

Reaching 1 Million EV Chargers by 2030

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Peninsula Clean Energy

Peninsula Clean Energy is San Mateo County's not for profit locally-led electricity provider.

Mission: To reduce greenhouse gas emissions by expanding access to sustainable and affordable energy solutions.

Savings: Customers have saved over \$100 million compared to investor-owned utility rates.



Supporting transition to electric transportation

- Nearly 1,000 **electric vehicle (EV) chargers** installed in our service territory since 2021; 3,500+ more in pipeline
- 500+ customer rebates issued for **used EVs** since 2019
- 800+ **e-bike rebates** since 2021




*Margarita Mendez
Program participant*

Takeaways from Today

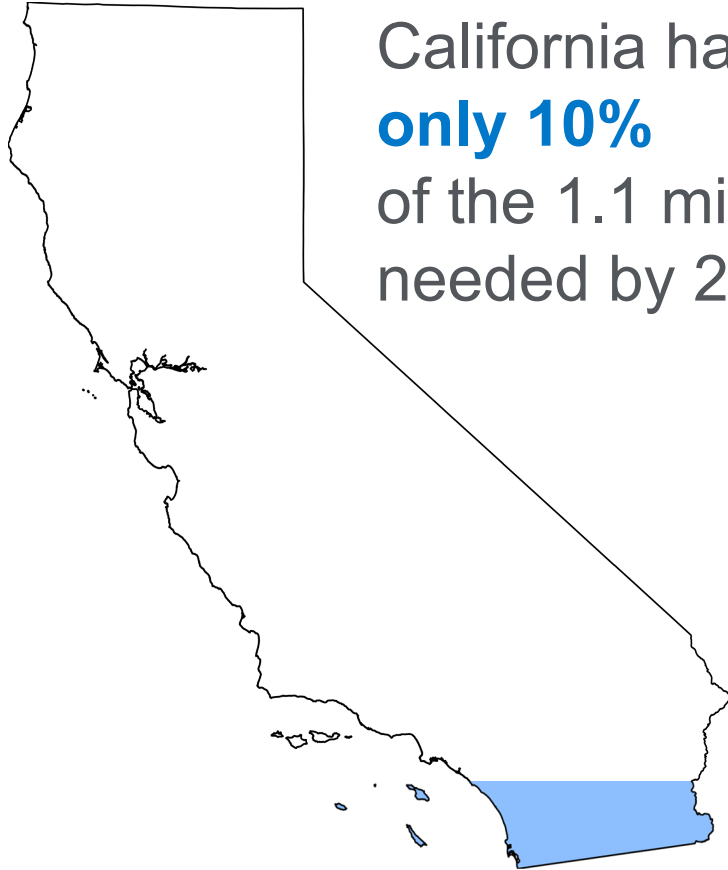
1. CA way off track from EV charging targets
2. A lot of EV charging is too expensive
3. Low power and affordable charging at apartments (with parking)
4. Building codes are the secret weapon for affordable and ubiquitous charging



Types of EV Charging

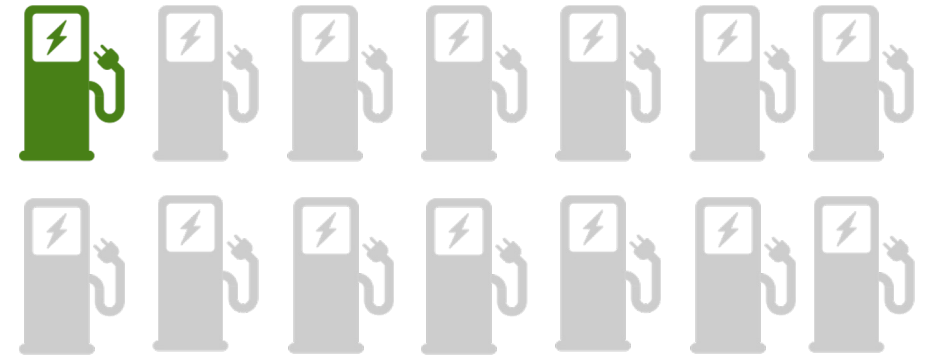
Type of Charging	Speed	Where
Level 1 	~40-50 miles of range overnight. Up to 1.9 kW	<ol style="list-style-type: none">1. Residential2. Apartments and condos3. Workplace
Level 2 	~20 miles of range per hour. Up to ~7 kW.	<ol style="list-style-type: none">1. Workplace2. Public charging
Level 3 	150+ of range per hour. Typically 100kW+	<ol style="list-style-type: none">1. Public charging2. Highways

