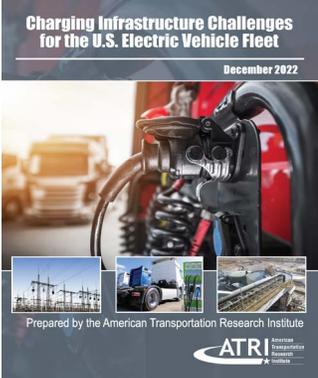


Is California Ready for an Electric Vehicle Future?



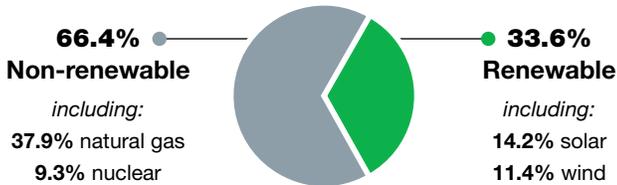
In December 2022, the American Transportation Research Institute published *Charging Infrastructure Challenges for the U.S. Electric Vehicle Fleet*. That study found that full electrification of the U.S. vehicle fleet would require a large percentage of the country's present electricity generation. Domestic long-haul trucking would use more than 10 percent of the electricity generated in the country today – while an all-electric U.S. vehicle fleet would use more than 40 percent. Some individual states would need to generate as much as 60 percent more electricity than is presently produced. ATRI found that California would need to generate 57.2 percent more electricity than is presently produced. This analysis provides additional metrics by which to evaluate the future of electric vehicles in California.

[REALITY]

Where California Gets its Electricity

4th largest producer of electricity..... >197,000 GWh
1st in net imports of electricity..... >50,000 GWh
2nd largest consumer of electricity..... >247,000 GWh

Annually, total consumption in Massachusetts is equal to California's Electricity IMPORTS



[REALITY]

Battery Materials Need to be Sourced from Around the Globe

A fully electric California vehicle fleet will require significant resources. California's mining requirements for electric vehicles include the following:

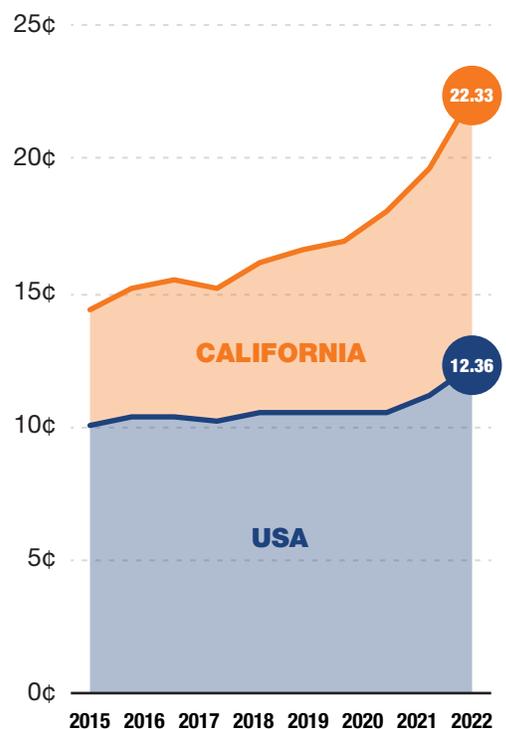
CALIFORNIA	COBALT	GRAPHITE	LITHIUM	NICKEL
Tons Required	763,001	4,183,027	543,223	2,659,099
% of Annual Global Production	407.2%	379.5%	492.8%	89.3%

[REALITY]

Electricity is Expensive

California has the nation's 2nd highest average cost per kWh:
22.33¢
U.S. average:
12.36¢

Urban areas have higher per kWh costs than the state average:
San Diego: **47.5¢**
San Francisco: **35.0¢**
Los Angeles: **28.7¢**



The California Public Utility Commission (CPUC) must review and approve all proposed rate increases and in 2023 the CPUC voted to increase rates for the state's largest utility by 13%. The utility had, however, asked for a 26% revenue increase to meet its infrastructure needs.

