



Item 4: Informational Item – Bidirectional EV Charging Benefits, Opportunities, and CEC Actions

March 12, 2026 Business Meeting

Vincent Weyl, VGI Principal
Fuels and Transportation Division



Electric vehicles can be much more than transportation



Image By Jorge Barrios - Own work, Public Domain

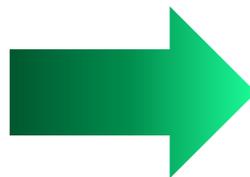


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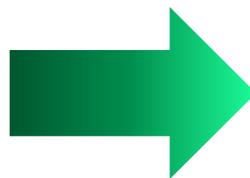


Photo: Kia America



Photo: Lucid Motors

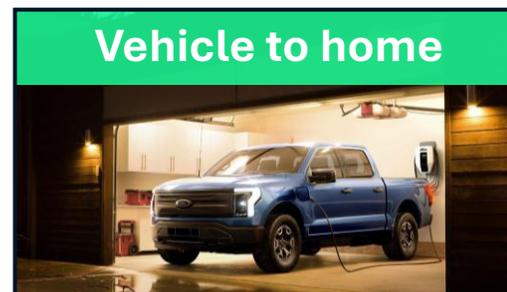


Photo: Ford



Photo: Zum



Bidirectional EV benefits to EV drivers

A mobile, reliable, and cost-effective clean energy resource

Vehicle to home



Photo: Ford



Save money – secure power

Lower electric bills, power backup during outage

Vehicle to grid



Photo: Zum



Earn money

Selling energy and providing grid services

Vehicle to load



Photo: Kia America

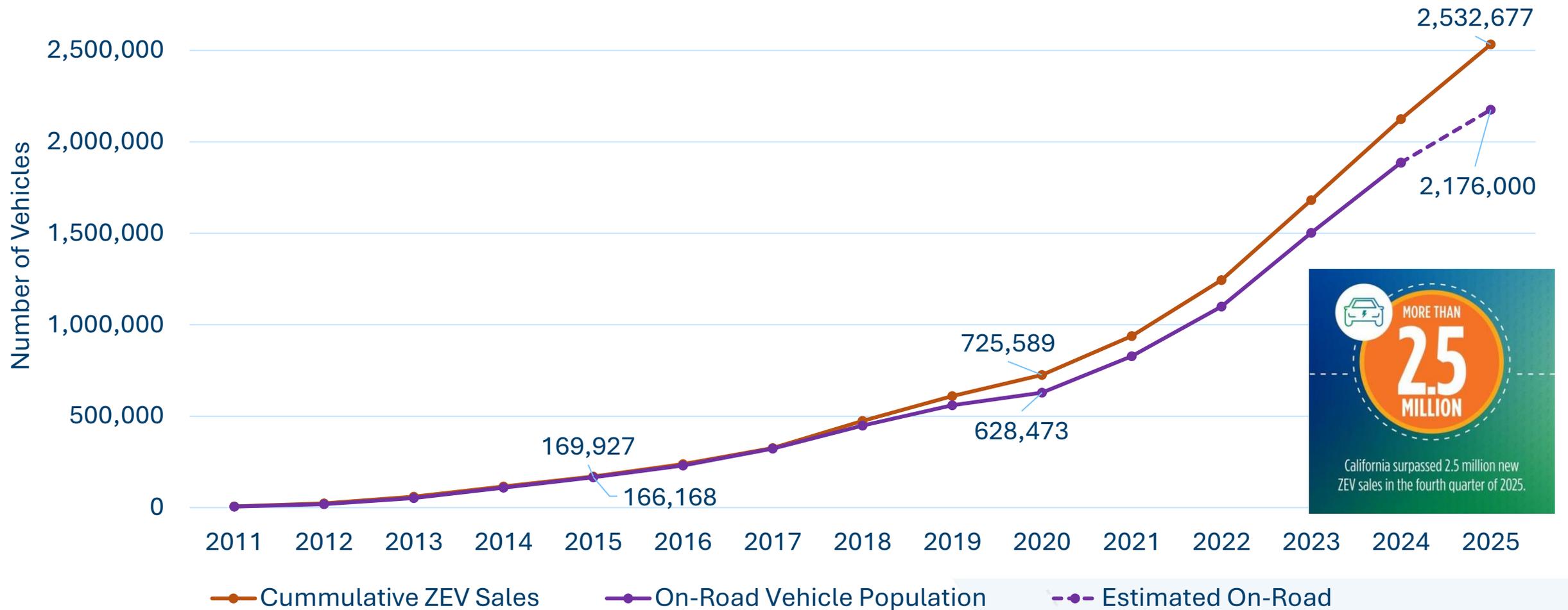


Mobile power – convenience

Power any appliance, anywhere



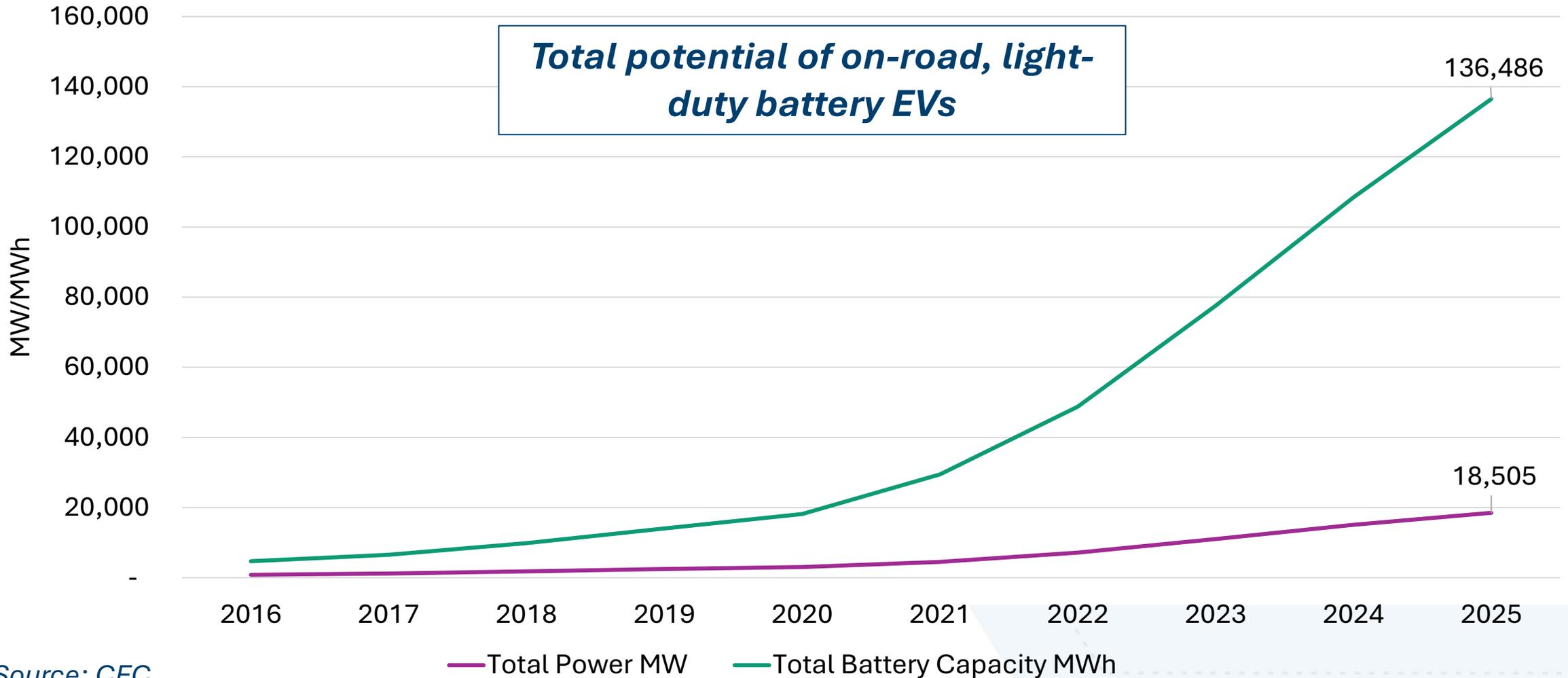
California's electric vehicle population is growing rapidly



