

Welcome



NEST MISSION



The Naperville Environment & Sustainability Task Force assists, informs, and advises City government and Naperville residents and businesses to identify, prioritize, and implement sustainability initiatives and greenhouse gas reduction, with the goal of creating a sustainable, resilient, carbon-free future for Naperville.

Upcoming NEST Community Meeting

- **March 9 6:30PM, Nichols Library**
 - Sustainable Landscaping - Creating Beautiful and Environmentally Responsible Outdoor Spaces





The Great **GEAR SWAP**

DON'T NEED IT? SWAP IT!

The Naperville Park District is partnering with Accelerate Climate Solutions to keep your unwanted sports equipment out of the landfill. Drop off your gently-used sports equipment during one of the collection dates below and receive a credit towards items available at the swap/sale event!

EQUIPMENT COLLECTIONS

Mon.–Wed., March 16–18 • 8:00-11:00 am & 4:00-7:00 pm

Thurs., March 19 • 8:00-11:00 am

SWAP/SALE EVENT

Fri., March 20 • 8:00-11:00 am & 4:00-6:00 pm

City of Naperville Programs

Electric lawn equipment rebates resumes March 1

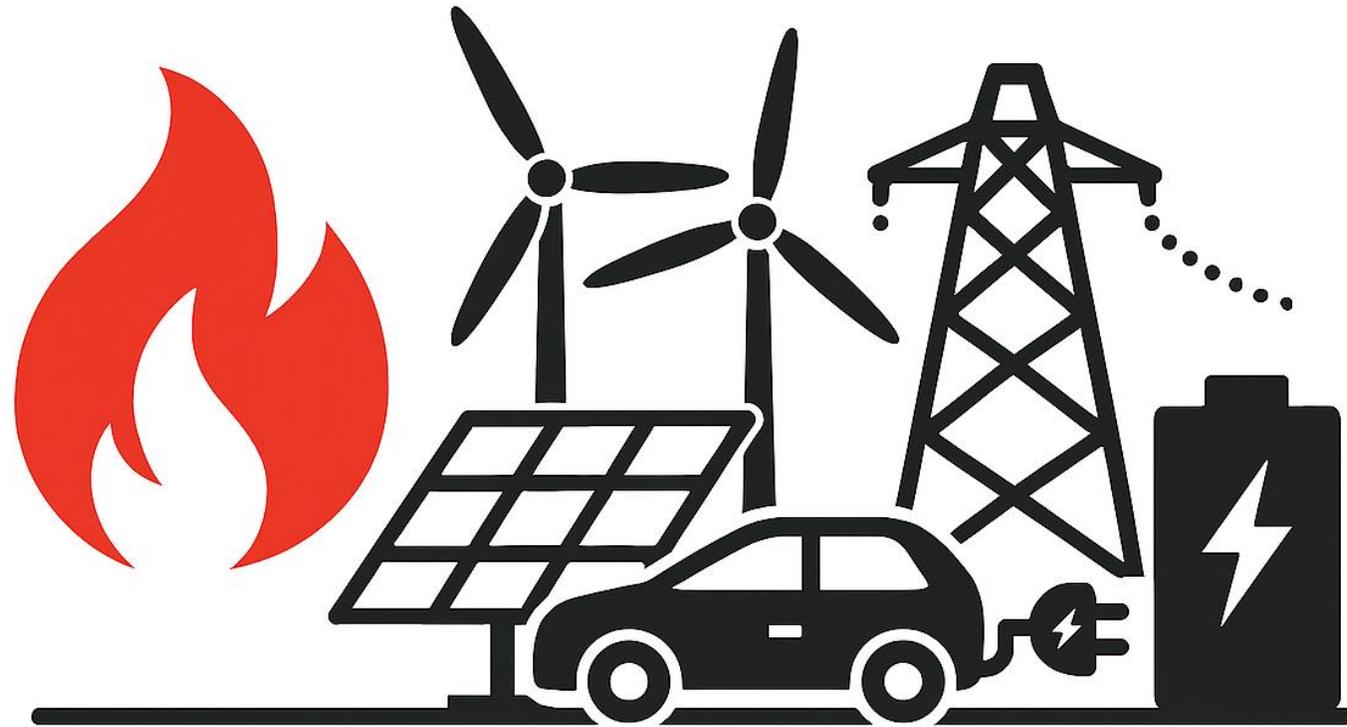
- \$50 rebate incentive
- For battery powered electric lawn mowers, trimmers, edgers, leaf blowers, snow blowers or manually powered reel lawn mower

Food scrap composting resumes March 16

- No yard waste allowed
- Likely same two locations as last year for 24/7 drop off
 - Naperville Auto Test Track / CNG Station: 1720 W. Jefferson Avenue
 - City-Owned Parking Lot 91st Street and Wolf's Crossing Road

From Fire to Wire

Why Energy Is About to Feel Very Different



Does Ireland or the UK burn more coal for electricity?



Gross Domestic Product
(GDP) is \$3.64 Trillion



GDP is \$720 Billion

Does Ireland or the UK burn more coal for electricity?

It's a tie! They both have shut down all their coal plants

The New York Times

Britain Shuts Down Last Coal Plant, 'Turning Its Back on Coal Forever'

The Ratcliffe-on-Soar plant was the last surviving coal-burning power station in a country that birthed the Industrial Revolution and fed it with coal.

▶ Listen to this article · 3:48 min [Learn more](#)

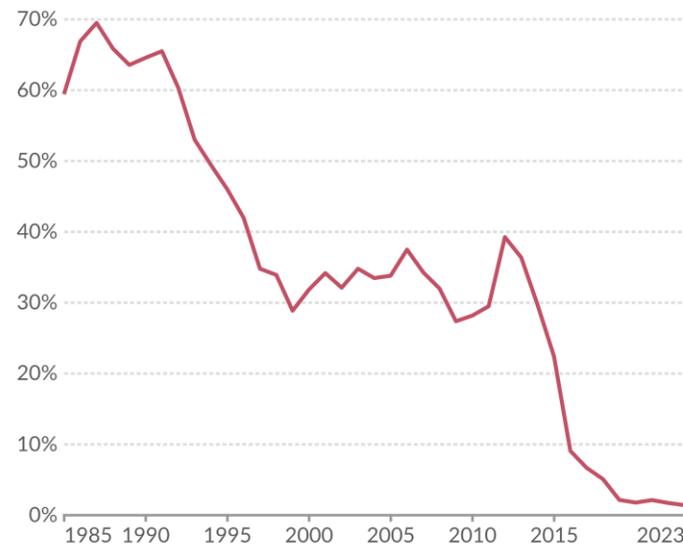
📄 Share full



The death of coal power in the UK

Share of electricity production from coal.

Our World in Data



Data source: Ember (2024); Energy Institute (2024)