[REALITY]

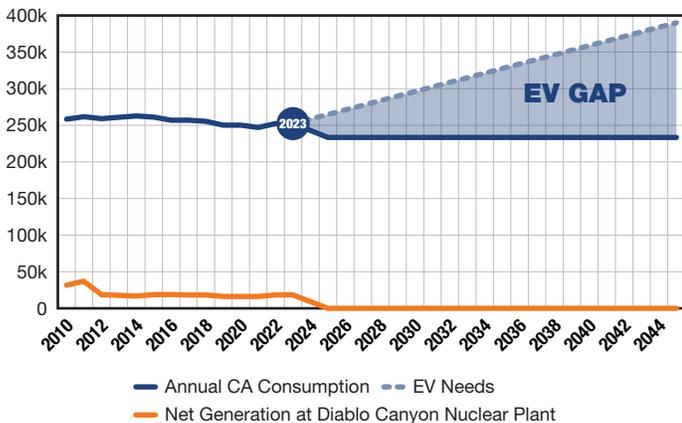


Uncertain Future for CA's Electricity Generation

At California's top-3 ranked power generators:

- California's last *nuclear* power plant, **Diablo Canyon**, provides 8.5% of in-state electricity. In 2018 the CPUC approved a plan to close the plant in 2025. The state has since moved to keep it open longer but once it goes offline, the gap will increase between what California will need versus what it produces.
- The **Intermountain Power Project** is a *coal-burning* power plant in central Utah operating since the mid-1980s by the Los Angeles Department of Water and Power and most of its electricity is consumed in California.
- The **Moss Landing Power Plant** is a *natural gas* power plant built in the 1950s. Though it has the 3rd highest output of CA-controlled facilities, its capacity was decreased from 2560 MW to 1020 MW when two of its units were retired in 2016.

MEGAWATT HOURS



[REALITY]



California Will Need to Power a Lot of Vehicles

According to the Federal Highway Administration, California is:

#1 in vehicle miles traveled (VMT) >310.8 billion Miles driven by Californians annually

#1 in vehicle registrations >31 million Vehicles

[REALITY]



Consumers Will Pay More for Goods Delivered by Trucks

With new battery-electric vehicle trucks costing more than \$425,000 – more than double the cost of a comparable diesel truck – California's supply chain will get more expensive. Additionally, the cost to power a battery-electric truck, including equipment, installation, utility upgrades and electricity, could be as high as \$1.21 per mile, nearly double the cost per mile of diesel fuel.

And, those trucks will need somewhere to charge. The nation currently faces a significant truck parking shortage, with an estimated one parking space for every 11 truck drivers. Adding a charger at each of California's 13,144 truck parking spaces would cost between \$1.472 billion and \$2.878 billion for just the purchase and installation of the charging units.

[REALITY]



California Will Need More Battery-Electric Class 8 Trucks to Haul the Same Amount of Freight

Using data from its 2023 *Operational Costs of Trucking* report, ATRI updated an earlier analysis to find that that if today's diesel tractors were replaced with much heavier electric trucks – one-third of the truckload sector would suddenly be too heavy for U.S. roads. The result – additional electric trucks would be needed to move the same amount of freight as a diesel truck. For every 1,000 trucks, an additional 343 trucks would be required due to battery weight.



For a copy of the full report, please scan the QR code or visit ATRI's website at TruckingResearch.org



The following data sources were utilized for this document: U.S. Energy Information Administration (2010-2023); California Energy Commission (2021-2023); Bureau of Labor Statistics (2023); California Public Utilities Commission (2023); Federal Highway Administration (2021); CalMatters (2023); National Renewable Energy Laboratory (2022); American Transportation Research Institute (2022, 2023); American Trucking Associations (2023); NS Energy (2023); Monterey Herald (2022)