Source: CEC



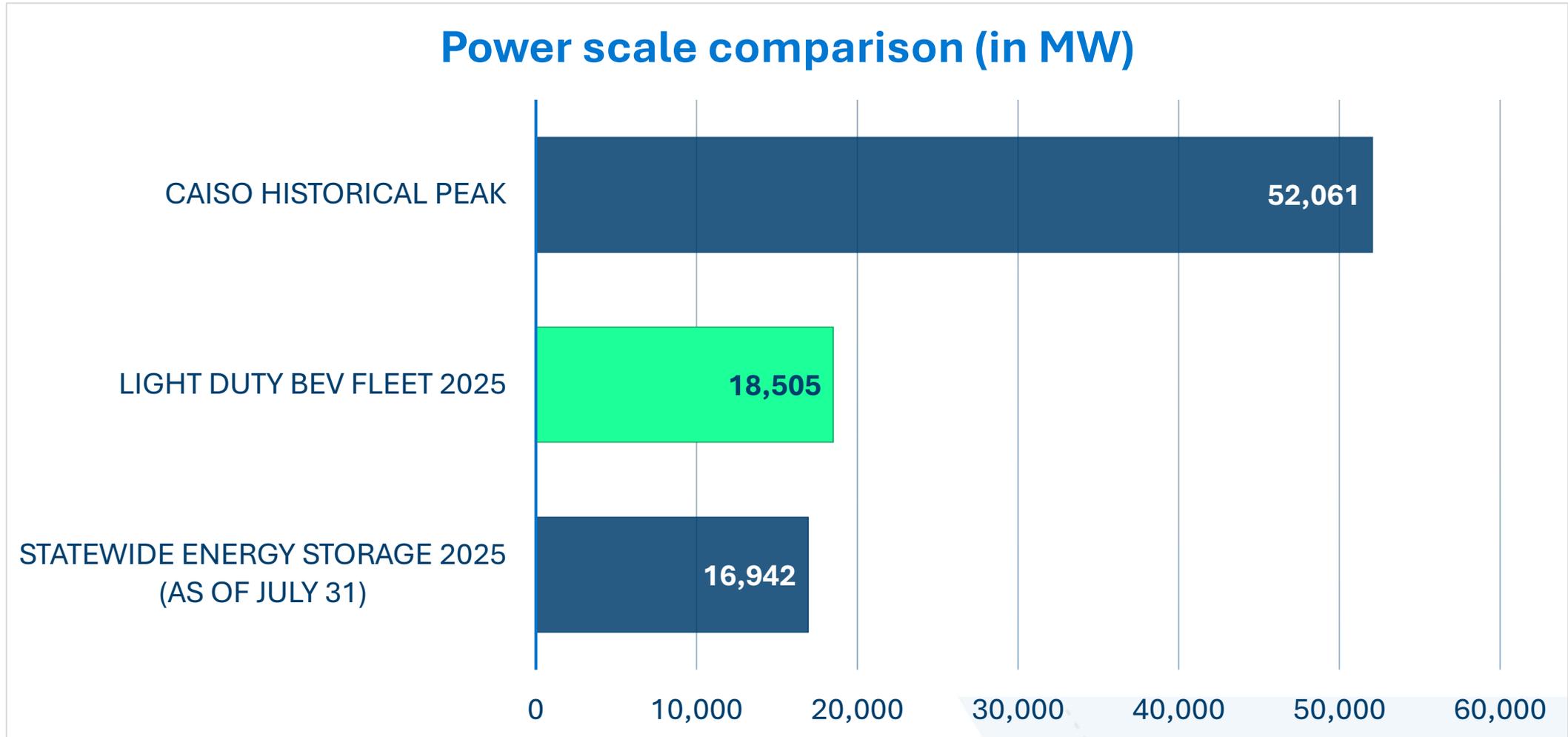
California's electric vehicles (EVs) are a substantial potential energy resource



