THE SALATA INSTITUTE
FOR CLIMATE AND SUSTAINABILITY
at Harvard University

EVs in U.S. Industrial Policy

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EV Industrial Policy under the Biden Administration

Biden Administration used carrots and sticks for BEV adoption

CARROTS

IRA

Clean vehicle tax credits — Deep dive

Production tax credits for U.S. critical mineral processing and battery production

Grants to auto suppliers making ICE->EV transition

Business tax credit for installing EV chargers

BIL

$7.5B for EV charging infrastructure, both investment and operation.

STICKS

Tighten fuel economy (CAFE) and greenhouse gas (GHG) regulations

Renew waiver allowing California tighter standards

TARIFFS

On imports from China:

EVs: 100%, Lithium-ion EV batteries: 25%

IRA's Clean Vehicle Tax Credit has three-fold goals

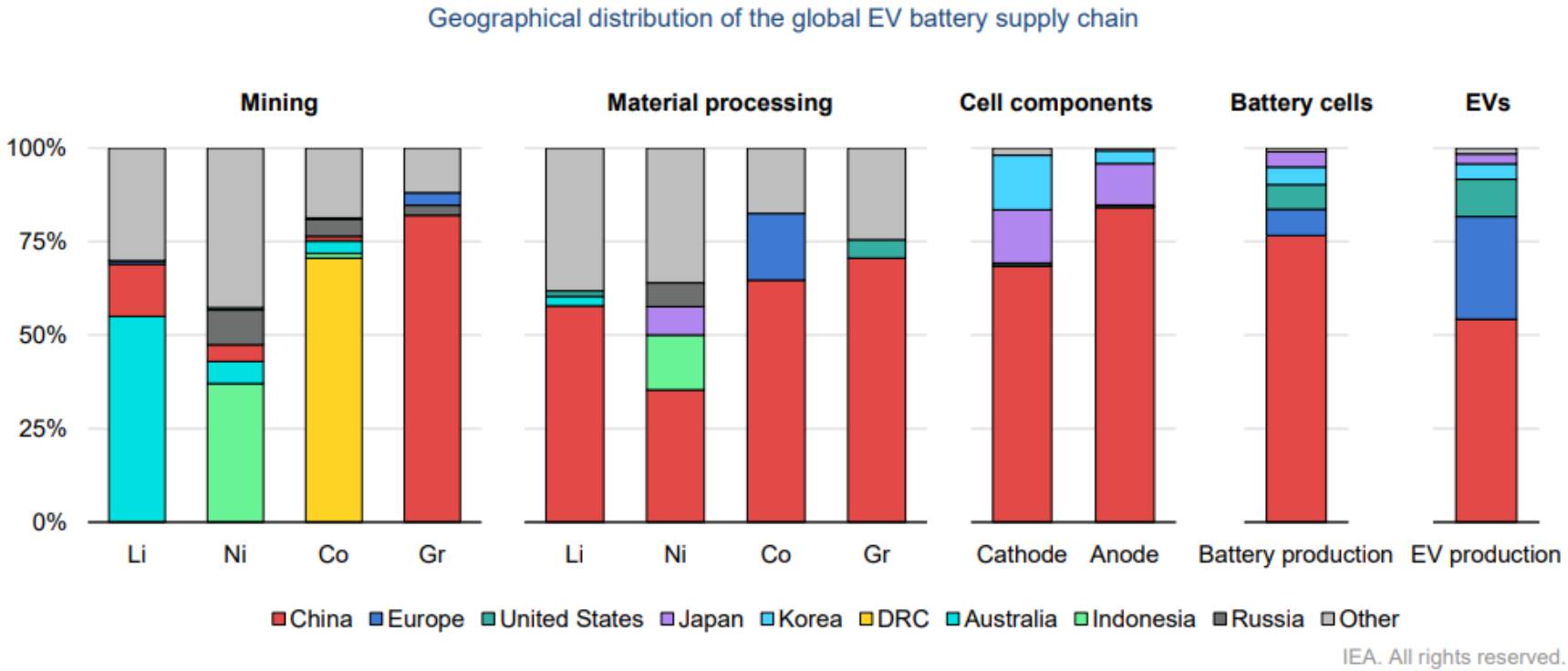
1. Promote EV adoption for its climate benefits

2. Support growth of U.S. EV manufacturing

3. Prevent U.S. EV manufacturing to being vulnerable to foreign control of critical supply chains

Don't spend federal dollars to encourage #2 without #3

IEA: China dominates the downstream EV battery supply chain



Source: IEA, Global Supply Chains of EV Batteries (2022) at https://iea.blob.core.windows.net/assets/4eb8c252-76b1-4710-8f5e-867e751c8dda/GlobalSupplyChainsofEVBatteries.pdf (accessed 1/19/24.

IRA changed the EV tax credit for consumers buying new EVs

Pre-IRA EV Tax Credit

Consumer purchases and leases
$7,500

Only for first 200,000 EVs sold by an automaker

IRA EV Tax Credits

Consumer purchases:
Up to $7,500
$3,750 for battery components
$3,750 for critical minerals

Leases (Commercial credit):
$7,500 to leasing co.

Used EVs: Up to $4,000

The consumer purchase tax credit has strict requirements but leases are an exception

New Clean Vehicle Tax Credits for EVs

		Consumer	Commercial (under 14,000 lbs.)
Maximum		**$7,500** $3,750 for critical minerals $3,750 for battery content	**$7,500**
Assembly Requirement		**North America**	**None**
Critical Minerals from North America, FTA partners		**Increasing % each year**	**None**
Battery Components from North America		**Increasing % each year**	**None**
No China content in battery components / critical minerals		**From 2024/2025**	**N.A.**
MSRP Cap	Truck/SUV/Van	**$80K**	**None**
	Car	**$55K**	**None**
Income Cap		**$150K single/$300K married**	**None**

Source: Inflation Reduction Act of 2022.

