California: Leading the Future of Transportation

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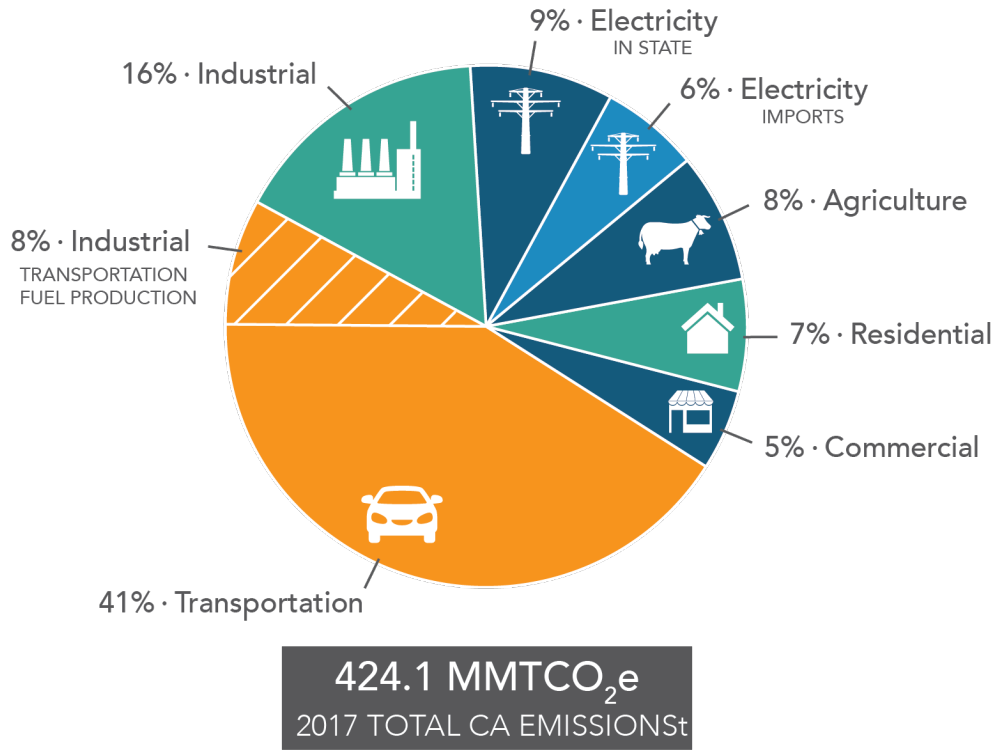
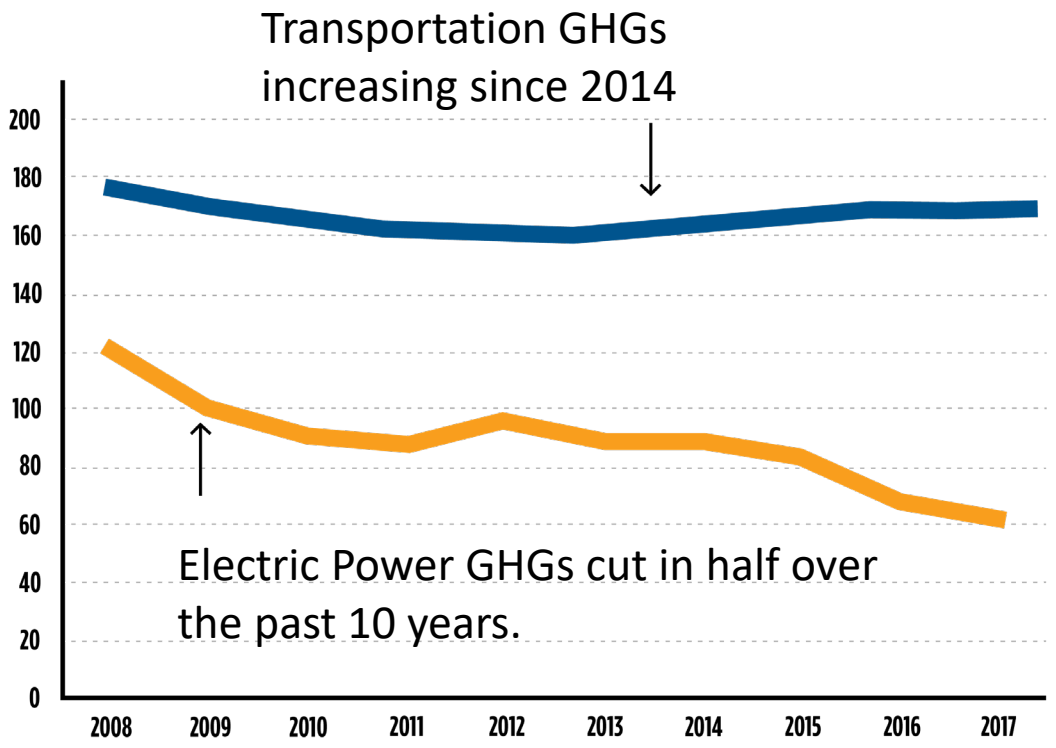
The Problem