CC BY

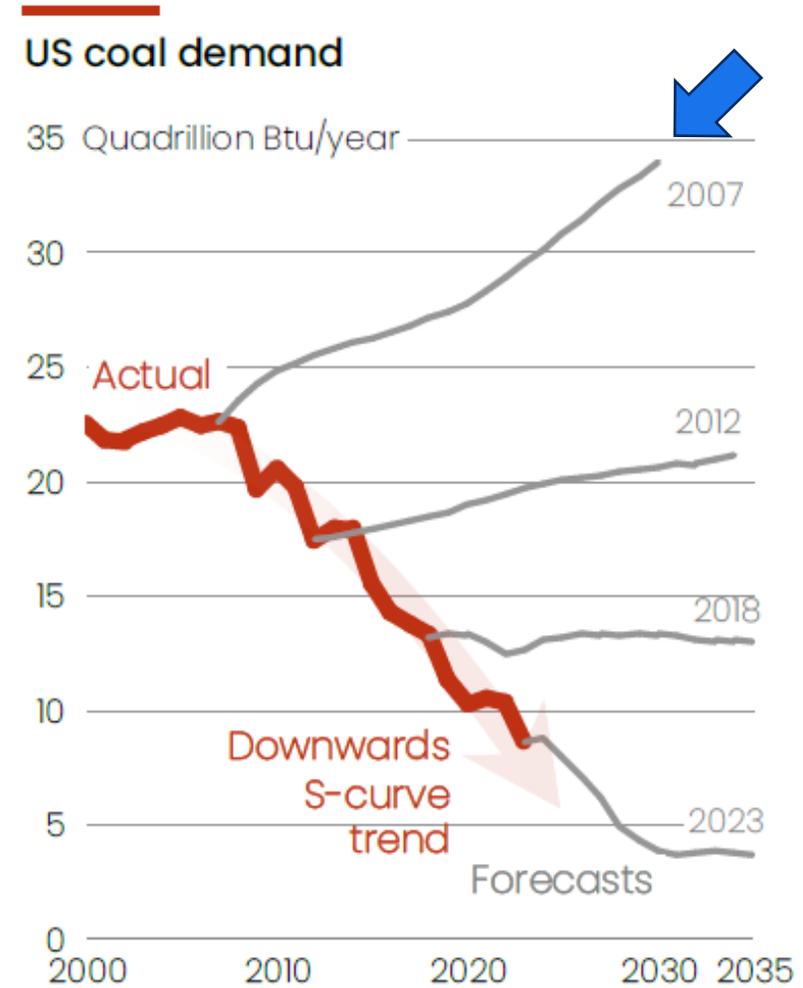
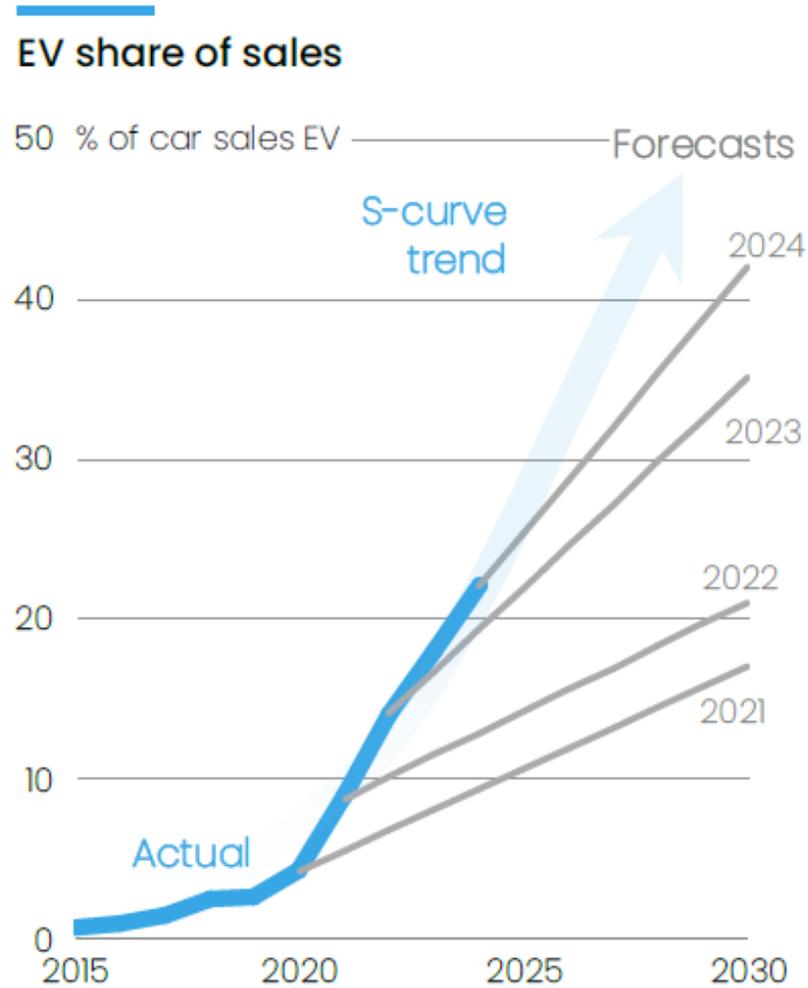
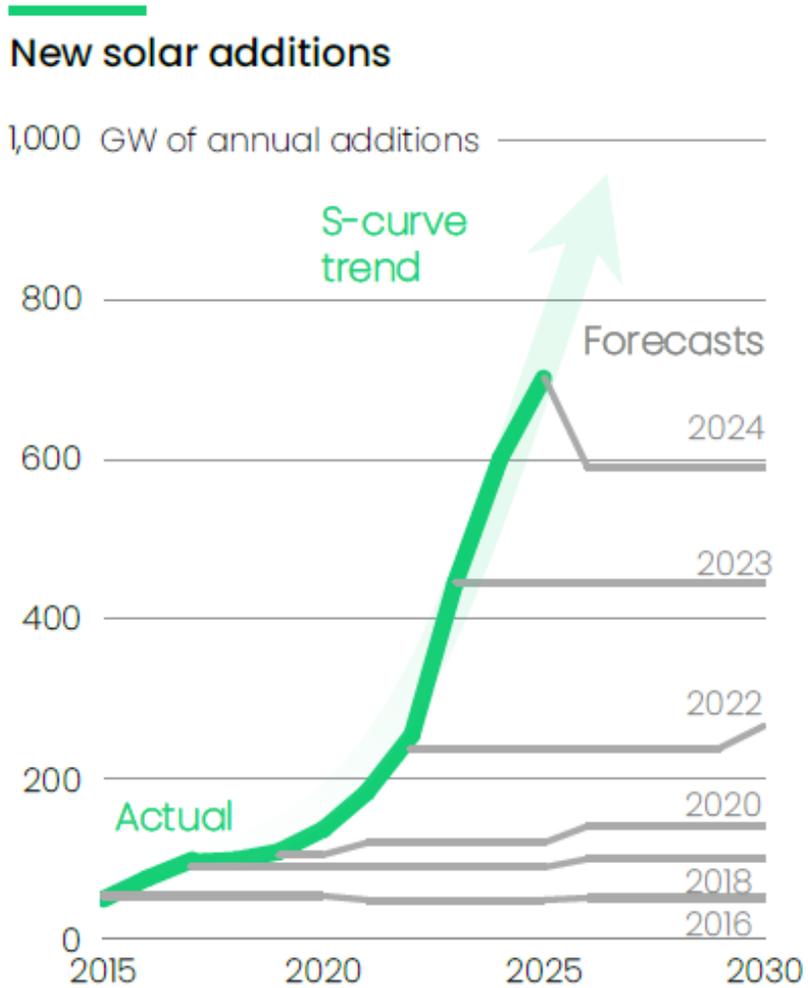
20 June 2025

