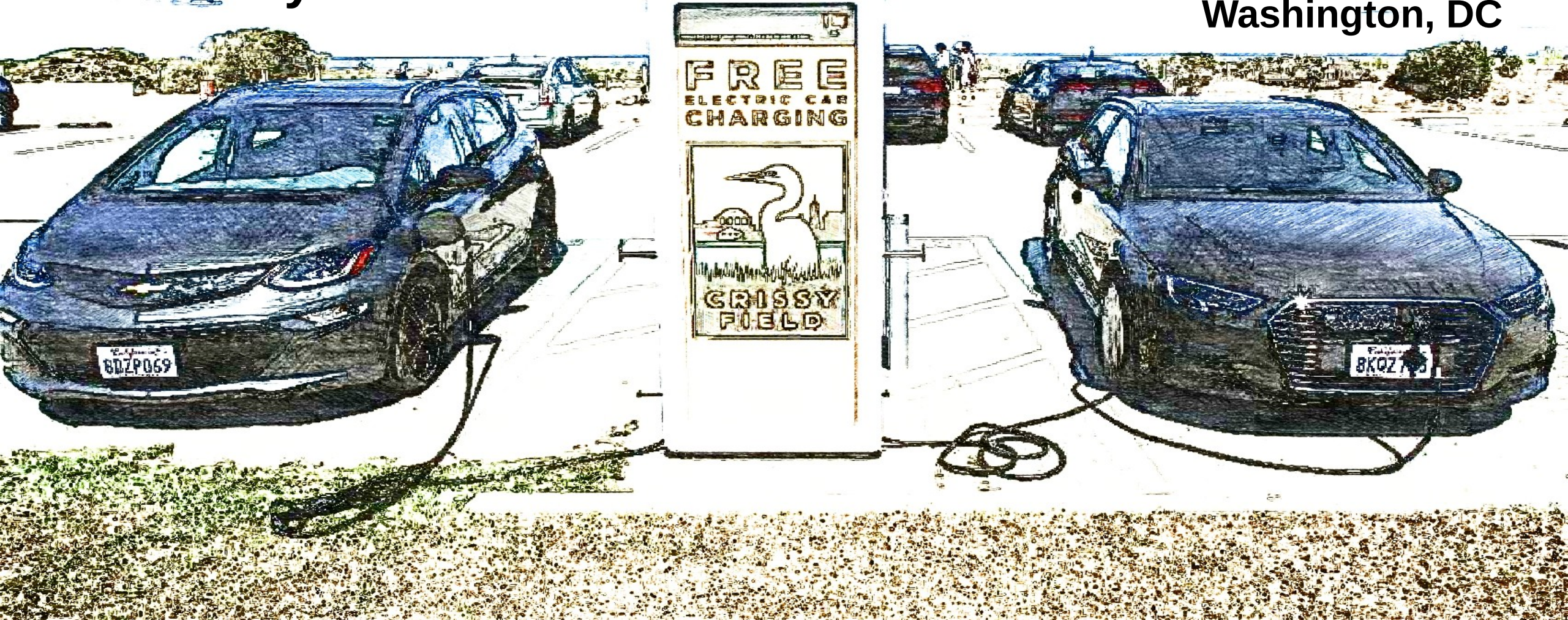


Chart of the Week: Can the California Electricity Grid Immediately Switch to an All EV Fleet?

Max Pyziur
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Can the California Grid Handle EVs?



Can California's Power Grid handle an immediate switch to Electric Vehicles?				
			Factor	Formula
A	U.S. Total Miles On-Highway Driven (VMT)	351.1	Billion	
B	Number of Light Duty Vehicles (LDVs) (90% of VMT)	26.1	Million	
C	Heavy Duty Vehicles (HDVs) (10% of VMT)	1.1	Million	
D	LDVs VMT	316.0	Billion	90% * A
E	HDVs VMT	35.1	Billion	10% * A
F	MPG-Equivalent LD Electric Vehicle	100.0	One	
G	MPG-Equivalent HD Electric Vehicle	30.0	One	
H	LDV Fuel – Gasoline KWH/Gallon	35.3		
I	HDV Fuel – Diesel KWH/Gallon	40.3		
J	LDV EV Annual Electricity Requirement	111.4	Billion KiloWatt Hours	$(D \div F) * H$
K	HDV EV Annual Electricity Requirement	47.1	Billion KiloWatt Hours	$(E \div G) * I$
L	Total EV Annual Electricity Requirement	158.5	Billion KiloWatt Hours	J + K
M	California Total Electricity Consumption	277.7	Billion KiloWatt Hours	Percent of Total Consumption
N	Generation	200.5	Billion KiloWatt Hours	72.2%
O	Net Imports	77.2	Billion KiloWatt Hours	27.8%
P	Percentage of additional electricity requirements	57.1%		L ÷ M
Analysis based on EIA & DOE Data			EPRINC	

Can the California Grid Handle EVs?



- On September 23, 2020, California Governor Gavin Newsom signed Executive Order N79-20.
- Executive order N79-20 requires that by 2035 all new cars and passenger trucks sold in California be zero-emissions vehicles, either electric-powered (EVs) or hydrogen-powered ones.
- In addition, in June 2020, California adopted a rule that an estimated 300,000 trucks (just under 30% of the total number of trucks in 2019) must be powered by either electricity or hydrogen and must be on California roads by 2035.
- In 2019, California consumed 277.7 billion kilowatt hours (kwh) of electricity, of which 77.2 billion kwh, or 27.8%, was imported.
- Total immediate replacement of all ICE (internal combustion engine) motor vehicles in California with EVs would require an additional 158.5 billion kwh per year, or 57.1%, more electricity than used in 2019.
- This slide deck is available at: <https://eprinc.org/chart-of-the-week/>
- For more information on this chart, please contact Max Pyziur, maxp@eprinc.org