Transportation is the greatest and increasing source of greenhouse gas emissions (GHGs) in California.

Transportation: Our biggest problem, and our greatest opportunity





The Solution

Clean zero-emission transportation.

Regulation Leadership Timeline

1966
Tailpipe emissions regulations for hydrocarbons and carbon monoxide.

1971
Tailpipe emissions regulations for nitrogen oxides.

1982
Tailpipe emissions regulations for diesel particulate matter.

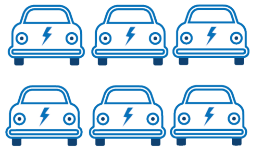
1990
Low-Emission Vehicle (LEV) and Zero-Emission Vehicle (ZEV) regulation.

1999
LEV II regulation update

2004
Pavley Regulations: greenhouse gas vehicle emission standards.

2007
Clean Transportation Program

2012
Advanced Clean Cars



2018
Innovative Clean Transit

2020
Advanced Clean Trucks

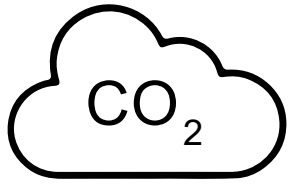
CALIFORNIA
AIR RESOURCES BOARD

14 ZEV MANUFACTURERS

in California designing and building cars, buses, motorcycles and trucks.

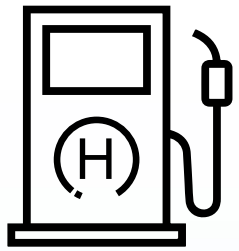
- TESLA
- BYD
- PROTERRA
- ZERO
- MOTIV
- LUCID
- KARMA AUTOMOTIVE
- EL DORADO NATIONAL CALIFORNIA
- FARADAY FUTURE
- PHOENIX MOTORCARS
- XOS
- GREENPOWER MOTOR CO.
- GILLIG
- ADOMANI

Key California ZEV Policy Goals



Climate

- Reduce GHG emissions to 40 percent below 1990 levels by 2030
- Achieve carbon neutrality by 2045



ZEV Infrastructure

- 250,000 electric vehicle chargers, including 10,000 DC fast chargers, by 2025
- 200 hydrogen refueling stations by 2025

ZEV Fleet

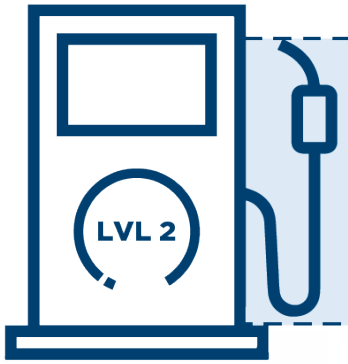
- 1.5 million electric vehicles by 2025
- 5 million zero-emission vehicles by 2030

CARB Regulations

ZEV Regulation for Passenger Vehicles	• Requires car manufacturers to sell increasing share of ZEVs • ~8% of new vehicle sales in CA in 2025
Clean Transit Regulation	• 2029: 100 percent of new buses will be zero-emission • 2040: 100 percent of operating buses will be zero-emission
Advanced Clean Trucks	• *Recently adopted* • Require truck manufacturers to sell increasing share of zero emission trucks from 2024 to 2035 • 2030: 50% of sales for Class 4-8 straight trucks; 30% for all other trucks
Low Carbon Fuel Standard (LCFS)	• Sets carbon intensity standard for fuels