Ireland Becomes Europe's 15th Coal-Free Country as Moneypoint Ends Coal Burning

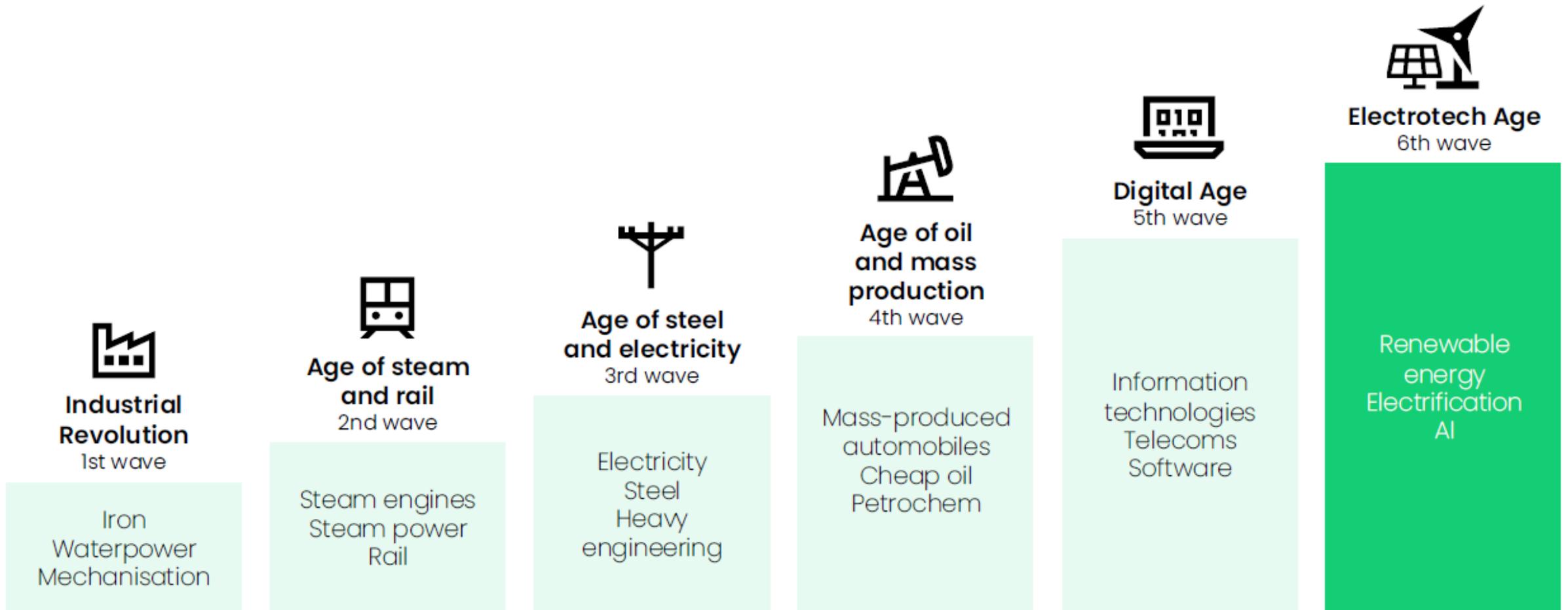
Kilrush, Co. Clare, 20 June 2025 — Ireland has today ended coal power generation, joining a growing group of European countries that have eliminated coal from their electricity mix. The closure of Moneypoint's coal operations makes Ireland Europe's sixth country to exit coal.

This moment was made possible by Ireland's remarkable progress on renewable power.

Even the Experts are Getting this Wrong



*The International Energy Agency said we are
"entering the age of electricity."*



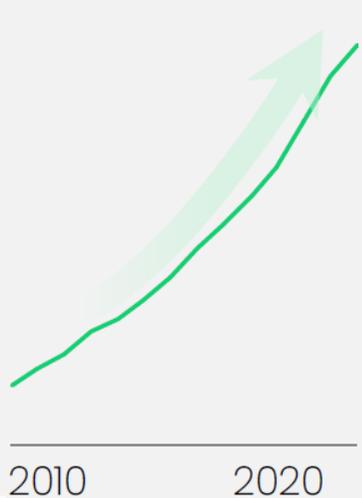
These changes build on each other

Supply

New ways to generate electricity

Solar PV deployment (GW)

Wind deployment (GW)

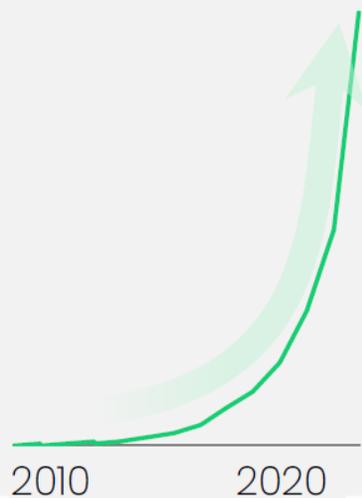


Store & Transport

New ways to transport and store electricity

Battery storage deployment

HVDC lines deployment (km)

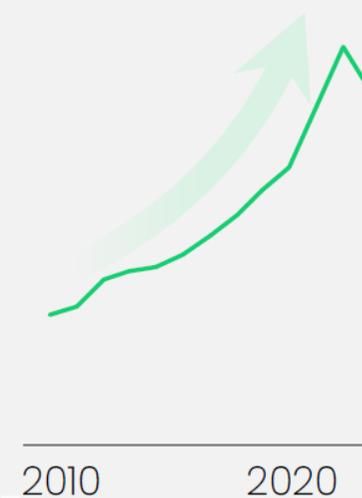


Demand

New ways to use electricity

EV sales

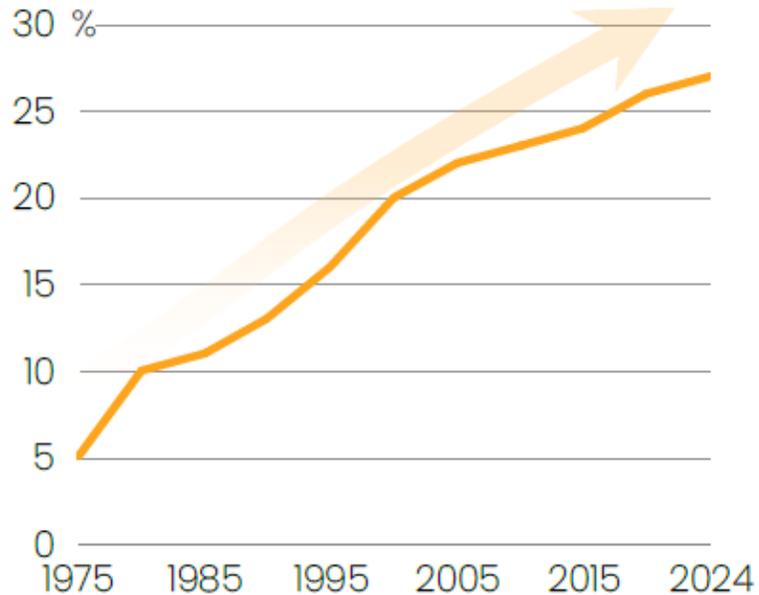
Heat pumps sales



Wright's Law, established by Theodore Wright in 1936, states that for every cumulative doubling of units produced, costs fall by a constant percentage due to learning-curve effects.

Supply

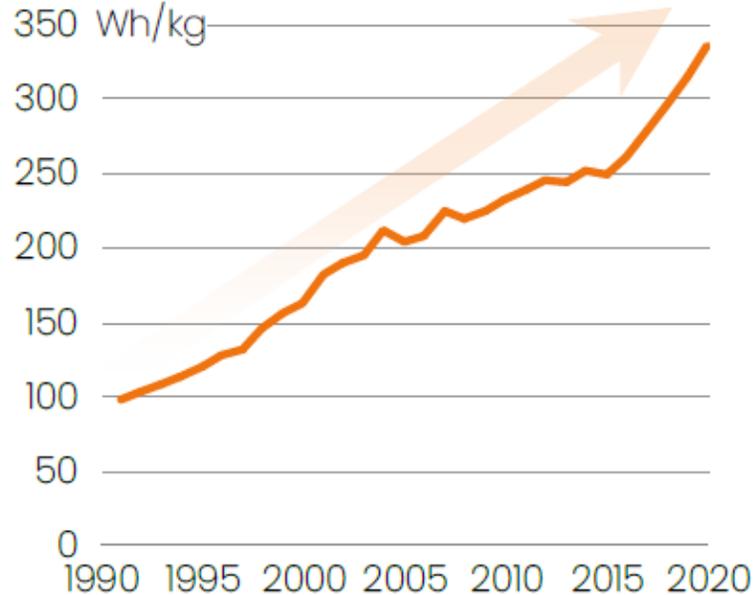
Solar cell efficiency



More efficient solar cells mean more space and material efficiency and lower cost