EV Charging, Far from State Targets



California has installed **only 10%** of the 1.1 million chargers needed by 2030

San Mateo County has 5,000 of the 70,000 chargers they will need



1- <https://www.energy.ca.gov/data-reports/reports/electric-vehicle-charging-infrastructure-assessment-ab-21272>

EV Charging, Expensive and Lengthy

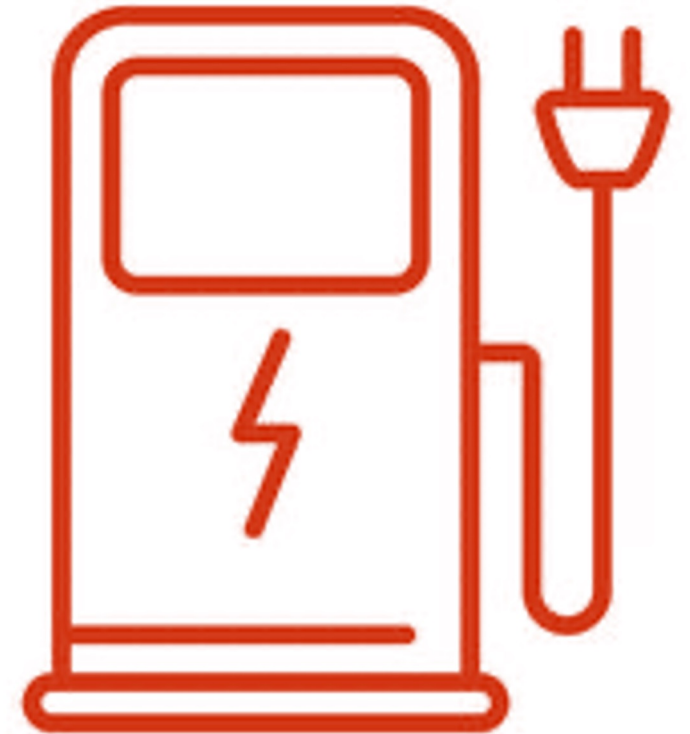
Current approach, costly and drawn out

1. PG&E average cost/port is **\$17,500²**
2. ~\$16B to install all 900k chargers at PG&E costs
3. Electrical service upgrades avg over a year to complete by utility

\$1.9B Clean
Transportation Budget



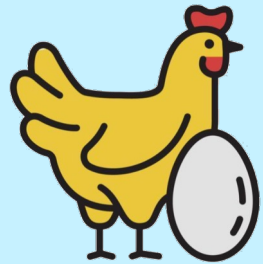
\$16B+ Actual Need



2- https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/your-options/clean-vehicles/charging-stations/program-participants/EV-Charge-Network-2022-Q1-Report.pdf