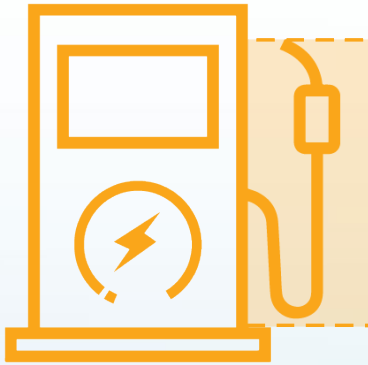
Key California ZEV Policy Goals

ZEV Infrastructure



51,200
LEVEL 2 CHARGERS

GOAL
240,000

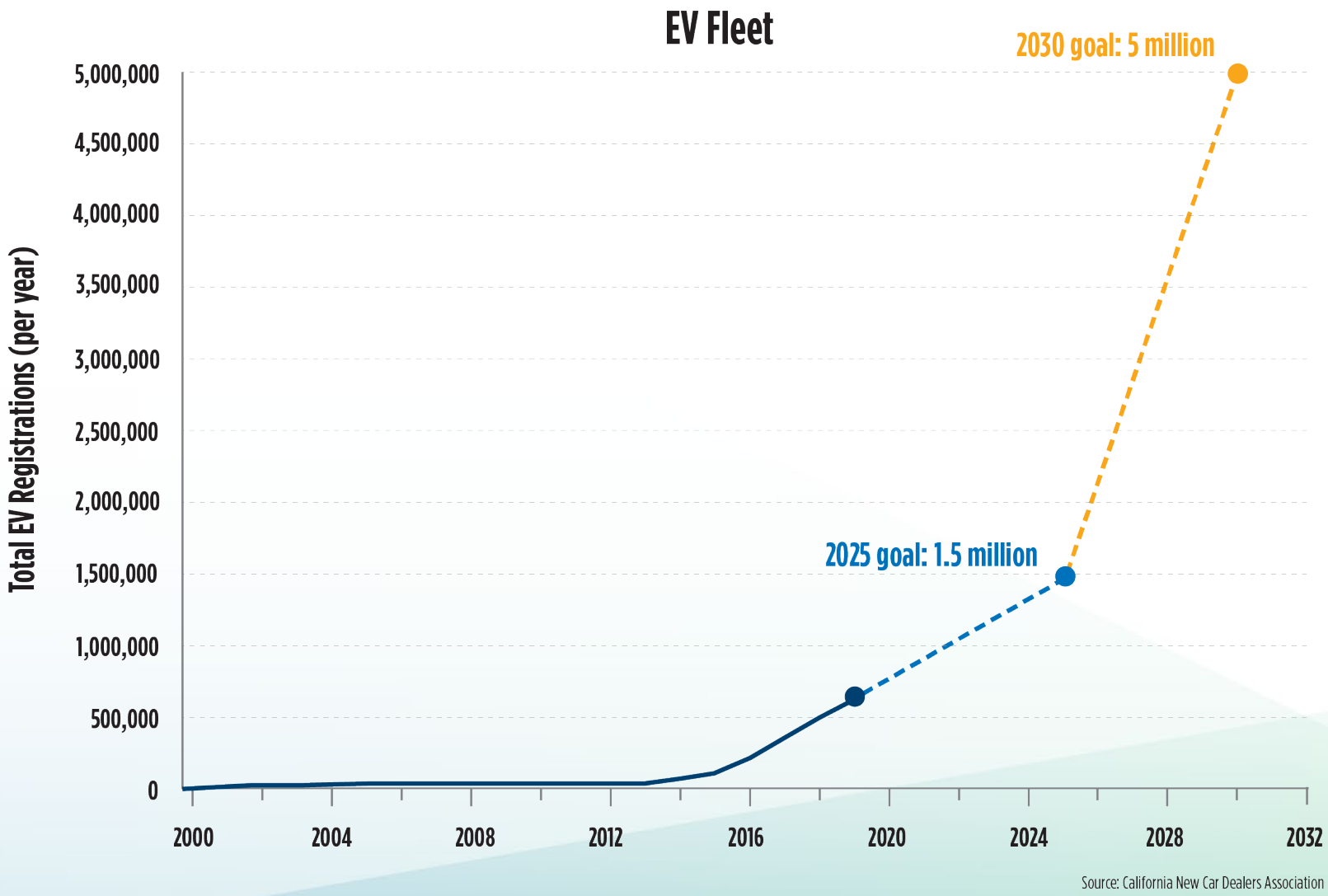


4,255
DC FAST CHARGERS

GOAL
10,000