Store & Transport

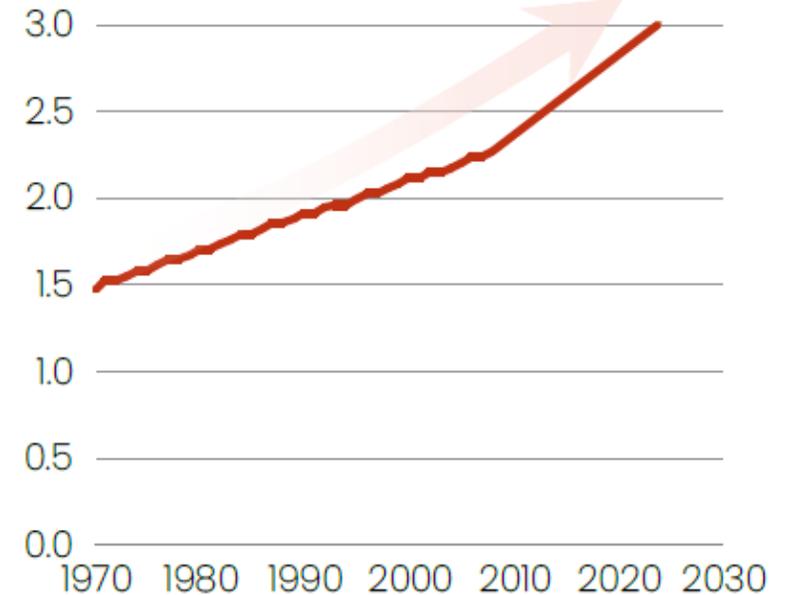
Top-tier battery cell density



Denser batteries mean longer EV ranges; new EV applications opening up and more material efficiency

Demand

Heat pump coefficient of performance, US sales average



Higher COP means a more efficient and powerful heating system

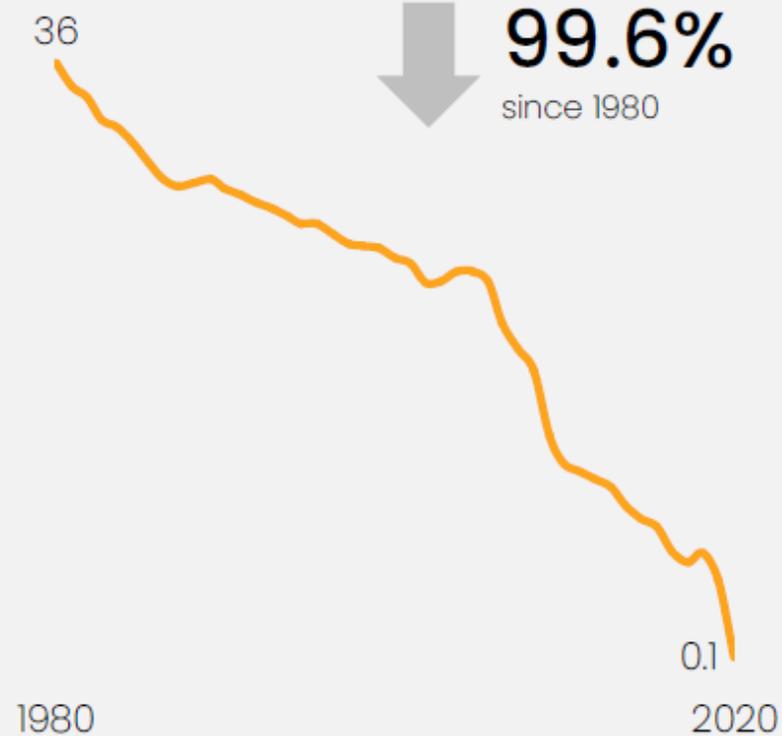
Costs have been falling for decades on learning curves

