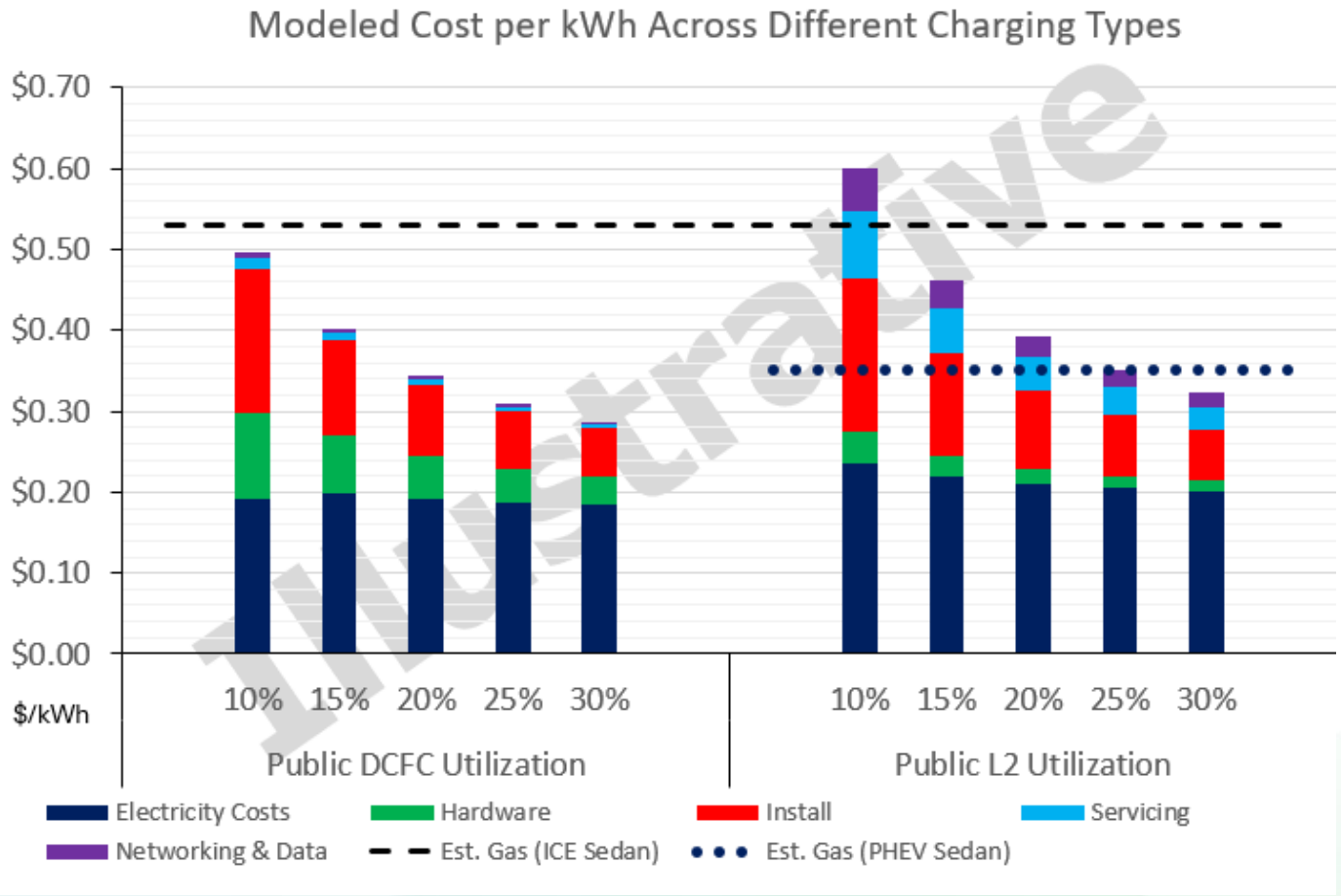
Business Case for Light-Duty EV Charging

Public Funding For Light-Duty EV Charging

- CEC monitors EV charging market maturation as it makes funding decisions for ZEV charging and fueling infrastructure
- California still in early stages of ZEV transition
  - ZEVs account for 26.4% of new cars sold in Q3 2024
  - ZEVs account for 5.17% of on-road vehicles end of 2023
- Maturation of market depends on business case for charging

Exploring Business Case for Charging

- Developed methodology to assess levelized cost-of-service in $/kWh
  - How a light-duty station operator would have to price energy to cover capital and operating costs and make a profit
- Utilization and charging speed are two factors that lower the $/kWh
- Utilization = time drawing power at 150 kW and 6.6 kW respectively



Public Discussion Period

Questions for Consideration (EV)

Light Duty EV Charging

- Which Funding Scenario should the state consider?
  - Primary AB 2127 Funding Scenario
  - Increased DC Fast Charger Funding Scenario

MDHD EV Charging

- Current funding proposes a 50/50 split for depot/high-speed local and en route. Should this be adjusted?

Questions for Consideration (Hydrogen)

LD and MDHD Hydrogen Stations

- Current strategy deploys light-duty stations separate from medium- and heavy-duty stations. Should the state move towards deployment of light- AND medium-duty hydrogen stations?

- Current strategy will deploy both depot and publicly available MDHD hydrogen stations. Are there other cases the state should consider?

Questions for Consideration (Business Case)

Business Case for Light-Duty EV Charging

- Is levelized cost of charging in the graphic representative of what industry is seeing for Level 2 and DC fast charging?
- Other inputs to take into consideration?

Public Discussion

Zoom Application

- Click “raise hand” feature

Telephone

- Press *9 to raise hand
- Press *6 to Mute/Unmute

Written Question/Comment

- Type your question in the Q&A window

Submit written comments to Docket 24-TRAN-03

Deadline: 5pm February 7, 2025

Next Steps

2024 ZIP Schedule

Publish Draft Staff Report
January 8

Public Workshop
January 29

Written Comments Due
February 7

Publish Revised Staff Draft
May 2025

Written Comments

Electronic Commenting System

Visit the comment page for this docket at

https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=24-TRAN-03

Comment by E-mail

E-mail: docket@energy.ca.gov

Subject Line: 2024 Draft ZIP

All comments due by 5pm Friday, February 7, 2025

Thank You!