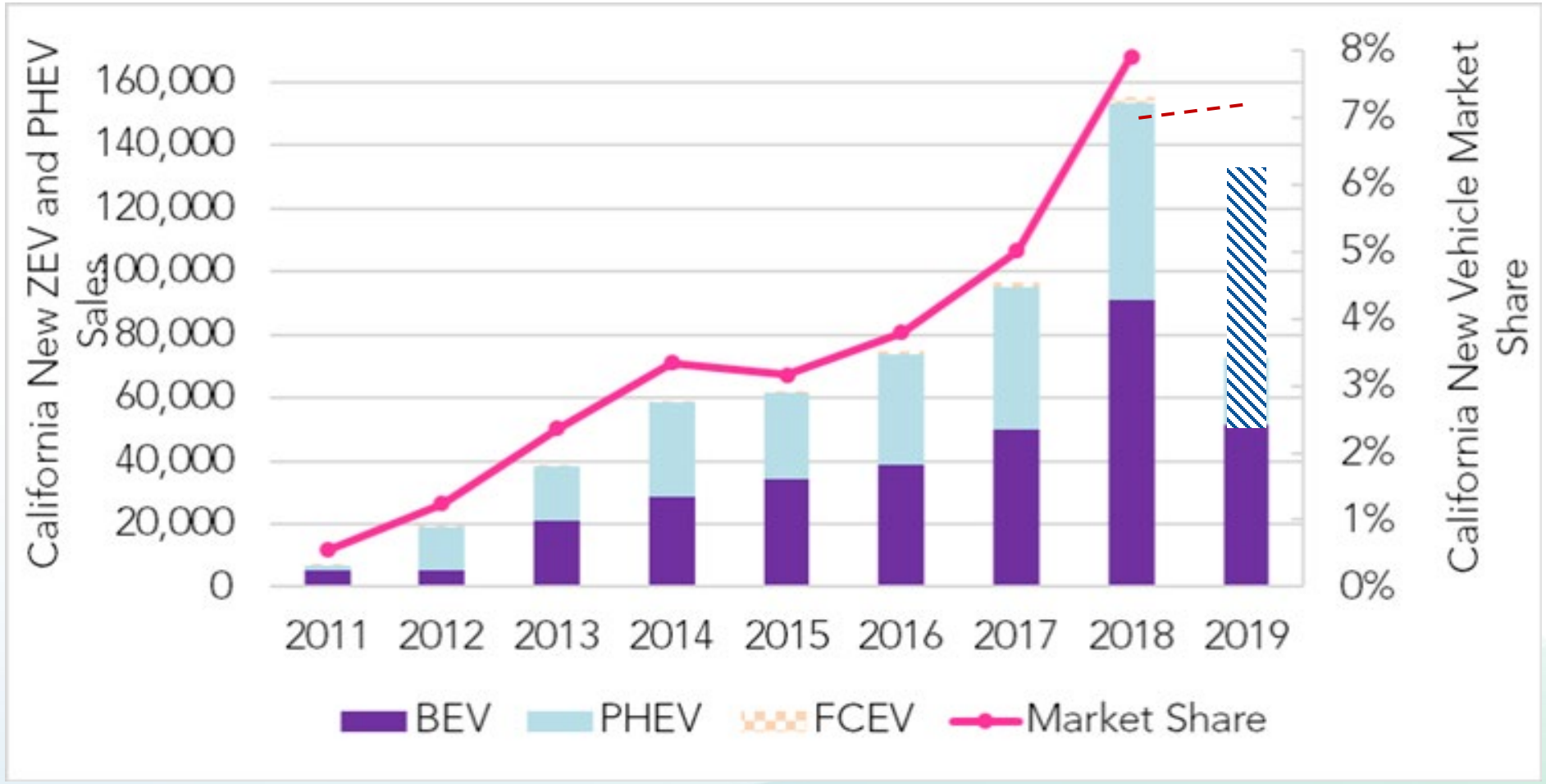
Source: CEC CTP Investment Plan Update

Key California ZEV Policy Goals



Source: California New Car Dealers Association

ZEVs Gaining Momentum and Market Share (PRE-COVID DATA)