Decades of steady cost innovation improved electrotech economics

Solar PV module price

\$/W, global price

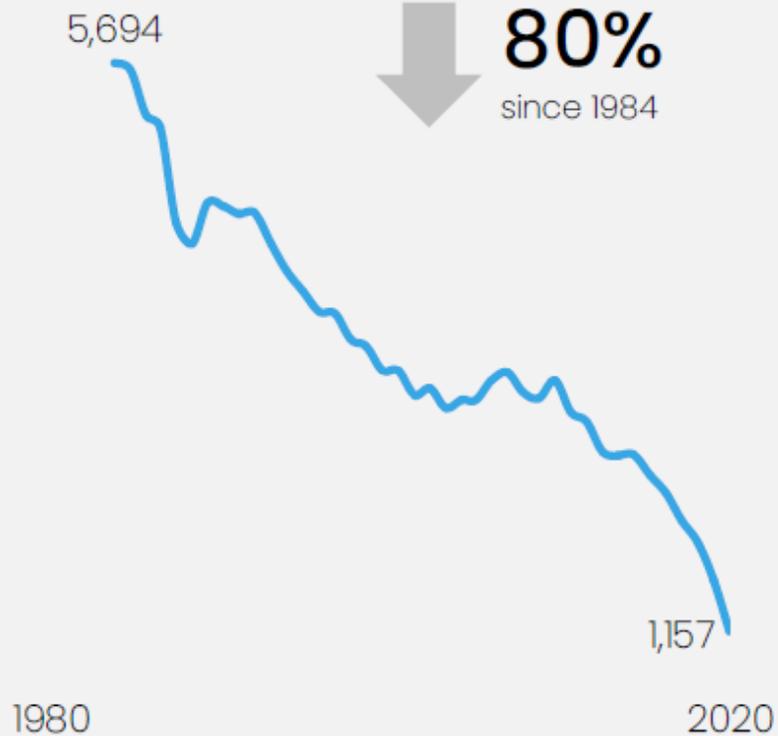
Logarithmic scale



Wind installation cost

\$/kW, global price

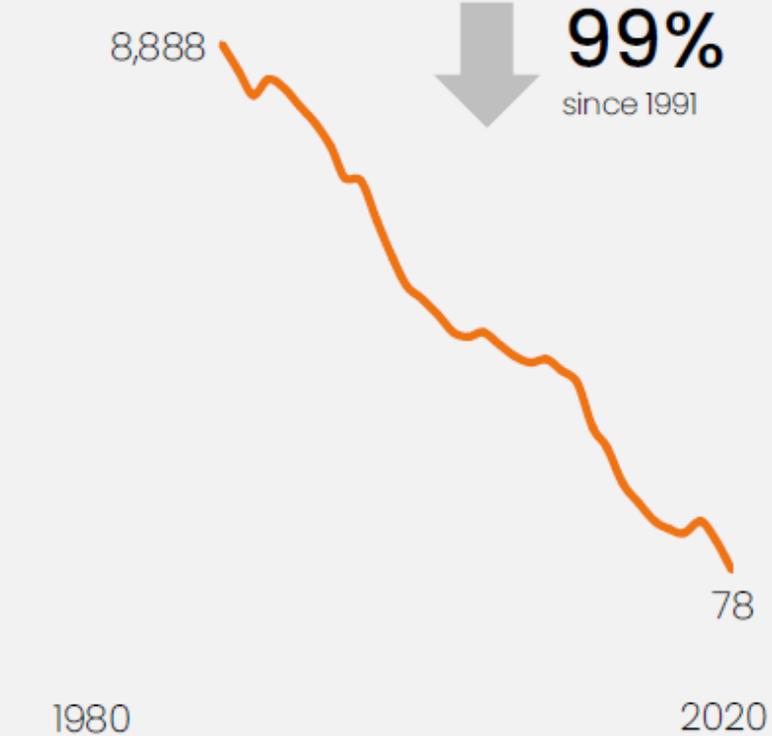
Logarithmic scale



Battery cell price

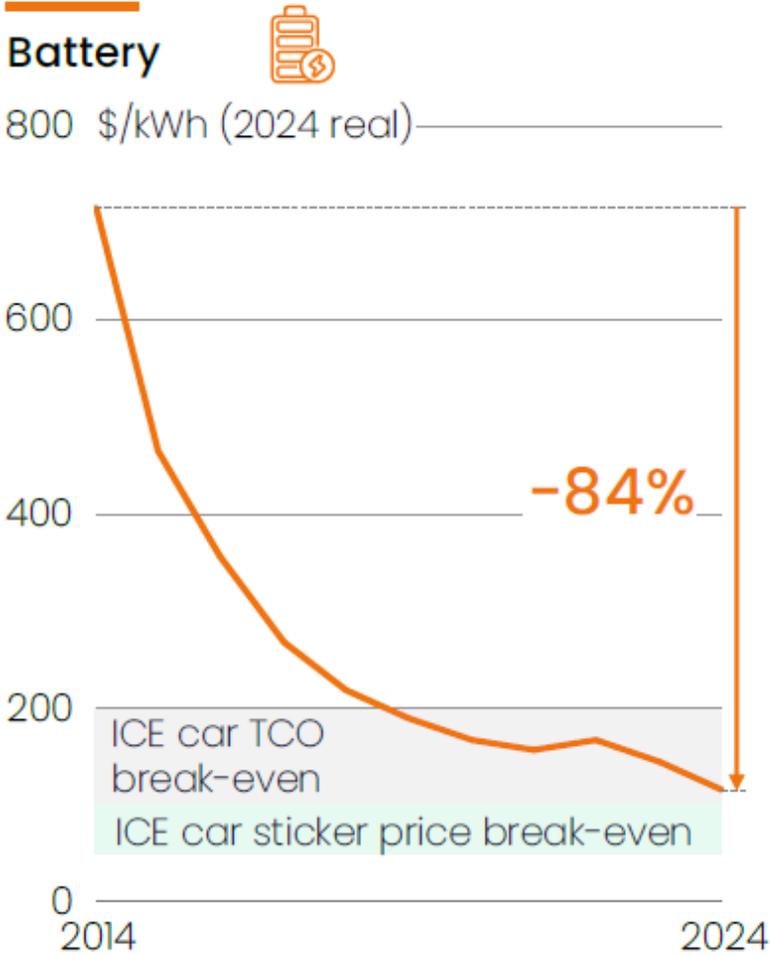
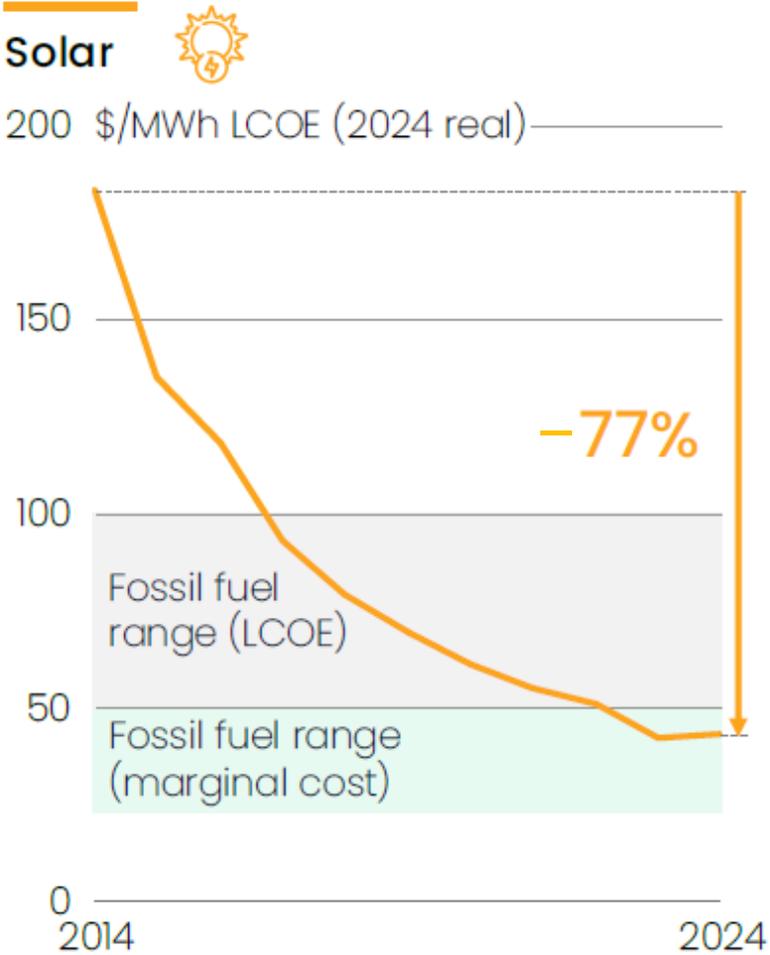
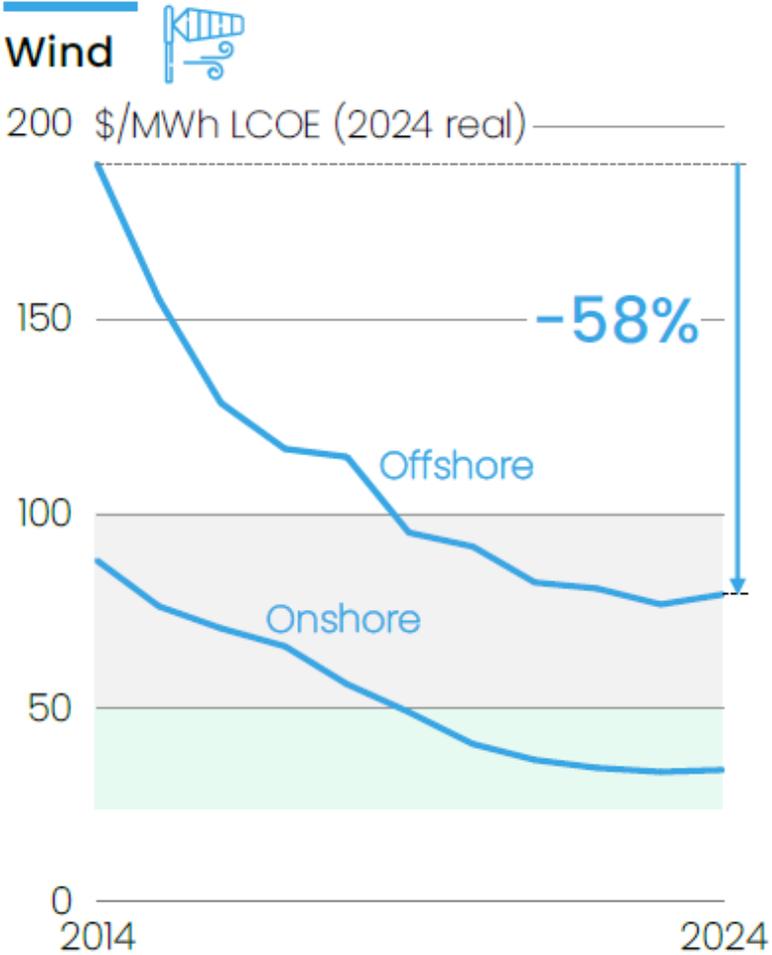
\$/kW, global price