EV Charging, Equity Challenges

Apartment/condo
access is critical



Chargers must
come before EVs

Transportation is 2nd
Highest Household Cost



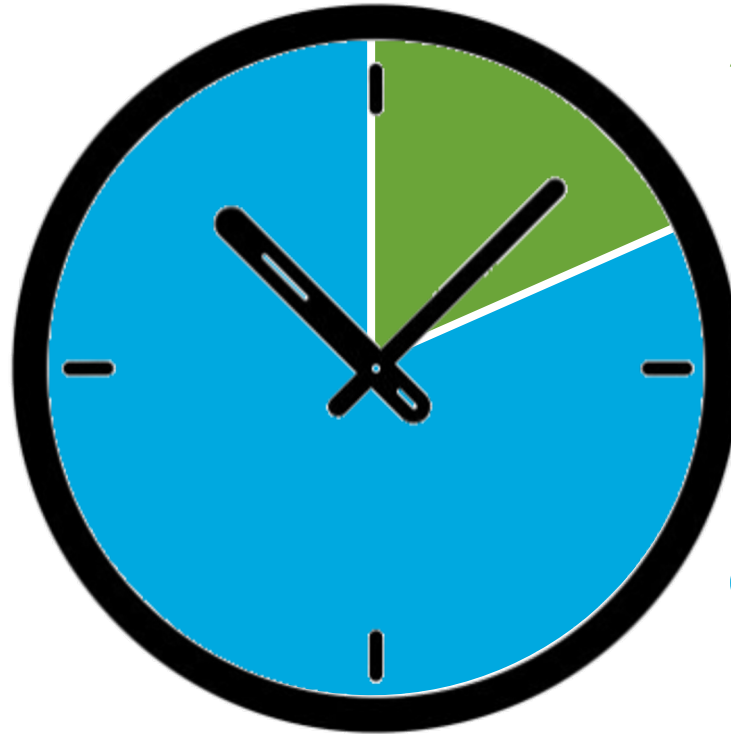
3- <https://livingwage.mit.edu/counties/06081>



EV chargers installed through PCE “EV Ready” program

Level 2 Charging, Not a Universal Solution

7 kW is overbuilt for overnight charging at apartments and condos



Average charge time is under 3 hours

Cars are typically plugged in for 12 hours

Source: CSE/Forth study:
<https://www.peninsulacleanenergy.com/wp-content/uploads/2022/07/CSE-Report-on-MUD-Charging-Incl-Average-Plug-In-Times.pdf>

And Yet, Shared L2 Still Required

CEC
CALeVIP 1.0
\$186M



CEC
CALeVIP 2.0 (Communities in Charge)
\$250M



~1,500 chargers installed at multi-family housing so far in CALeVIP 1.0



Solution: “Right Speed” EV Charging

Focus on Daily Needs

- Avg. driver need: <30 mi/day¹
- 94+% of drivers need just 1.65 kW capacity with overnight charge²



1 in 3 EV drivers already using L1 charging at home



1- <https://insideevs.com/news/709425/recurrent-ev-driving-distance-america/>

2- <https://www.peninsulacleanenergy.com/wp-content/uploads/2021/09/Determining-the-Appropriate-Level-of-Power-Sharing-for-EV-Charging-in-Multifamily-Properties.pdf>

Solution: “Right Speed” EV Charging

Solution

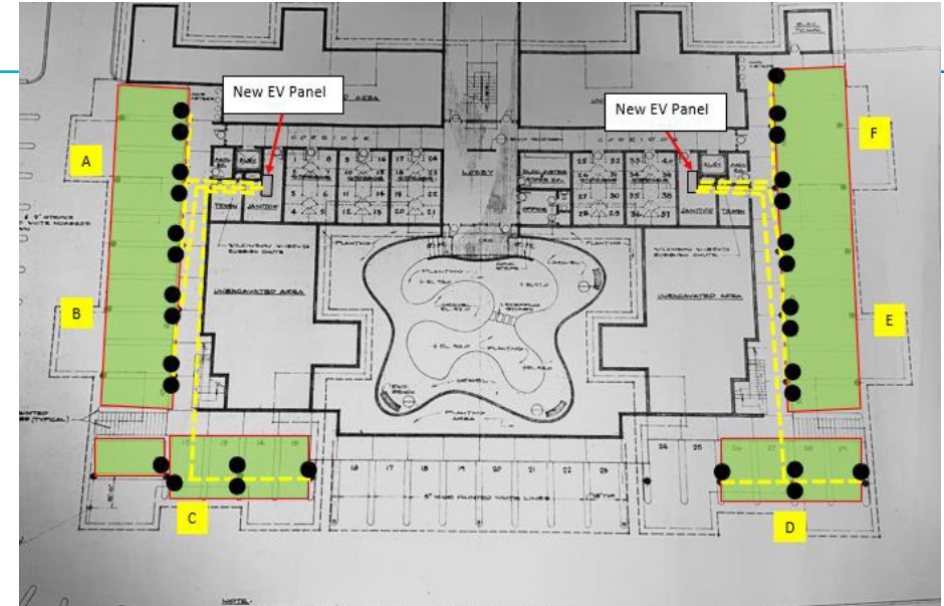
- Level 1. 1.9 kW (dedicated 20-amp circuit), provides 60+ miles overnight
- At assigned parking spaces (avoids vehicle shuffling)
- PCE program avg cost: ~\$2,500/ea. 7X cheaper than PG&E L2 costs.