Note: 2019 figures reflect actual sales for January – June and estimates for the remainder of the year

Cumulative Investments

Key ZEV Clean Transportation Program Investments

$182.8M

EV Charging Infrastructure

$125.7M

Medium and Heavy-Duty Clean Technology Demonstrations

$135.6M

Hydrogen Refueling Infrastructure

$55.5M

ZEV Manufacturing

$33.3M

Workforce Development

Total: $532.9M

Future Investments

Planned Key ZEV Clean Transportation Program Investments for 2020-2023

$132.9M

Light-Duty EV Charging Infrastructure and eMobility

$134.8M

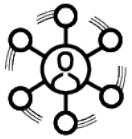
Medium and Heavy-Duty ZEVs and Infrastructure

$65M

Hydrogen Refueling Infrastructure

$9M

ZEV Manufacturing

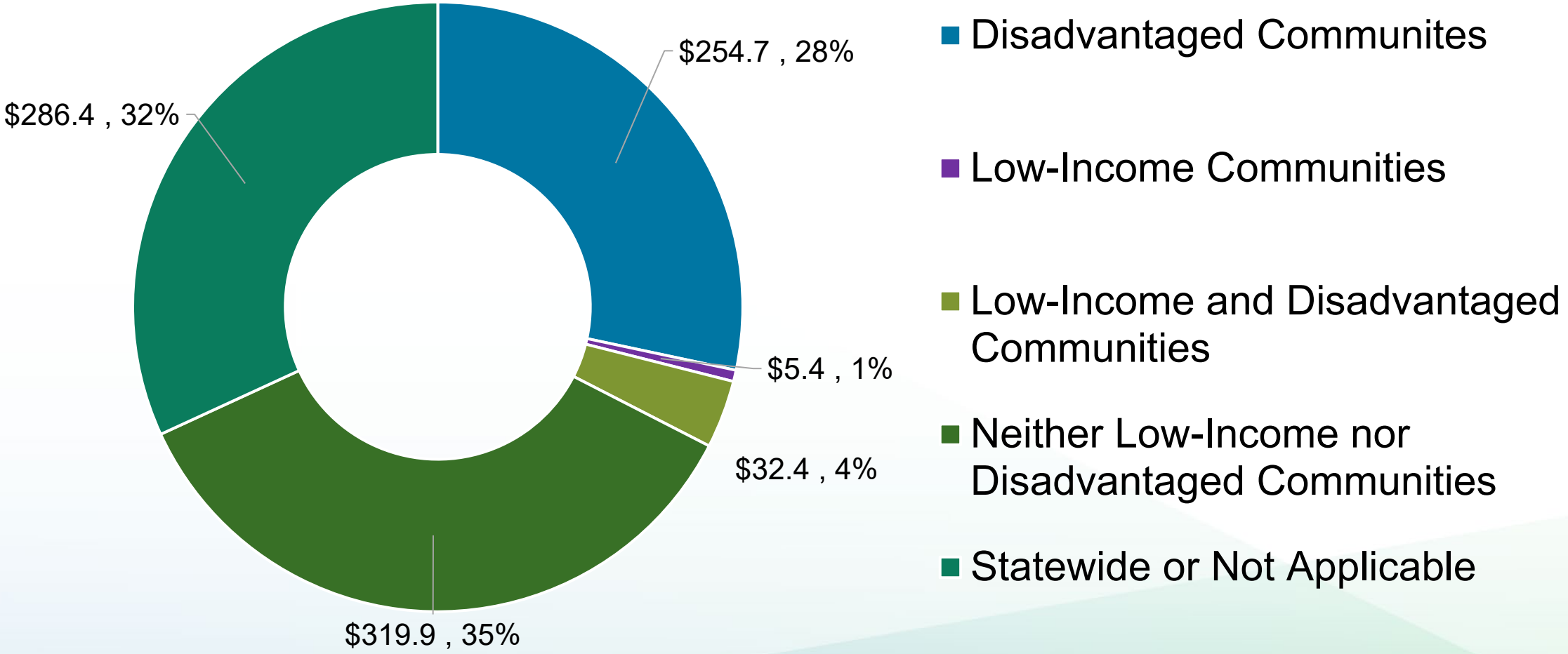


$7.5M

Workforce Development

Total: $349.2M

Proportion of Clean Transportation Program Funding Awarded to Projects Located in Disadvantaged and or Low Income Communities ($ in Millions)