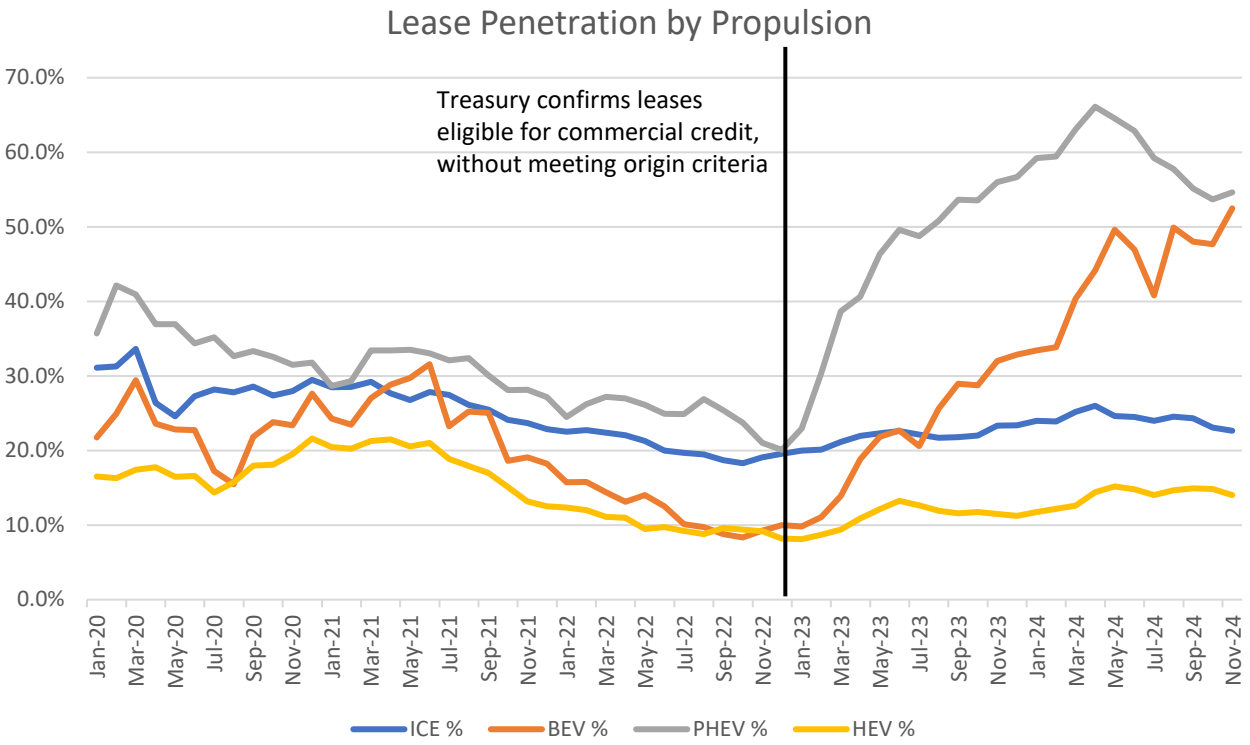
Consumer Tax Credit eligible EVs dropped from 26 to 15 since IRA passed

	PRE-IRA	MY 2024-2025
	Before August 16, 2022	Jan-25
$7,500	26	15

Source and notes: Fueleconomy.gov. Excludes exotics; all counts at model level (if at least 1 trim qualifies).

What has the impact been?

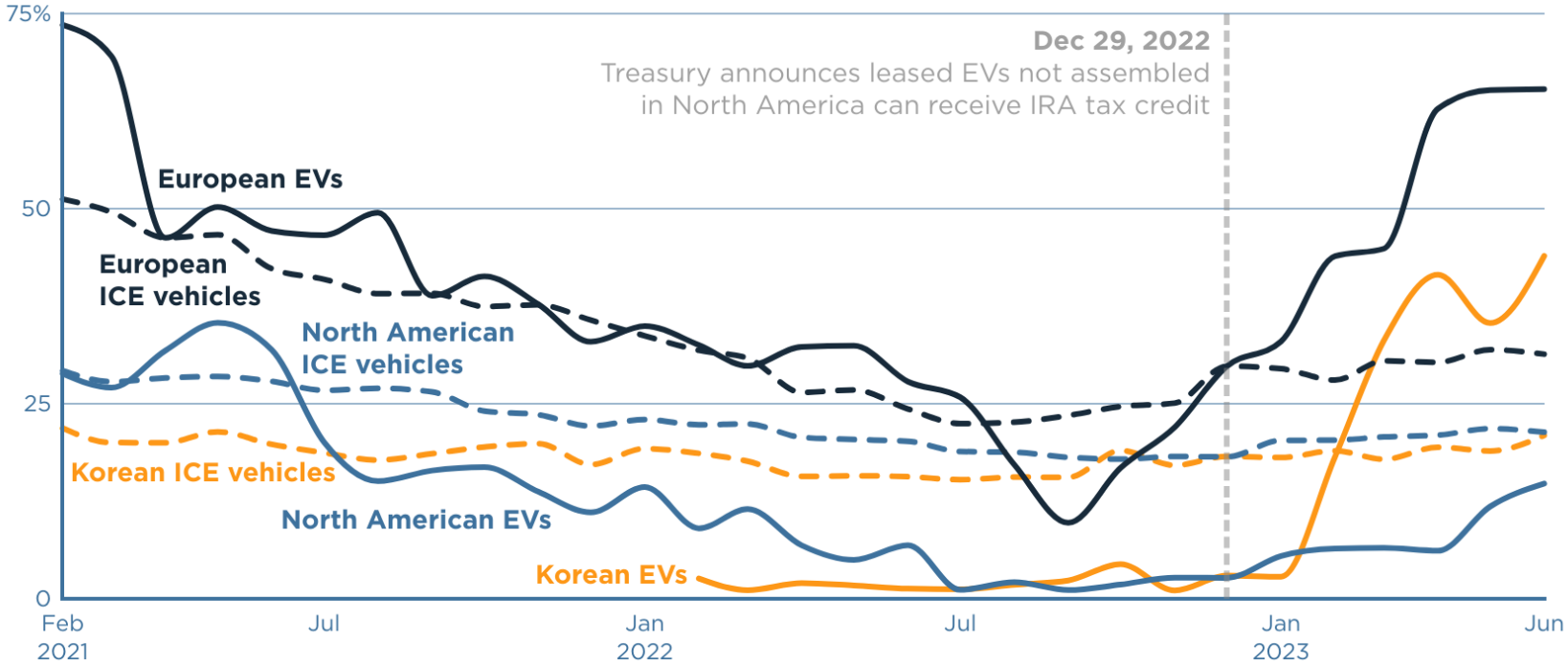
EVs are leased at much higher rates than ICE vehicles since the IRS confirmed their eligibility for the commercial credit



Source: Cox Automotive.

EVs made outside North America are disproportionately leased, vs. sold, since Jan. 2023 to access the commercial EV tax credit

Leases as a share of all new vehicles entering US market by vehicle type, 2021–23, percent



Source: Chad P. Bown, “How the United States solved South Korea’s problems with electric vehicle subsidies under the Inflation Reduction Act," Peterson Institute for International Economics working paper 23-6, July 2023.