Smart L1 Products
Integrated billing + access controls

Example Project

- 39-unit apt. in Belmont, built 1962
- Received TA + rebates
- “Upsold” from 12 to 32 L1 outlets
- 80% w/o service upgrade
- Final cost: \$76,690
- PCE rebate: \$69,000 (\$2.1k/port)
- Net to cust: \$7,690, ~\$240/charger

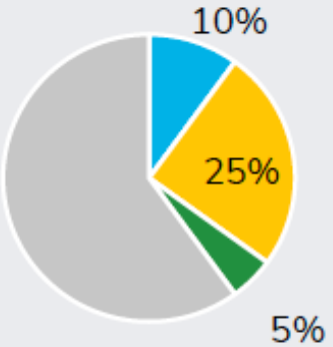
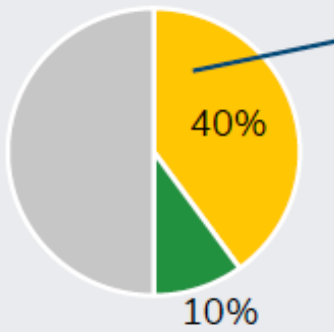
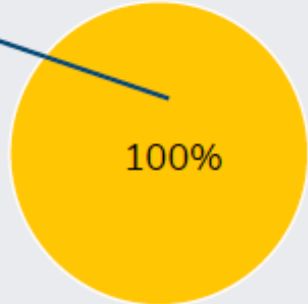
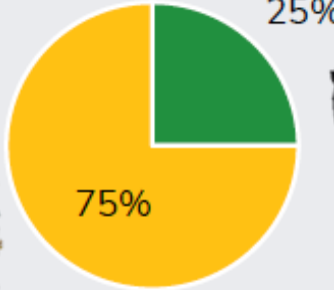


Building Codes



State CALGreen (+ Local “Reach Codes”)