Clean Transportation for All

Changes already implemented through the Clean Transportation Program

- Reconstituted Advisory Committee to include greater representation from community- and equity-focused organizations
- Developed a three-year investment plan with great focus on zero-emission transportation
- Increased share of funding for zero-emission medium- and heavy-duty vehicles – to reduce harmful diesel pollution

Clean Transportation for All

Changes we are considering for the Clean Transportation Program

- Improve support for EV charging at multi-unit dwellings
- Explore new criteria besides project location to evaluate benefits to low-income and disadvantaged communities (e.g., air quality, public health, and mobility access)
- Design new programs in collaboration to better meet community mobility needs
- Incentivize collaboration with community based organizations

CPUC
Commissioner Rechtschaffen

Transportation Electrification Framework

- Draft issued by CPUC in February 2020
- Policy areas include:
  - Process for submittal and approval of utility TE applications
    - Strategic electrification plans
  - The roles the IOUs should play in statewide TE
  - Priority areas for near-term investment
  - Equity
    - Targeted communities
    - Barriers to electrification
  - Rates
  - Focus on areas with highest barriers to electrification: MUDs, DACs and MD/HD

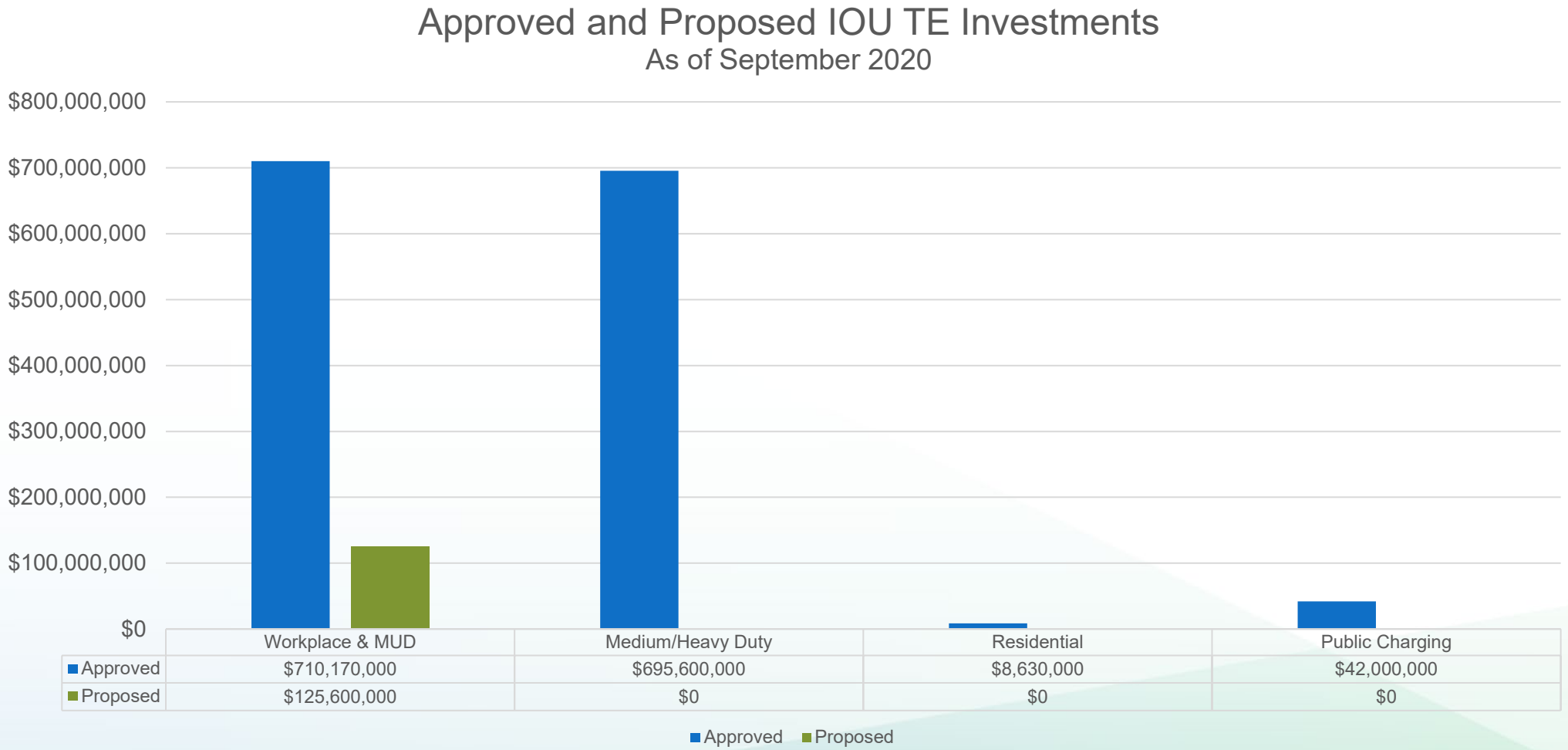
Significance of medium and heavy-duty Sectors