Source: CEC



An abundant, flexible resource for the grid



Source: CEC



Bidirectional charging can save drivers hundreds and the grid Gigawatts

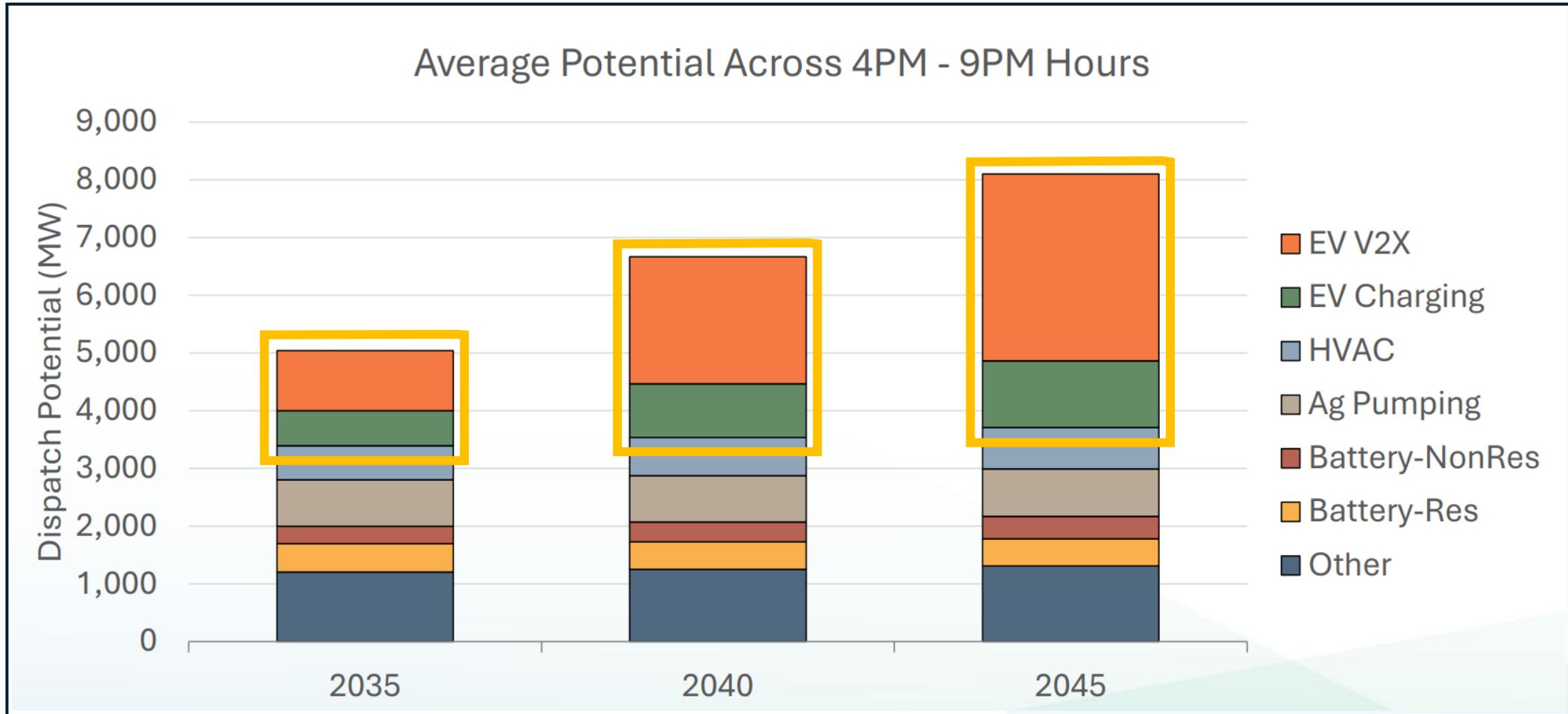
Vehicle-to-Home <u>Potential</u> in 2030		
Discharging during peak hours of 4 to 9 p.m.	Grid Disconnected	Grid Connected
EVs able to discharge at least once per week	2.3M (51.7% of EVs*)	2.36M (53% of EVs*)
Average total bill savings per EV (June to September – TOU rates)	\$262**	\$321**
Max grid load reduction (% residential load)	4.1 GW (9.4%)	5 GW (11.6%)