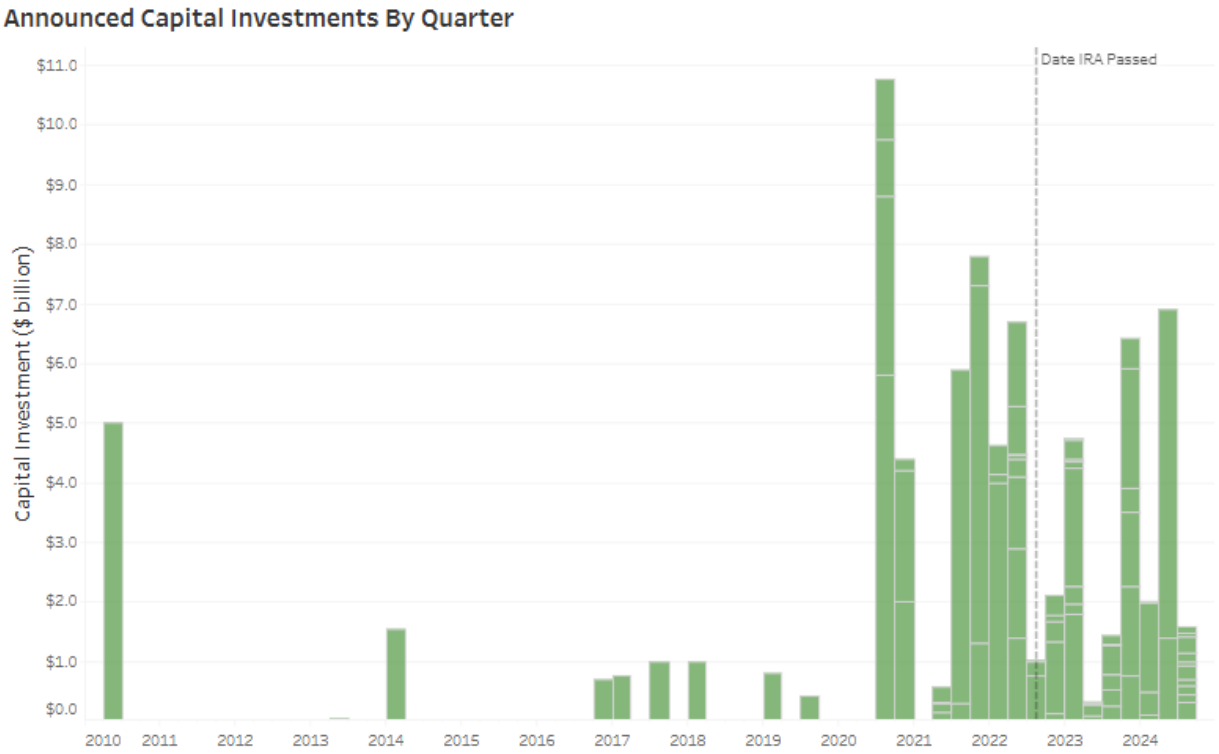
Domestic EV investment boom started pre-IRA

Announced since IRA to 2/16/25:

60 new projects

52K new jobs

$26B in investments



Source: The Big Green Machine website by Jay Turner, https://www.the-big-green-machine.com, accessed March 6, 2025.

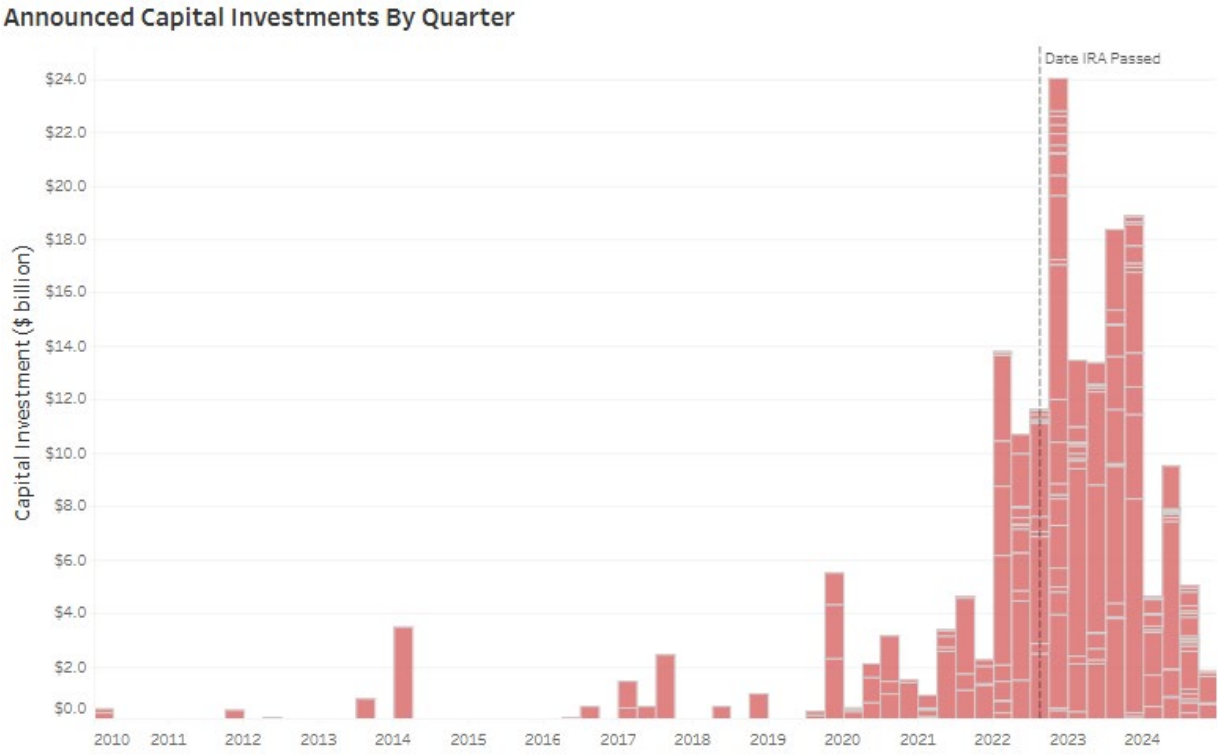
The battery boom is even larger—and IRA seems to be a more important trigger

Announced since IRA to 2/16/25:

142 new projects

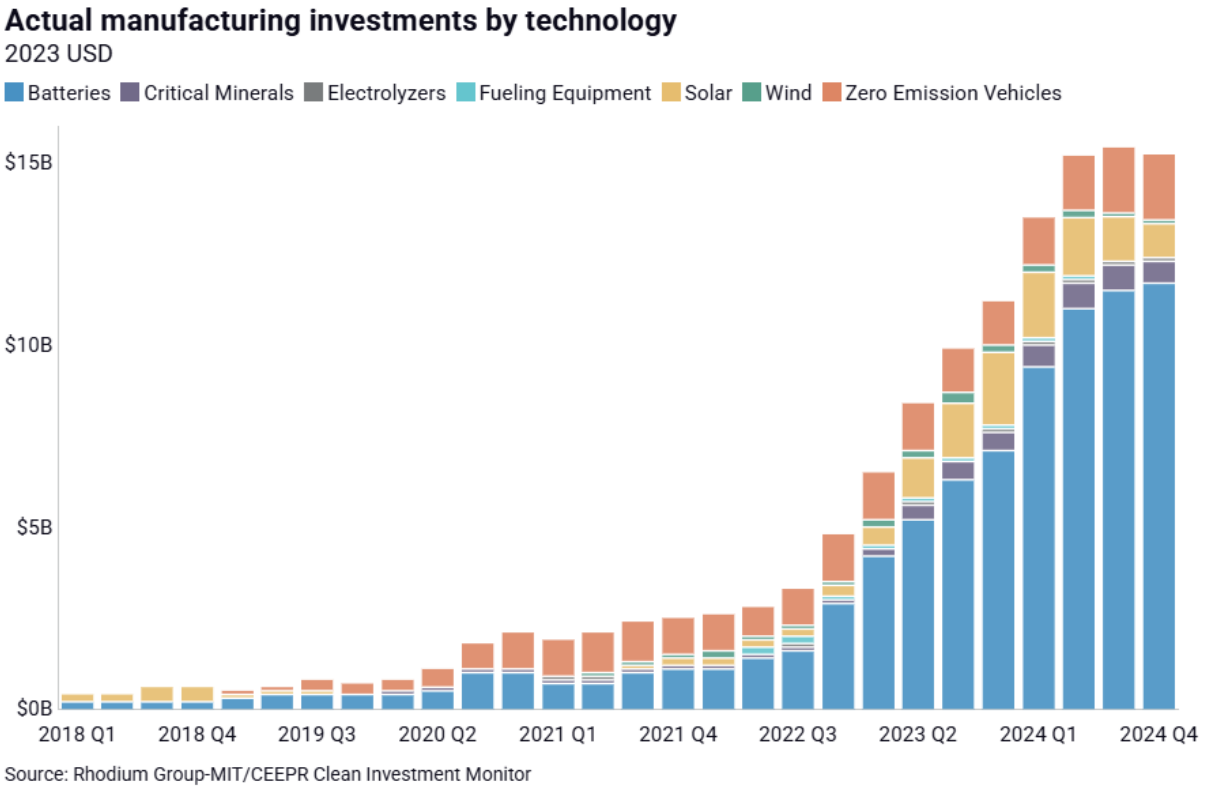
70K new jobs

$109B in investments



Source: The Big Green Machine website by Jay Turner, https://www.the-big-green-machine.com, accessed March 6, 2025.

The biggest $ are in batteries



Source: Rhodium Group-MIT/CEEPR Clean Investment Monitor (accessed March 6, 2025.)

Modeling the effects of a Trump Administration EV policy overhaul

Biden Administration used carrots and sticks for BEV adoption

CARROTS

IRA
Clean vehicle tax credits

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STICKS

Tighten fuel economy (CAFE) and greenhouse gas (GHG) regulations

Renew waiver allowing California tighter standards

TARIFFS

On imports from China:
EVs: 100%, Lithium-ion EV batteries: 25%

What does Trump's "Unleashing American Energy" Executive Order do or signal?

CARROTS

IRA

"Consider the elimination of unfair subsidies..."

Clean vehicle tax credits, Critical mineral processing and battery production

"pause ... disbusement"

Grants to auto suppliers making ICE->EV transition

Business tax credit for installing EV chargers

BIL

90 day review

$7.5B for EV charging infrastructure, both investment and operation.

STICKS

"Eliminate the EV mandate"

Tighten fuel economy (CAFE) and greenhouse gas (GHG) regulations

"terminate] ... state emissions waivers"

Repeal waiver allowing California tighter standards

TARIFFS

On imports from China:

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Policy simulations

Cole et al (2023) discrete choice model with charging

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Scenarios

- **Baseline: Current law**
- **Remove 30D, 45W, 25E (consumer purchase, commercial, used vehicle credits)**
- **Remove 30C – home and public chargers**
- **Cap NEVI (IIJA) at FY2022-2024 approved plans: $2.385 billion**
- **Remove 45X (battery manufacturing / critical mineral processing)**
- **Eliminate California waiver (Section 209, 177)**

+ combinations

Outcomes reported

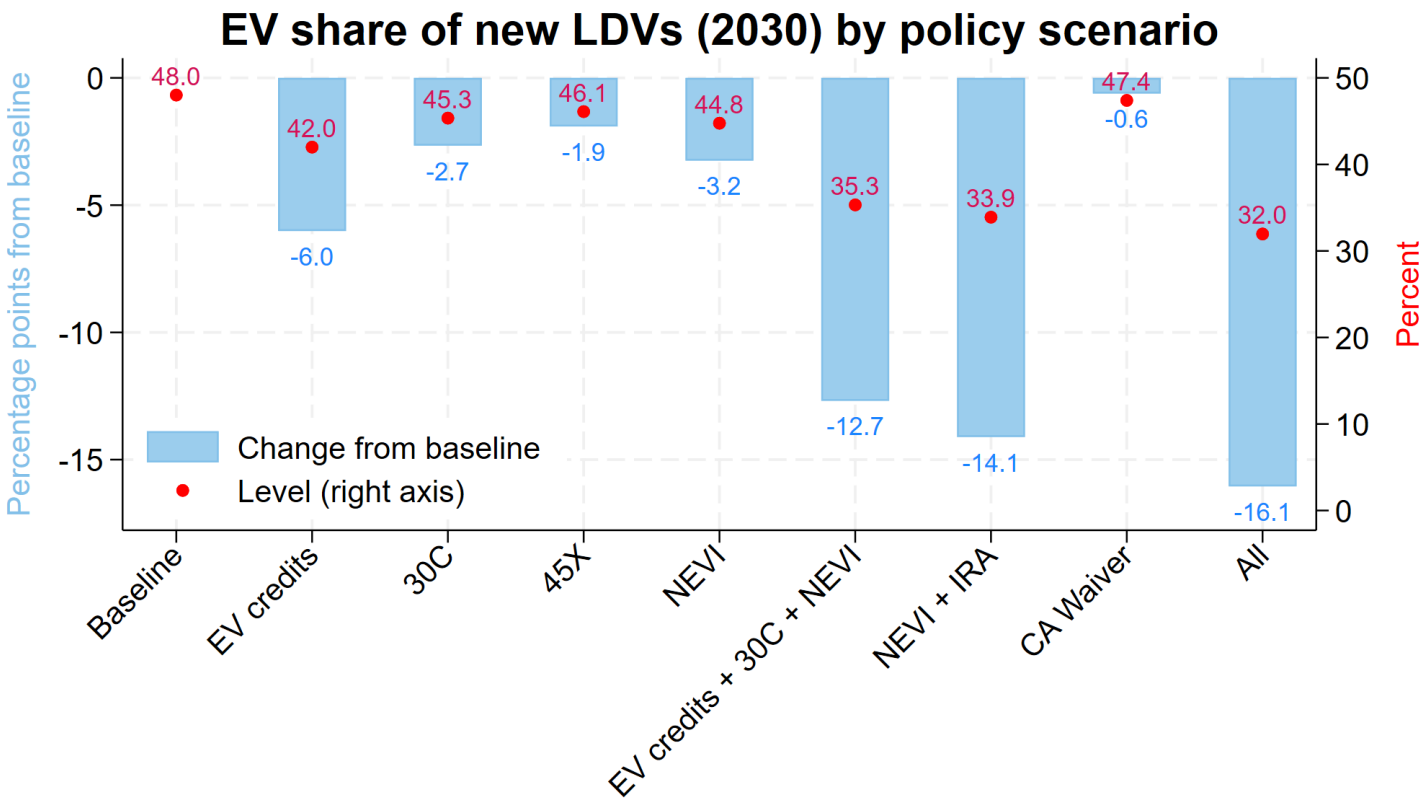
- EV sales penetration (2030)
- CO2 emissions
- Fiscal costs (undiscounted 10-year budget window)
- EVs on the road (registered, 2030)