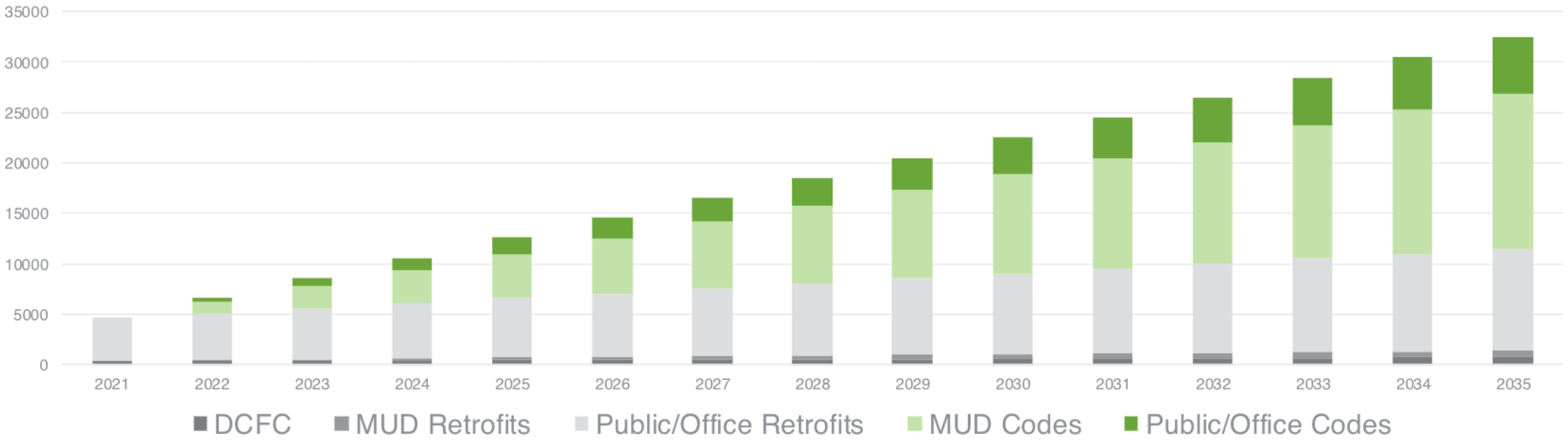
New multi-family residential construction

2022 CALGreen	2022 CALGreen Intervening (July 1 st 2024)	Model Code	
Mandatory	Mandatory	Proposed 2025 CALGreen Mandatory	
 <p>10% Level 2 EV Capable 25% Level 2 EV Ready (low-power) 5% Level 2 EVCS</p> <p>% of Parking Spaces</p>	 <p>40% Level 2 EV Ready (low-power) + Direct Wiring 10% Level 2 EVCS</p>	 <p>100% Level 2 (low-power) EV Ready + Direct Metering</p> <p>% of Spaces for Residents</p>	 <p>25% Level 2 EVCS 75% Level 2 (low-power)</p> <p>% of Spaces for Common Use Parking</p>

Why are codes so important?

Expected to be the primary driver of new EV charging

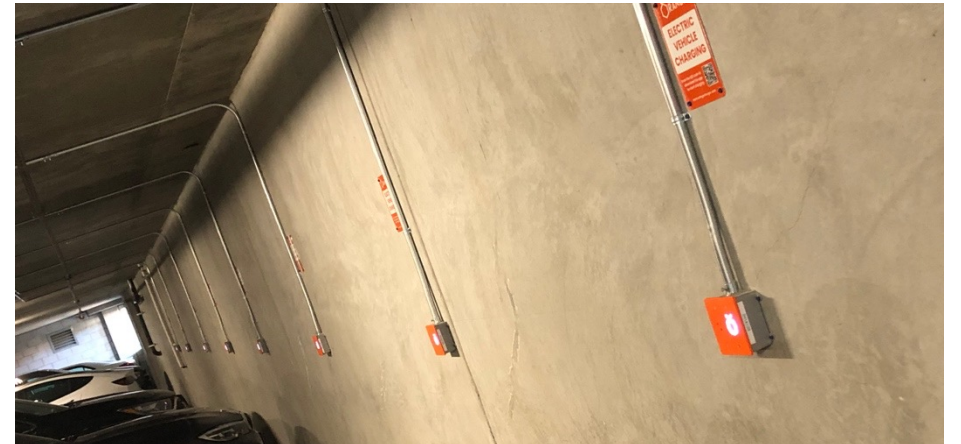
EV Charging Station Forecast in San Mateo County, by Segment



65% of EV chargers by 2035 will be created through codes
3-4X cheaper than retrofitting later

Recap

1. CA needs to change course on EV charging to meet targets
2. Affordable, low-power solutions needed for scaling
3. Building codes, major driver of EV charging



Smart Level 1 outlets installed through PCE's EV Ready Program

Thank you!

Case studies, design guidelines, and
more at
[https://www.peninsulacleanenergy.com/
ev-technical-resources/](https://www.peninsulacleanenergy.com/ev-technical-resources/)

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