- MD/HD vehicles are 3% of CA's vehicles
  - 70% of state's on-road NOx emissions; 45% of on-road PM emissions
  - 21% of on-road GHG emissions
- Programs designed specifically for MD/HD sector

Transportation Electrification Framework

- Schedule
  - Final rounds of comments being submitted this month
  - Targeting a Q1 2021 Decision
- Seeking input on all areas of the TEF but presents an opportunity for DACAG to weigh in on equity, rates, MD/HD, MUDs and DACs

IOU Investments in EV Charging Infrastructure



	Workplace & MUD	Medium/Heavy Duty	Residential	Public Charging
Approved	$710,170,000	$695,600,000	$8,630,000	$42,000,000
Proposed	$125,600,000	$0	$0	$0

Recent CPUC TE Decisions: Focus on Equity

- **SCE Charge Ready 2 (Decision 20-08-045) – Aug 2020**
  - Authorizes a budget of $436 million to install approximately 37,800 EV chargers for light-duty vehicles at workplaces, multi-family buildings, and destination centers
  - Half of the funding is reserved for sites in disadvantaged communities
  - One-third reserved for multi-family buildings
  - DCFC program: 30% reserved for DACs, 25% reserved for MUDs

Recent CPUC TE Decisions: Focus on Equity

- **SDG&E Medium and Heavy-Duty Program (Decision 19-08-026) – Aug 2019**
  - Authorized more than $107 million to support the installation of charging infrastructure for medium- and heavy-duty electric vehicles
  - SDG&E must spend at least 30% in disadvantaged communities
  - Program is expected to electrify approximately 3,000 vehicles

- **PG&E Empower Program (Decision 19-09-006) – Sep 2019**
  - Specifically targets low and moderate-income residents

Recent CPUC TE Decisions: Focus on Equity

- **Schools, State Beaches and Parks (Decision 19-11-017) – Nov 2019**
  - Approved pilot programs for EV charging in parks, beaches and schools
  - Combined budget of $55 million to install 800 charging ports
  - Between 25 percent and 100 percent will be in disadvantaged communities
  - Defines DACs in SDG&E as top 25% on a statewide basis, rather than solely in its territory

The Importance of Rate Design: Off Peak EV Charging is Cheaper than Gas

IOU Territory	PG&E/SCE	SDG&E
Off-peak residential EV charging rate ($/kWh)	$ 0.13	$ 0.24
EV fueling is roughly equivalent to ($/gal)	$ 1.12	$ 2.07
% difference to charge EV than to fuel with gas	-72%	-48%
Total monthly EV fueling cost	$ 45.50	$ 84.00
Total monthly gasoline fueling cost	$ 162.34	$162.34

Commercial Rate Decision

- **PG&E Commercial EV Rate (Decision 19-10-055)**
  - Authorized a new subscription-based EV rate design for commercial and industrial customers
    - Includes transit fleet operators, owners of electric delivery trucks and providers of public charging stations
  - Eliminated demand charges and instead implemented a subscription model similar to cell phone bills, with time-of-use volumetric energy charges that encourage customers to charge off-peak
- **SCE has also adopted a commercial EV rate. SDG&E's is under consideration**

CARB Clean Vehicle Rebate Project

- Provides incentive for customers to purchase electric vehicles by providing a rebate
- Recently adopted an income cap of $150,000/single filer and $300,00/joint filers

CALIFORNIA CLEAN VEHICLE REBATE PROJECT℠