Policies not modeled:

- Tariffs
- State EV & charger incentives (held constant)

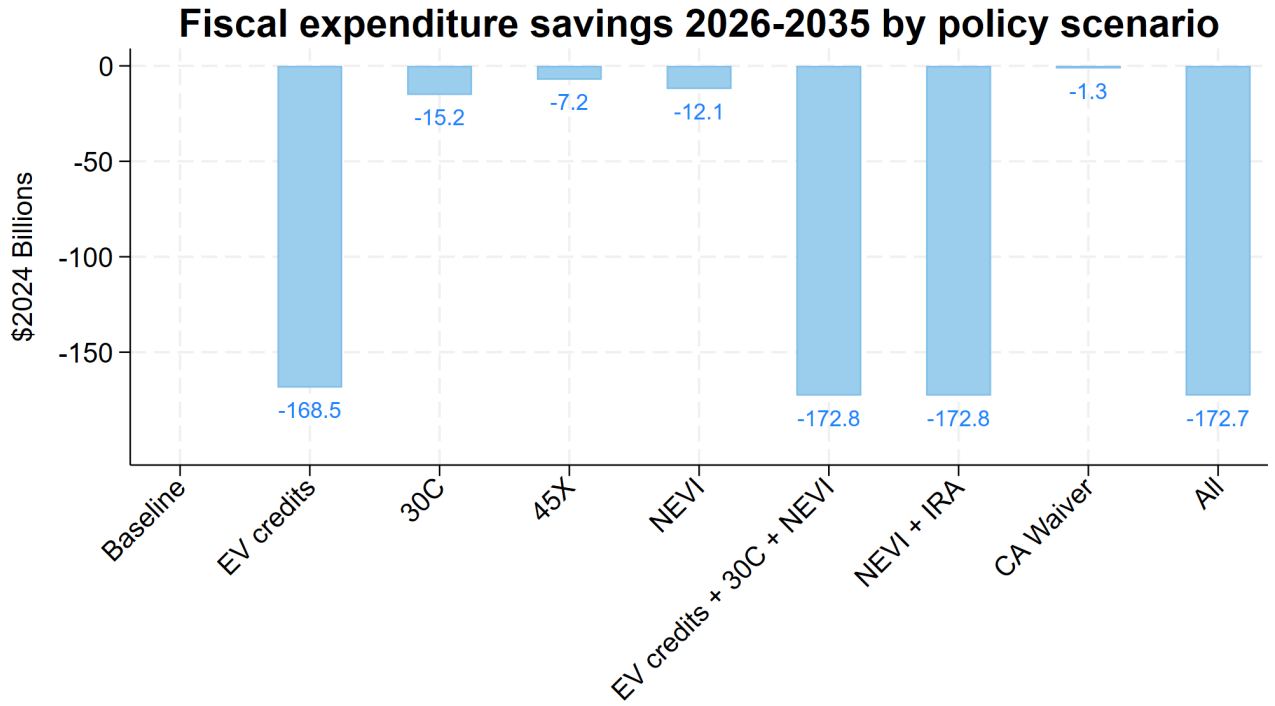
Source: Elaine Buckberg and Cassandra Cole, "Trump EV Policy Overhaul: What Will Happen to EV Adoption, Emissions, and the Fiscal Balance," Salata Institute Policy Brief, March 18, 2025.

Results: EV share of new vehicle sales in 2030 (ppts)



Source: Elaine Buckberg and Cassandra Cole, "Trump EV Policy Overhaul: What Will Happen to EV Adoption, Emissions, and the Fiscal Balance," Salata Institute Policy Brief, March 18, 2025.

Results: Total fiscal costs 2026-2035: Change over baseline ($B)



Note: These estimates of the fiscal impact may or may not align with the fiscal score produced by the Joint Committee on Taxation. Differences could include the current-law baseline projection, projections of the number of EVs eligible for the 30D tax credit, and take-up rates for the 25E and 45W tax credits.

Source: Elaine Buckberg and Cassandra Cole, "Trump EV Policy Overhaul: What Will Happen to EV Adoption, Emissions, and the Fiscal Balance," Salata Institute Policy Brief, March 18, 2025.