**based on 4.5M EVs in 2030*
***based on existing TOU rates*

Source: CEC and NLR



Bidirectional charging exceeds load flexibility potential of other resources

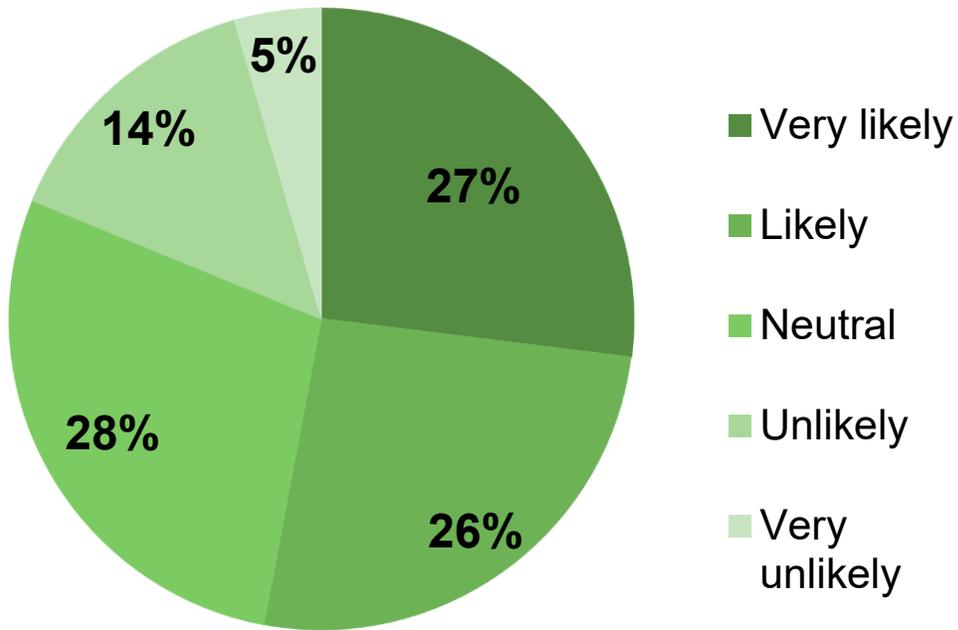


Source: 2024 SB 100 demand scenario workshop

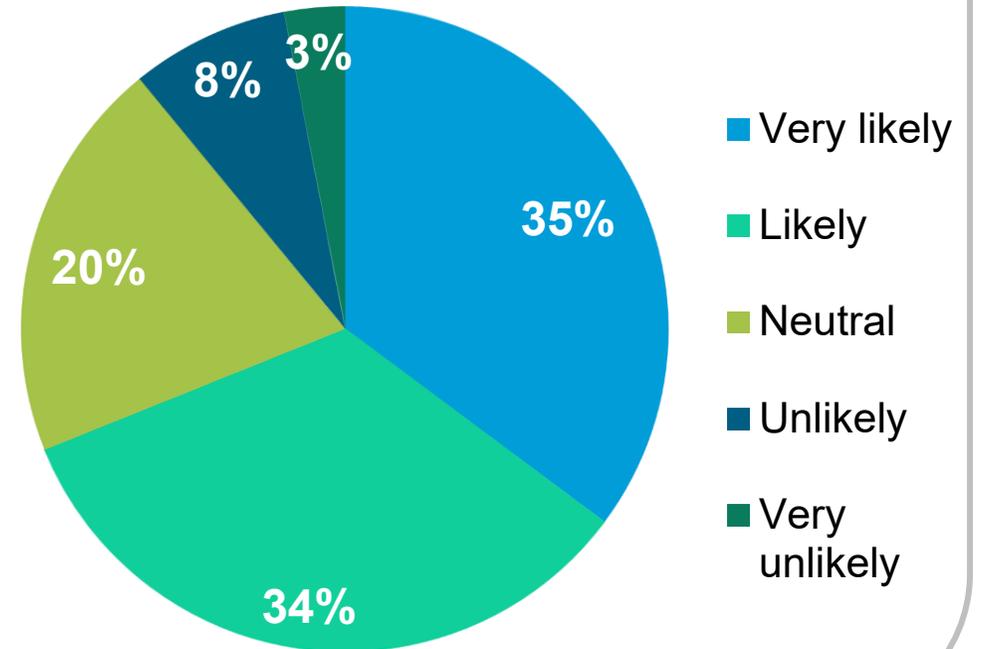


EV drivers are ready

Willing to pay more for bidirectional charging capabilities in an EV?



Willing to enroll in a bidirectional charging program?



