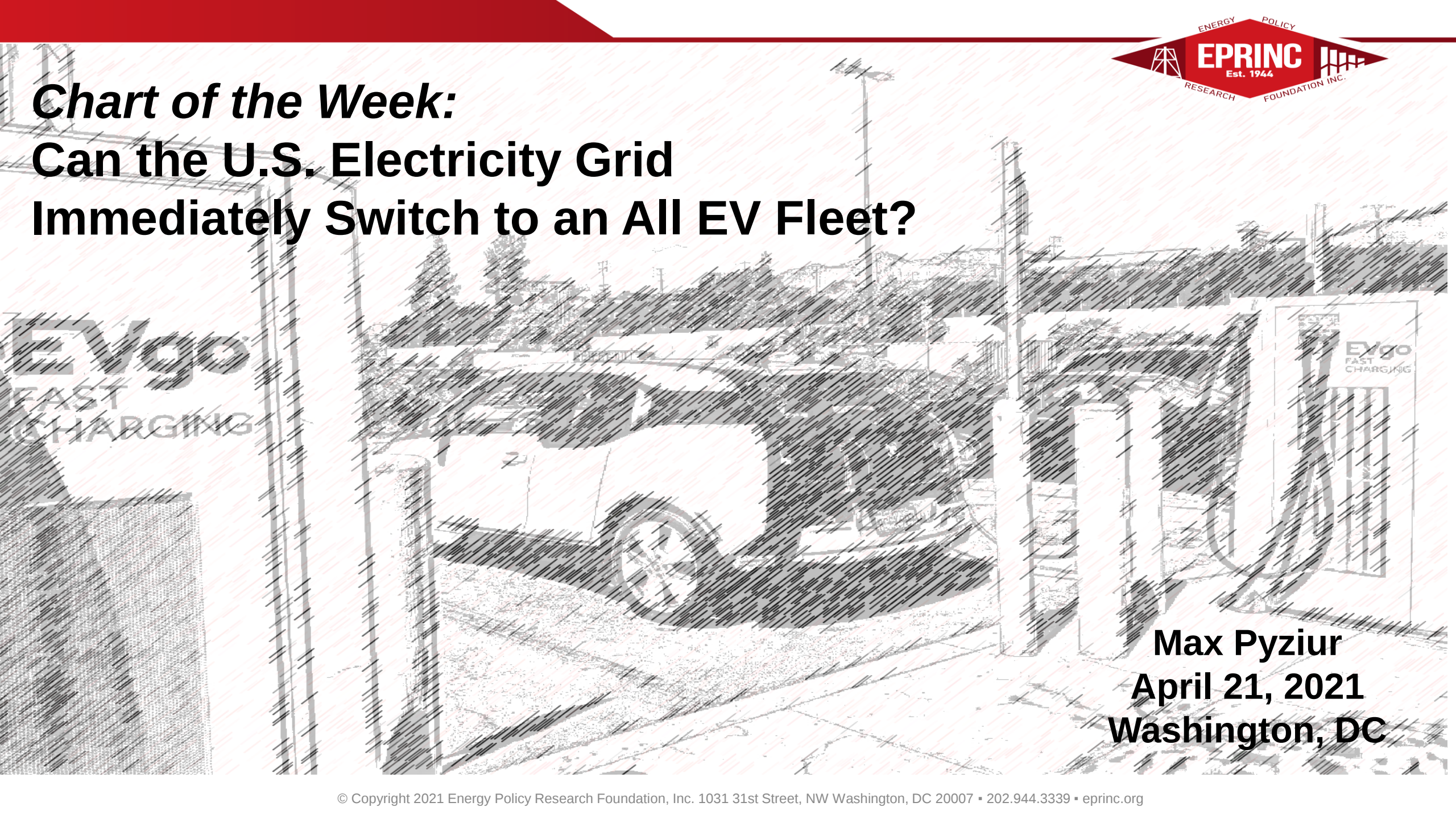


Chart of the Week: **Can the U.S. Electricity Grid Immediately Switch to an All EV Fleet?**



EVgo
FAST
CHARGING

Max Pyziur
April 21, 2021
Washington, DC

Can the U.S. Grid Handle EVs?



Can the U.S. Power Grid handle an immediate switch to Electric Vehicles?

			Factor	Formula
A	U.S. Total Miles On-Highway Driven (VMT)	3.2	Trillion	
B	Number of Light Duty Vehicles (LDVs) (90% of VMT)	249.0	Million	
C	Heavy Duty Vehicles (HDVs) (10% of VMT)	13.2	Million	
D	LDVs VMT	2.9	Trillion	90% * A
E	HDVs VMT	0.3	Trillion	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	1.0	Trillion KiloWatt Hours	$(D \div F) * H$
K	HDV EV Annual Electricity Requirement	0.4	Trillion KiloWatt Hours	$(E \div G) * I$
L	Total EV Annual Electricity Requirement	1.4	Trillion KiloWatt Hours	J + K
M	U.S. Total Electricity Generation	4.2	Trillion KiloWatt Hours	
N	10 year Annualized Growth Rate	0.4%		
O	Years Required of Growth in Electricity Generation	79.8		$(\ln(L + M) \div M) \div N$
Analysis based on EIA & DOE Data			EPRINC	

The U.S. Grid would need to generate 33%, or 1.4 Trillion KWHs, more of electricity.

U.S. Electricity Generation grew at an annualized 0.4% growth rate during the last ten years.

At that rate, it would require 79.8 years to accommodate a full EV transition of the U.S. fleet.

Corrected: Now, with kilowatt hours