Results: 2030 carbon emissions: Millions of metric tons

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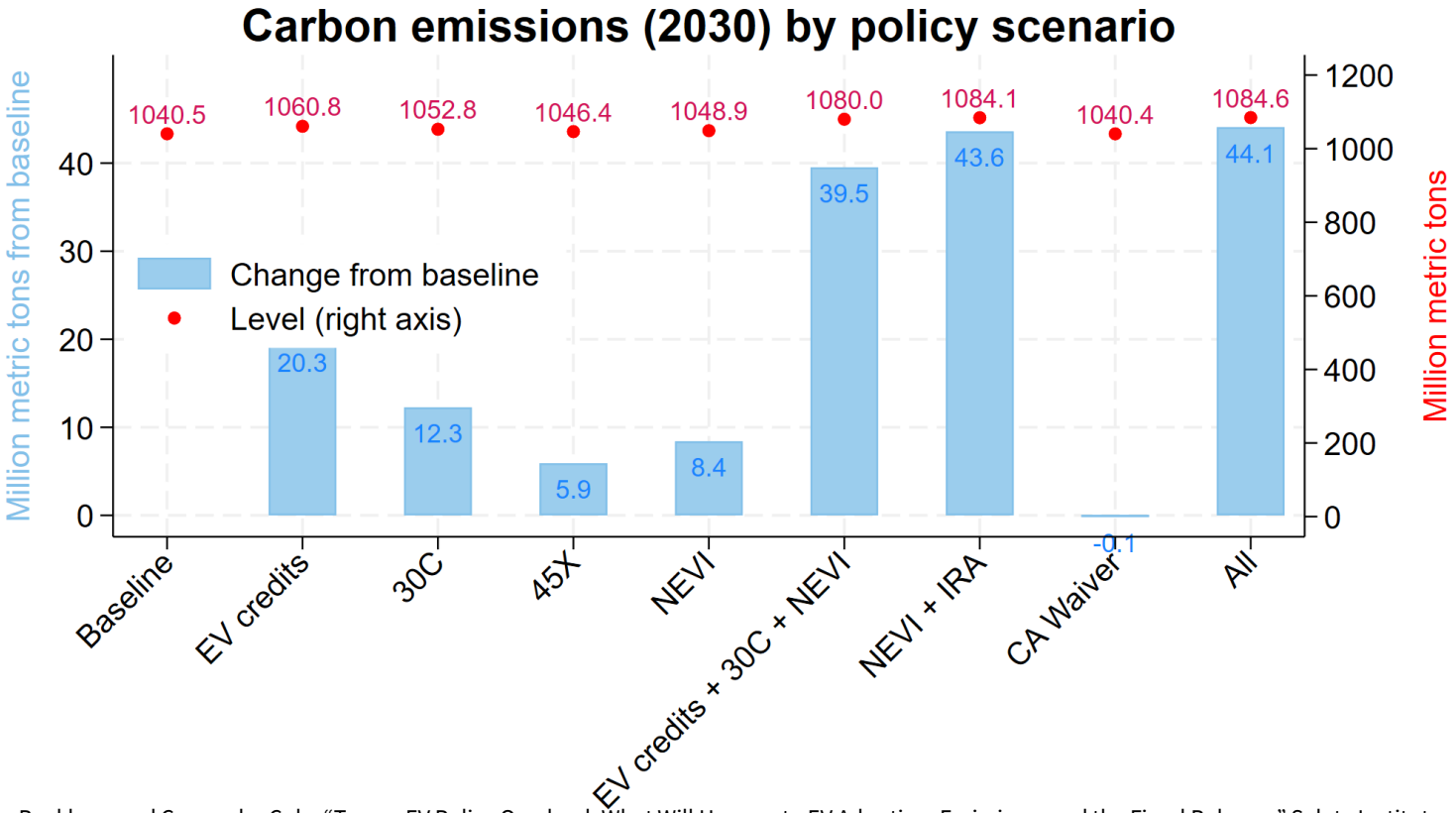
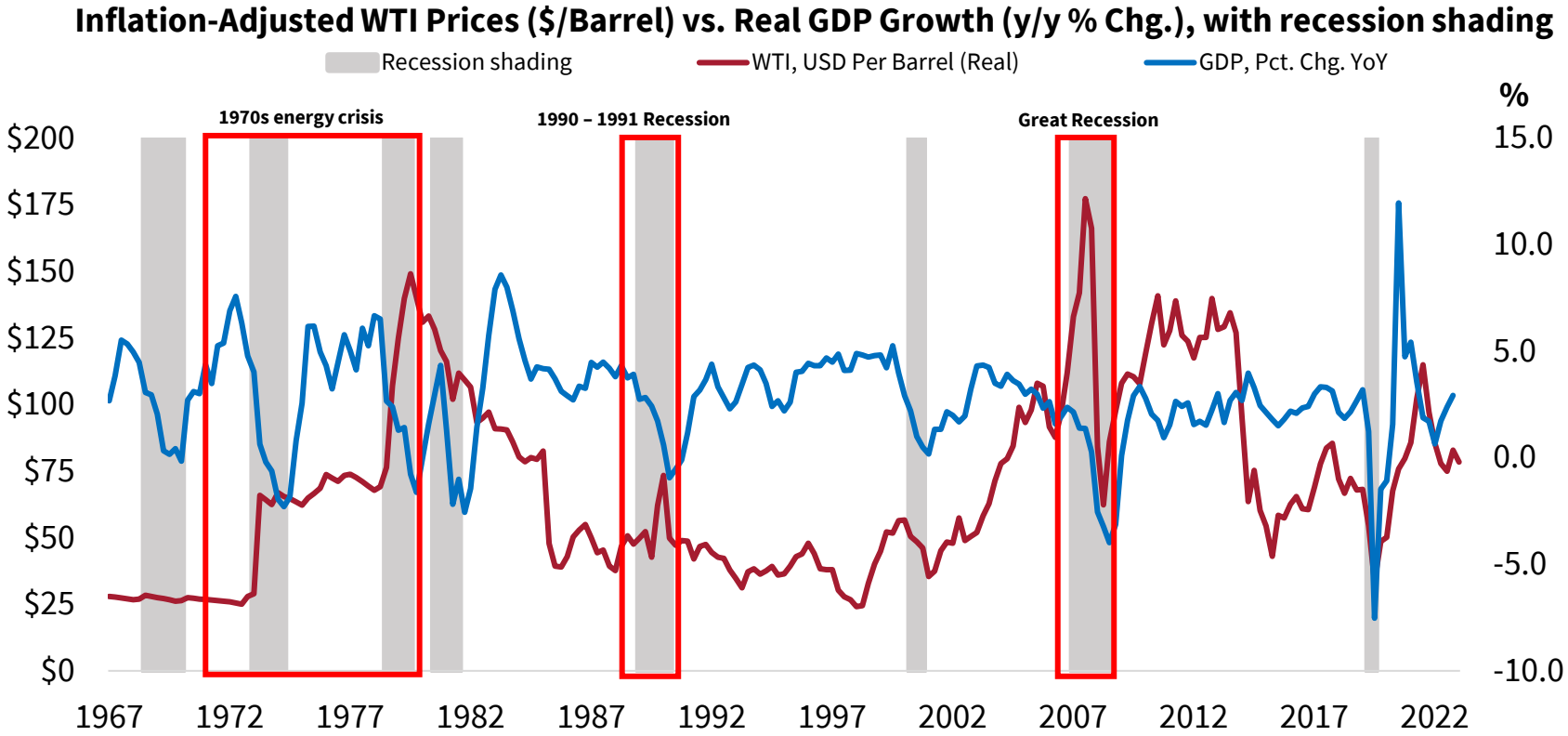


Source: Elaine Buckberg and Cassandra Cole, "Trump EV Policy Overhaul: What Will Happen to EV Adoption, Emissions, and the Fiscal Balance," Salata Institute Policy Brief, March 18, 2025.