Logarithmic scale

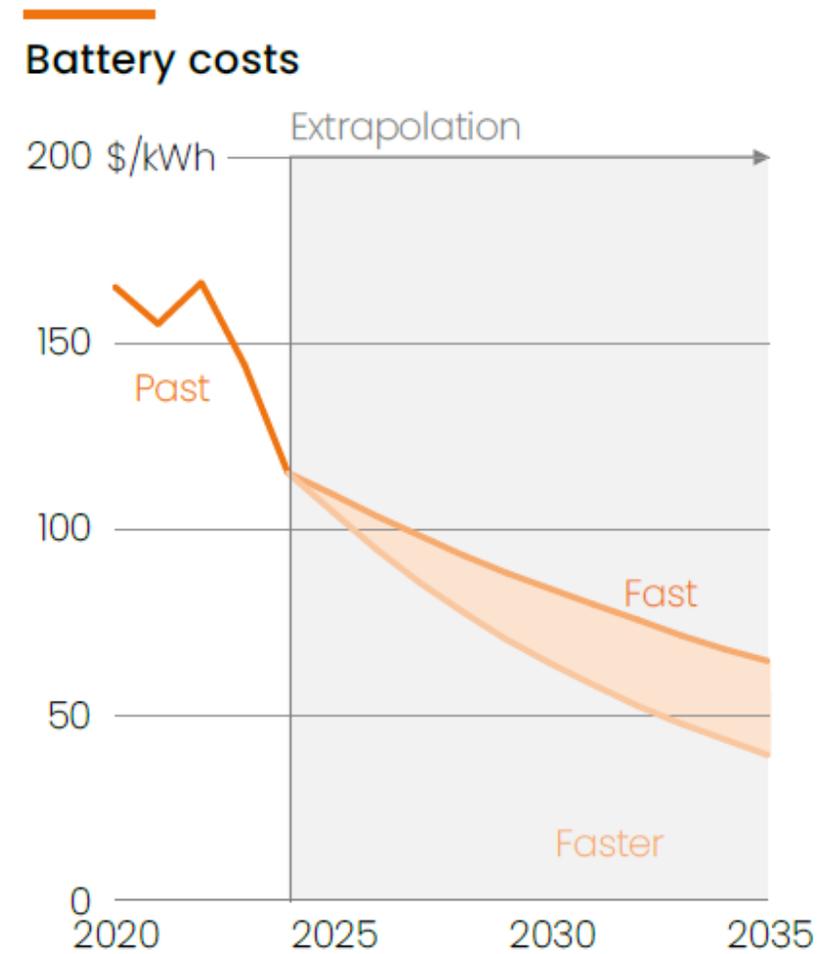
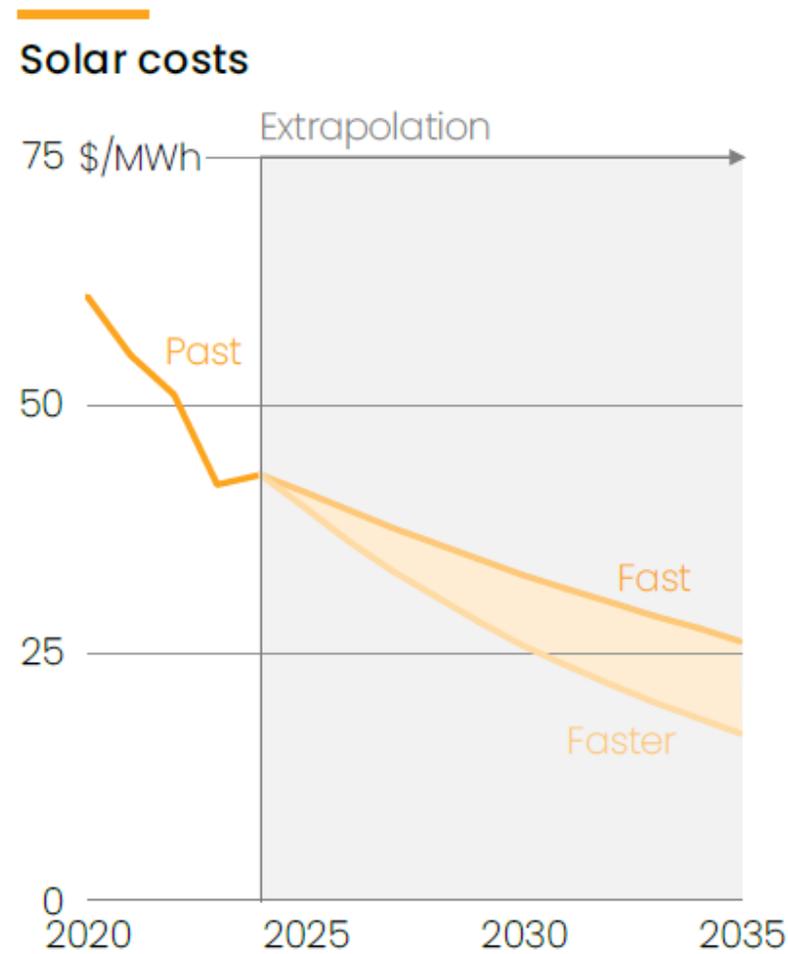
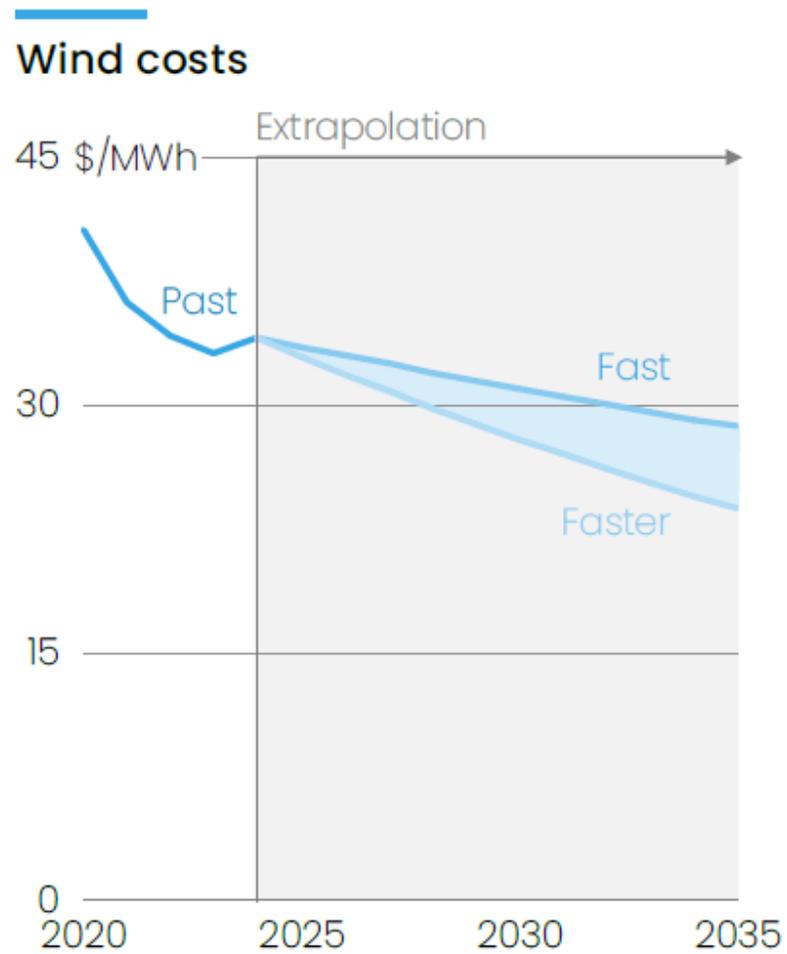


Cheap enough to challenge incumbents

After decades of cost innovation electrotech is now cheaper than fossils



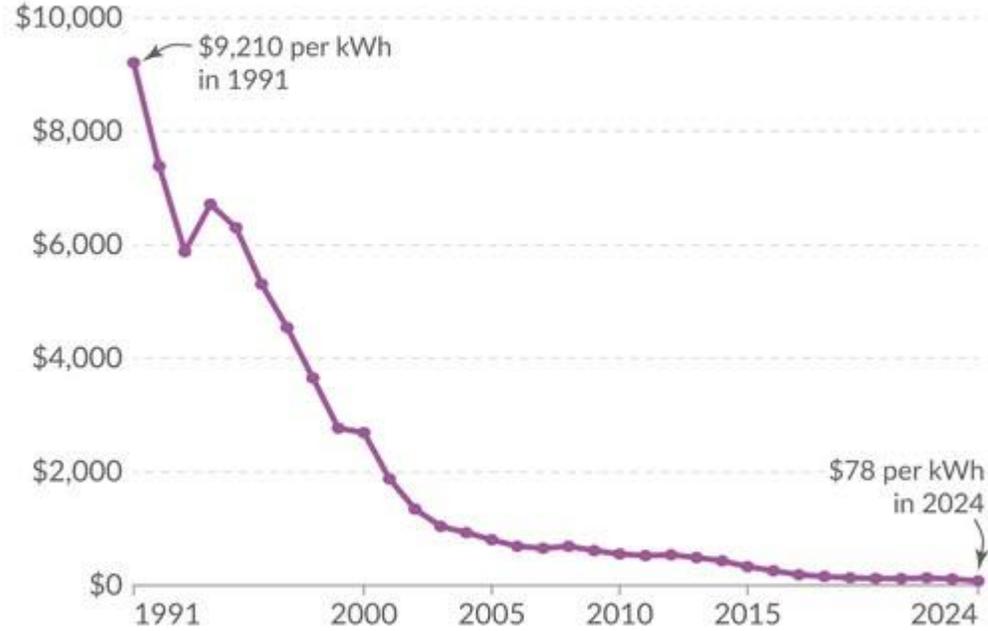
In the future, cost will go from competitive to irresistible



Price of lithium-ion battery cells



Representative estimate of the price of battery cells for lithium-ion batteries, across all major cell chemistries. Prices are in US dollars per kilowatt-hour, adjusted for inflation.