Source: Plug In America survey, March 2025

N = 321



EV industry is ready



\$45,000 Rivian R2 to Get Launch Edition, Bidirectional Charging



Tesla Unlocks Vehicle-to-Home (V2H): Your Car is Now a Powerwall on Wheels

Jul 26, 2025



GM Energy To Begin Leasing Bidirectional EV Charging System In 2026



2025 Chevy Silverado EV Now Features Vehicle-To-Home Capability



Polestar introduces its first bidirectional charging package for customers



ChargePoint's Next Generation AC Level 2 Tech Brings Bidirectional Charging



Wallbox opens pre-orders for Quasar 2 bidirectional charger



The Kia EV9 Will Soon Be Able To Power Your Entire House



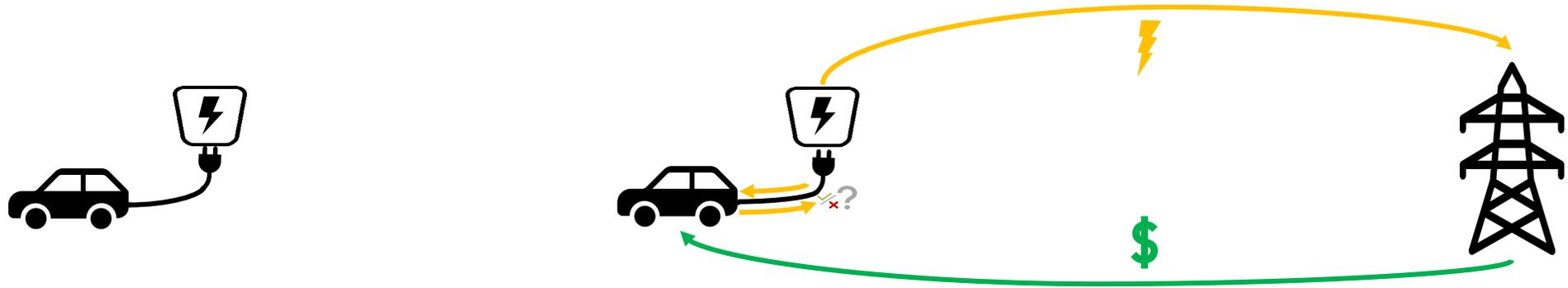
Toyota's Vehicle-to-Grid Program with Oncor Energy Demonstrates Benefits of Bidirectional BEV Charging



Ford Introduces EV Home Power System



Critical barriers to bidirectional charging remain



Emerging Product Offering

How do vehicle owners unlock the capability?

DRIVER EXPERIENCE

Interconnection

Do utilities approve installation of bidirectional products?

SAFETY

Revenue Opportunities

Do vehicle owners and rate payers have a value case?

COSTS & BENEFITS

Source: CEC



CEC actions are a major catalyst

- Committed to making bidirectional charging a reality
 - Bidirectional infrastructure funding
 - Technical & modeling expertise
 - Regulatory action
- Highlights of recent CEC actions
 - 200+ bidirectional chargers deployed
 - ERDD EPIC funding
 - Ongoing modeling activities in both EAD and FTD

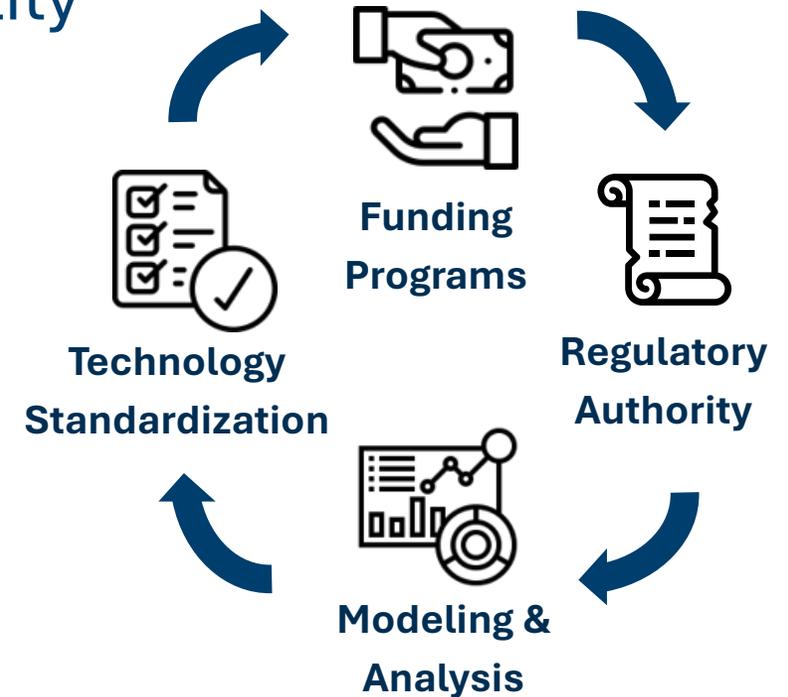


Image: flaticon.com



What to expect next from CEC

- Near term:
 - Bidirectional deployments in REDWDS (up to 18k)
 - Capital Charge Yard launch
 - V2G Equipment list update
 - AB 2127 report
- More needs to be done
 - Continue engagement with stakeholders and other state agencies
 - Focus on **driver experience**
 - Interoperability
 - Implementation



A future where any driver with any car can easily charge or discharge* at any charger on any network.

(*) when the capability is offered by the charging network.