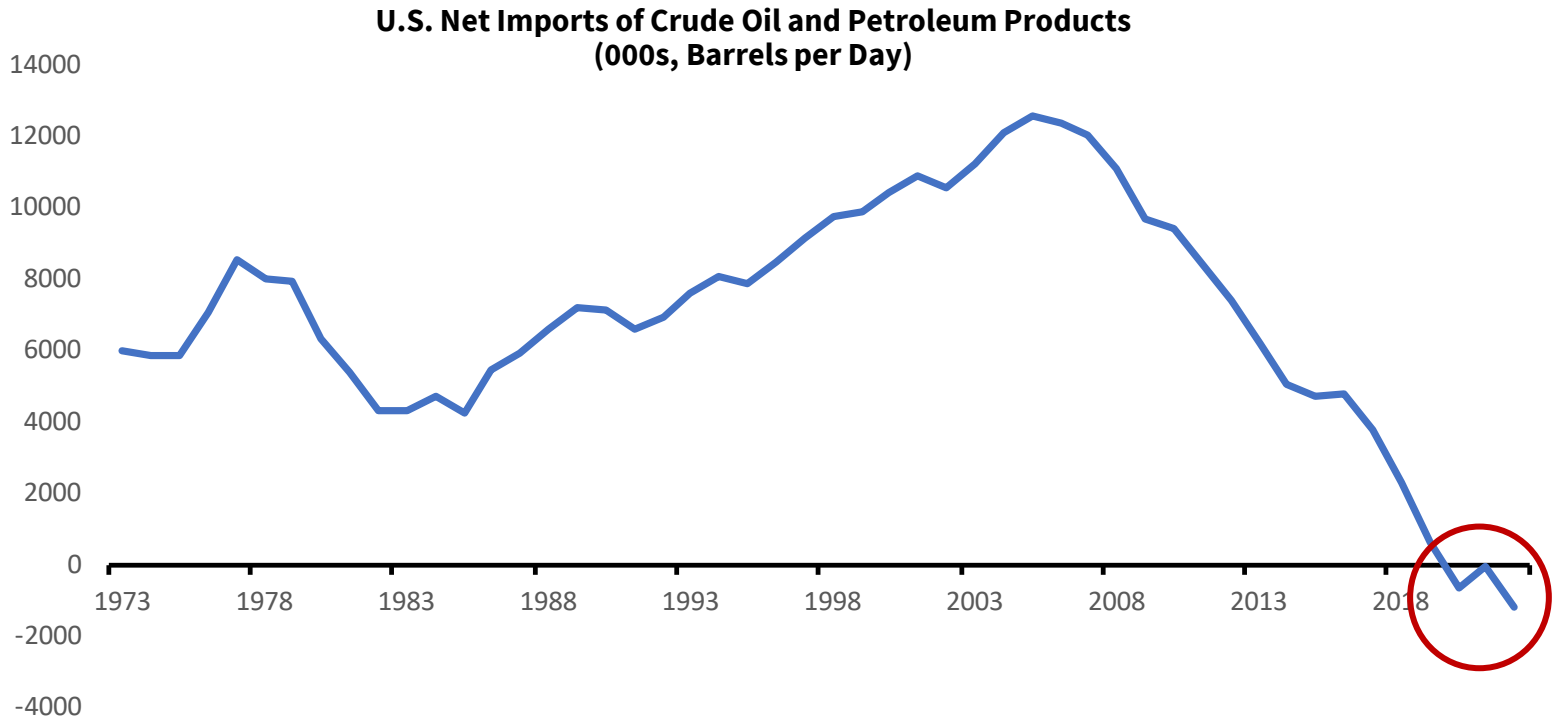
The EV transition will improve the U.S. economy's resilience

Large run ups in oil price preceded several U.S. recessions



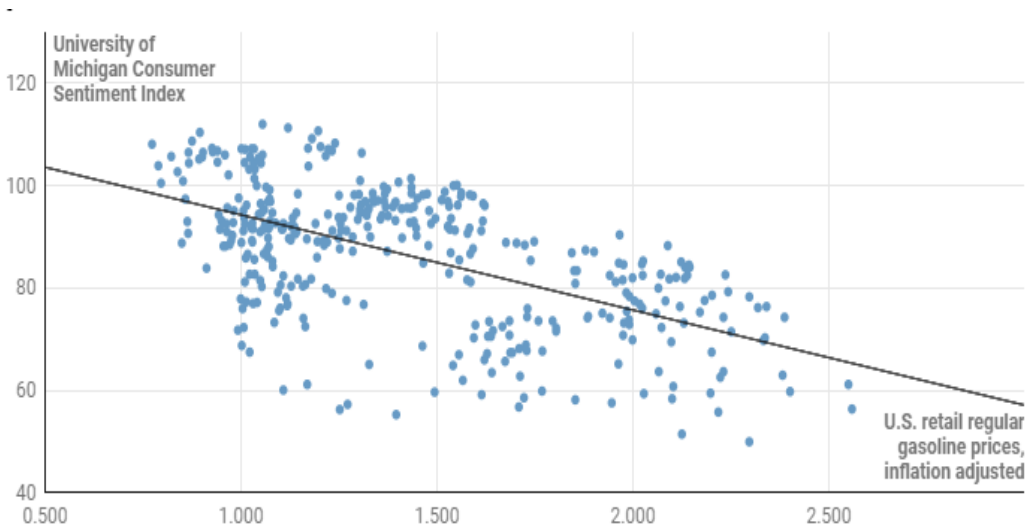
Source: U.S. BEA via FRED Economic Data. Real Gross Domestic Product | FRED | St. Louis Fed (stlouisfed.org) (accessed 1/21/24)

The U.S. became a net oil exporter in 2020 reducing the *direct* effect of oil price changes on GDP



Source: U.S. Energy Information Agency. https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mttntus2&f=a accessed 11/28/23.

Consumer sentiment remains strongly negatively correlated with gasoline prices



Source: U.S. Energy Information Agency, University of Michigan, Bureau of Labor Statistics via Haver Analytics, author's calculations. • Created with Datawrapper

"Consumer sentiment becomes more pessimistic with rising gas prices. This effect is strongest for consumers who lived through the recessionary oil crises in the 1970s…"

Binder and Makridis (2022)

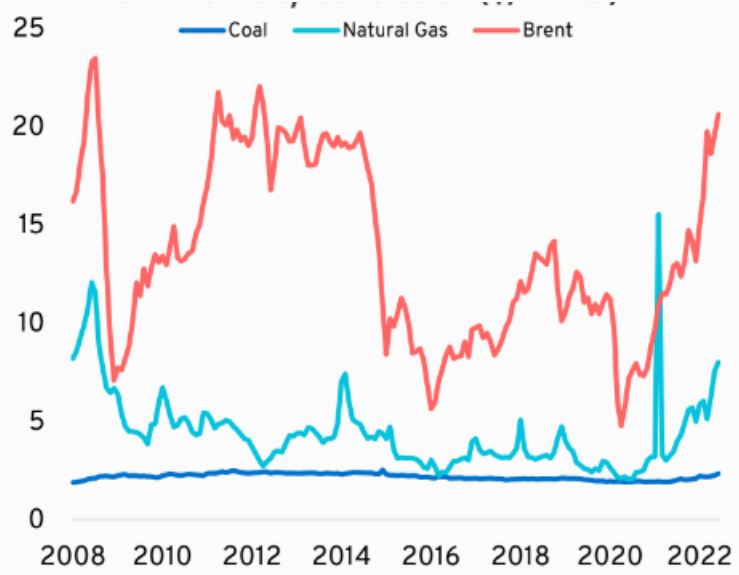
"[W]e also find that aggregate demand and other oil demand shocks have significant influence on household satisfaction with economic policy measures 'to fight inflation and unemployment.'"