Real World Big Battery Example

Energy storage deployments across all market segments, 2018-2024

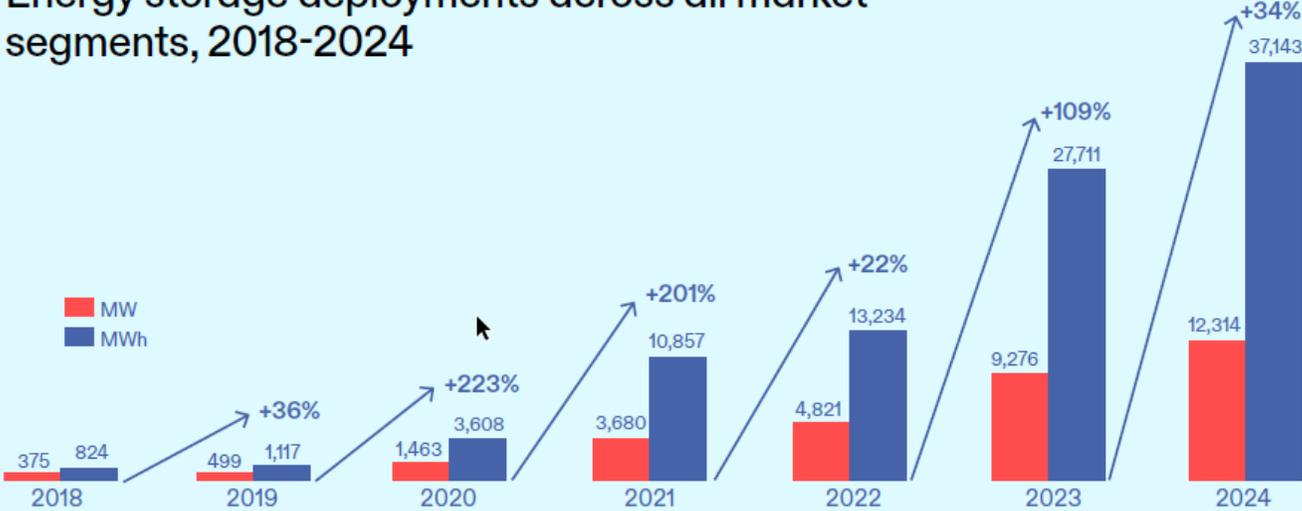
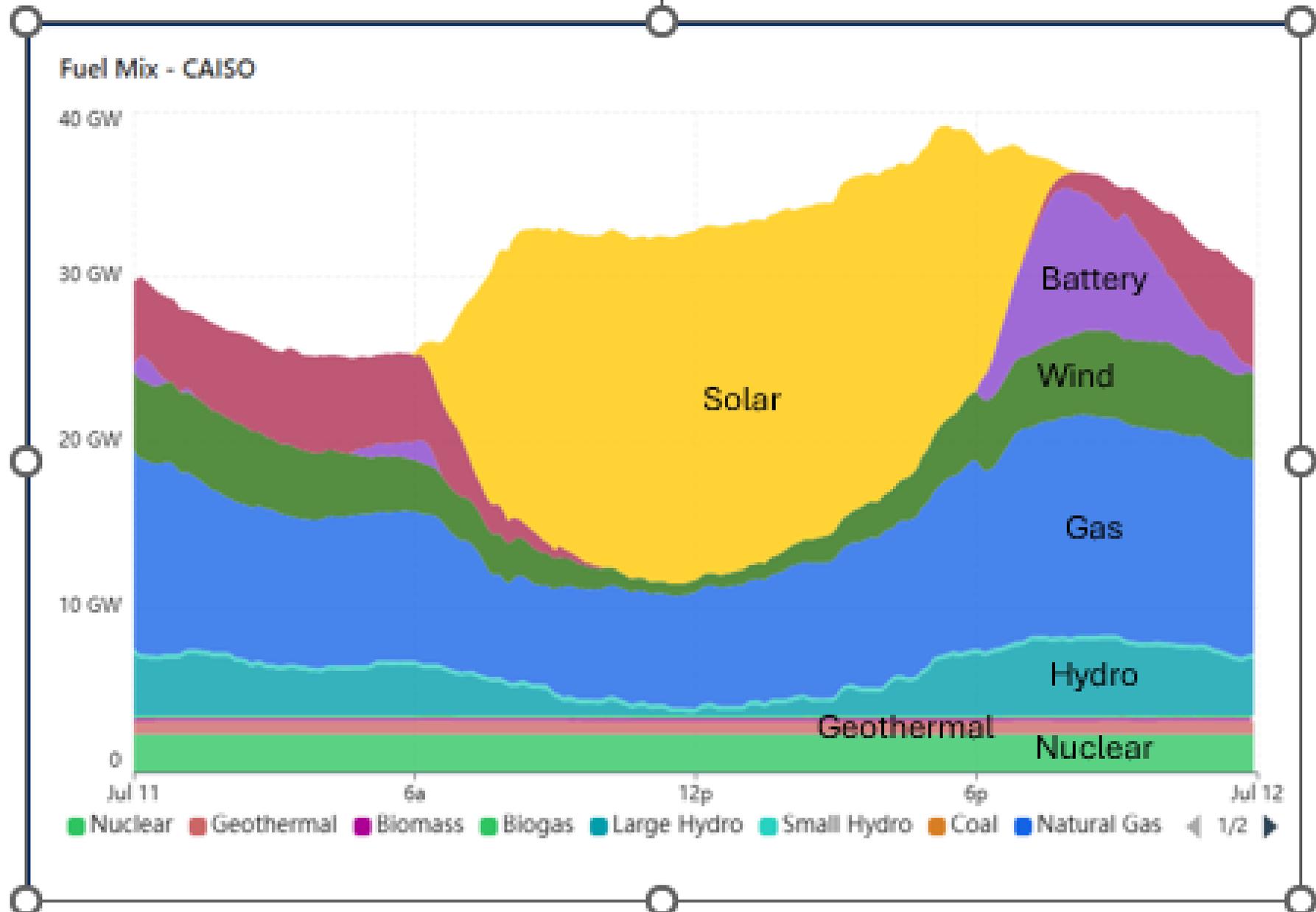


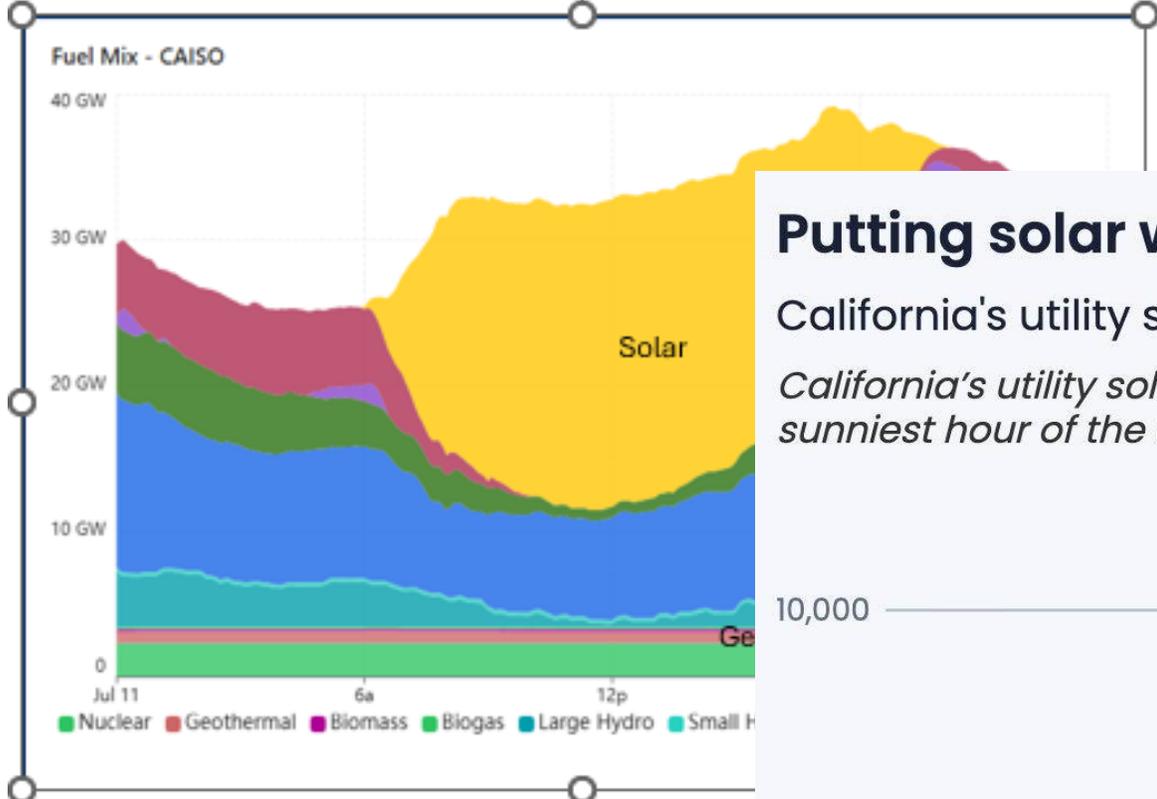
Chart source: U.S. Energy Storage Monitor 2024 Year in Review, ACP & Wood Mackenzie