Güntner and Linsbauer (2018)

Source: Elaine Buckberg, "The EV Transition Makes the U.S. Economy More Resilient," The Kenan Institute of Private Enterprise, July 24, 2023. CPI adjusted gas prices use Jan. 1992 dollars.

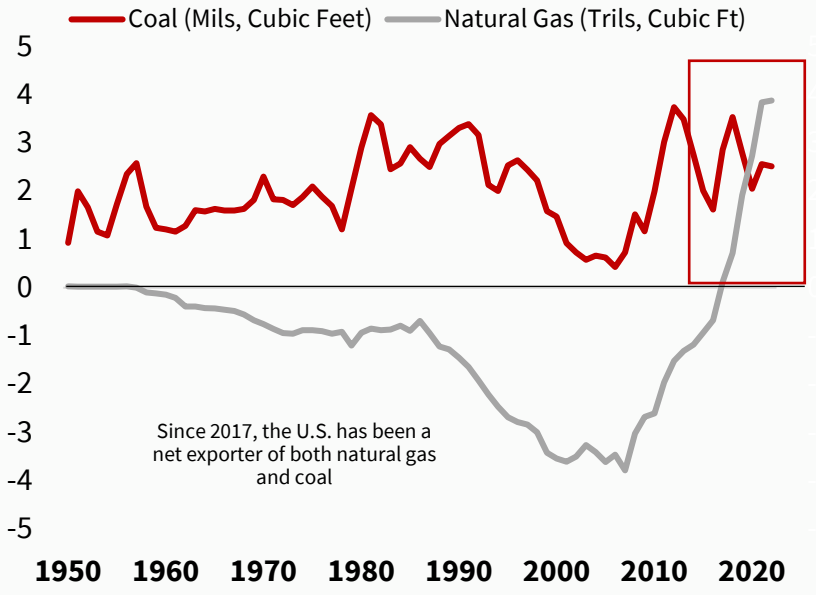
U.S. electricity grid is ~60% powered by coal and natural gas whose prices are less volatile than oil and in which the U.S. is self-sufficient

Brent Prices vs. U.S. Cost of Fossil Fuels for electricity generation ($/M BTU)



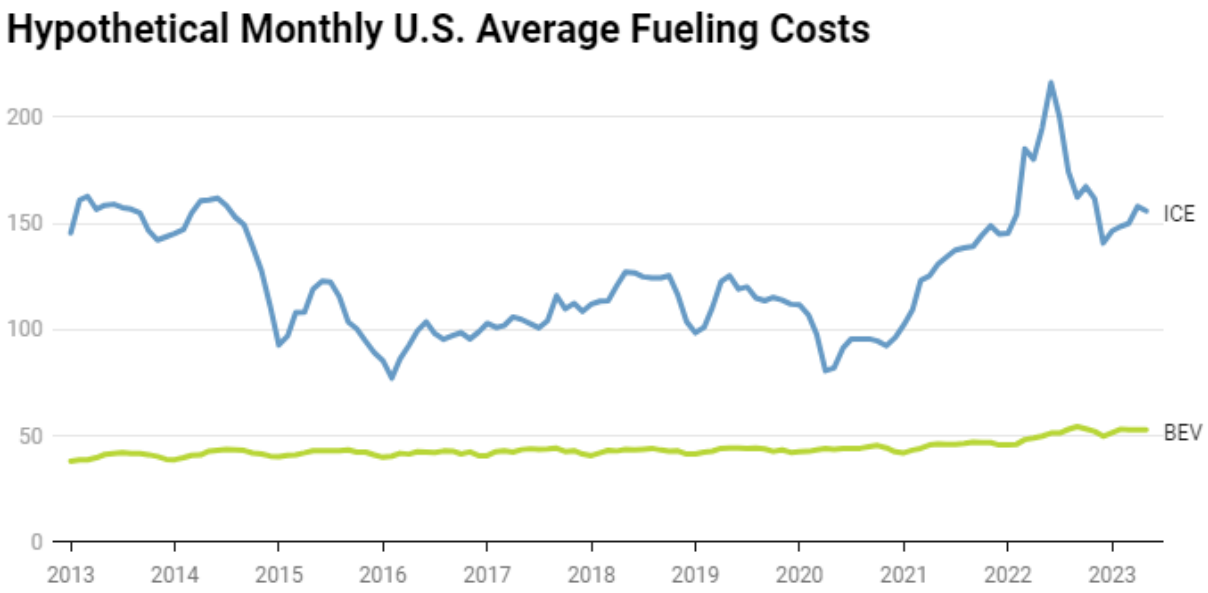
Sources: EIA, Haver Analytics. Assume 1 barrel of crude oil = 5,691,000 Btu; EIA. General Motors

U.S. Net Exports of Coal and Natural Gas



Sources: EIA, Haver Analytics, General Motors.

EV owners enjoy lower, less volatile “fuel” costs



Calculations also include: 1.035 miles/month based on 12.416 miles per vehicle year, Highway Statistics 2000, fhwa.dot.gov; median efficiency of 2021 model year EVs is 103 mpge or 3.1 miles/kWh, fueleconomy.gov; median 23.6 miles/gallon fuel economy for model year 2021 internal combustion engine vehicles, epa.gov.

Source: U.S. Energy Information Agency via Haver Analytics, author's calculations. • Created with Datawrapper

EVs stabilize the economy, reduce exposure to oil geopolitics, and reduce recession risk

The EV transition can make the U.S. economy more resilient by reducing vulnerability to oil price shocks.

Shifting transportation energy demand from oil products to electricity will reduce U.S. energy price volatility. The energy sources that power the electric grid are more diversified, have more stable prices and are less affected by geopolitical risk.

EV owners enjoy far lower and vastly more stable "fueling" costs than owners of ICE vehicles, insulating consumers from gasoline price volatility. Rising gas prices have an outsized negative impact on consumer sentiment, and therefore on consumption and GDP.

Over time, **EVs will be powered by cleaner energy sources as the grid greens**. Optimizing charging times to high-renewable daytime can drive emissions even lower.

Thank you!

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