What does this look like in the real world?

California
July 11, 2025



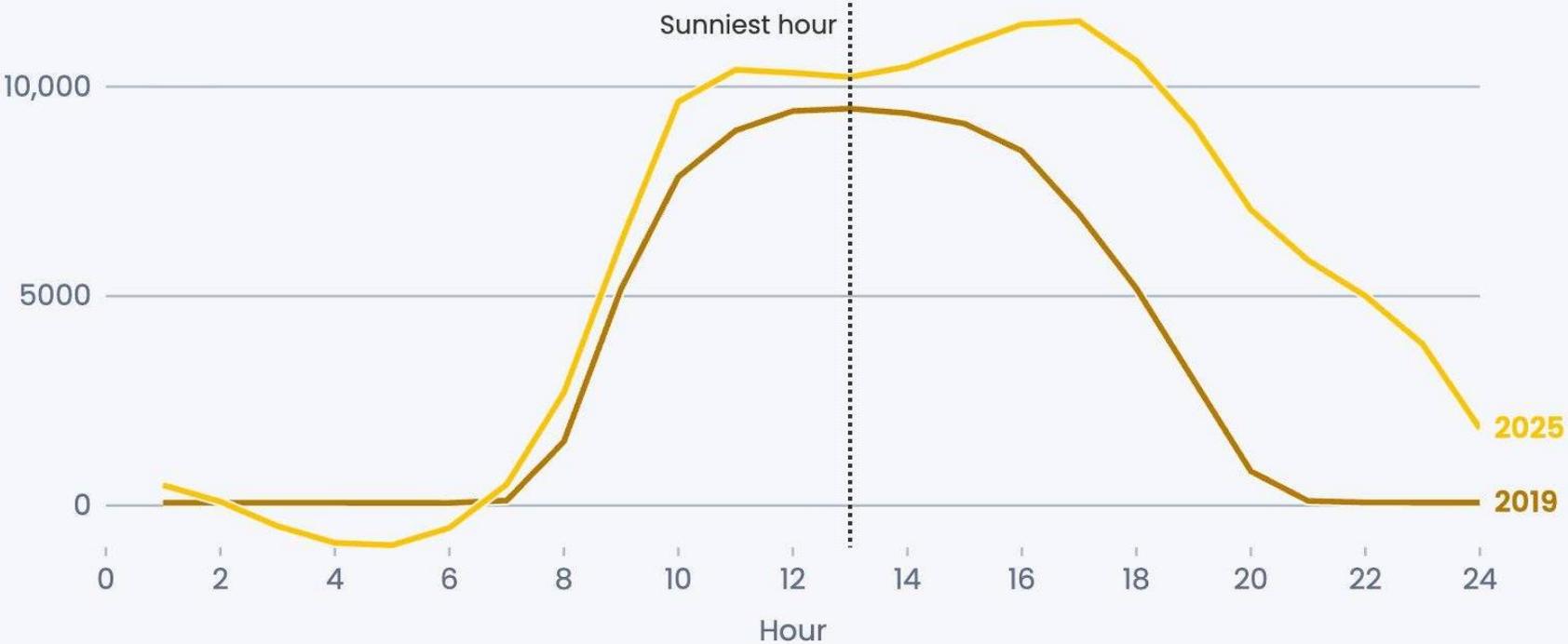
What does this look like in the real world?



Putting solar where the sun doesn't shine

California's utility solar+storage generation (average MW)

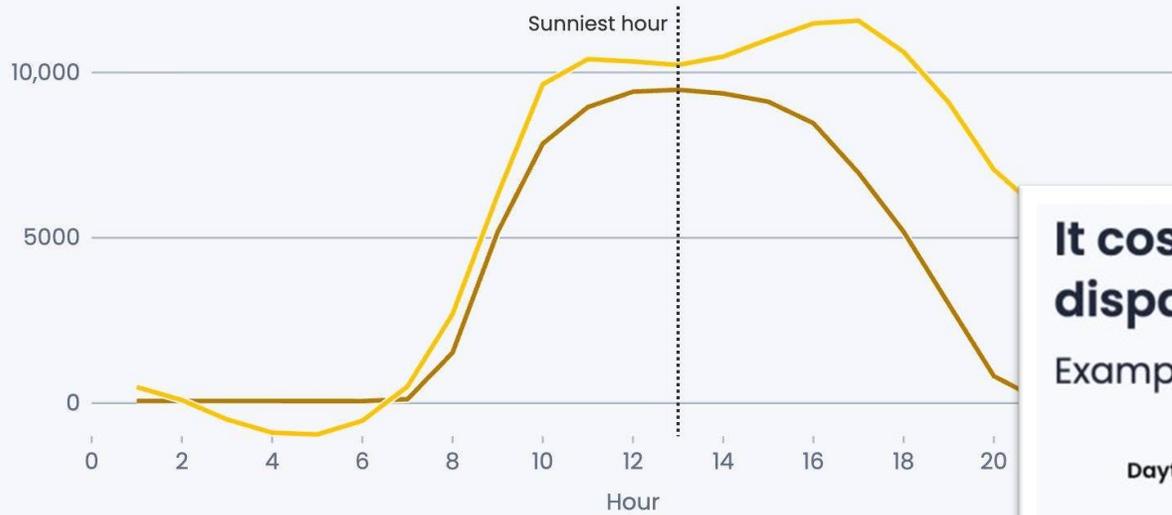
California's utility solar and battery generation has risen by 58%, yet generation at the sunniest hour of the day has risen by just 8%



Putting solar where the sun doesn't shine

California's utility solar+storage generation (average MW)

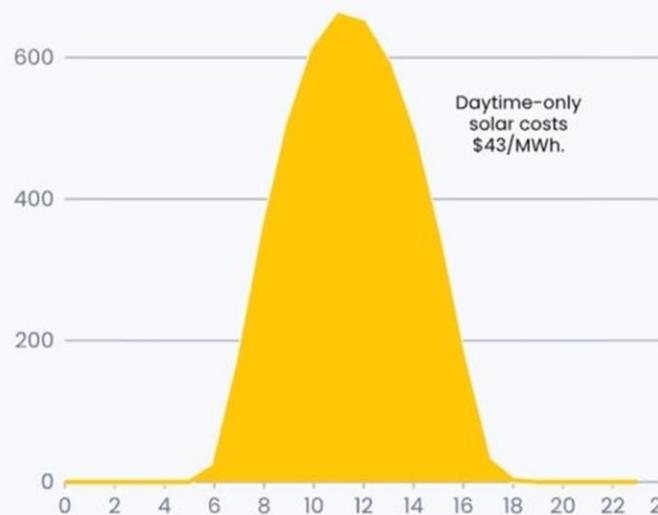
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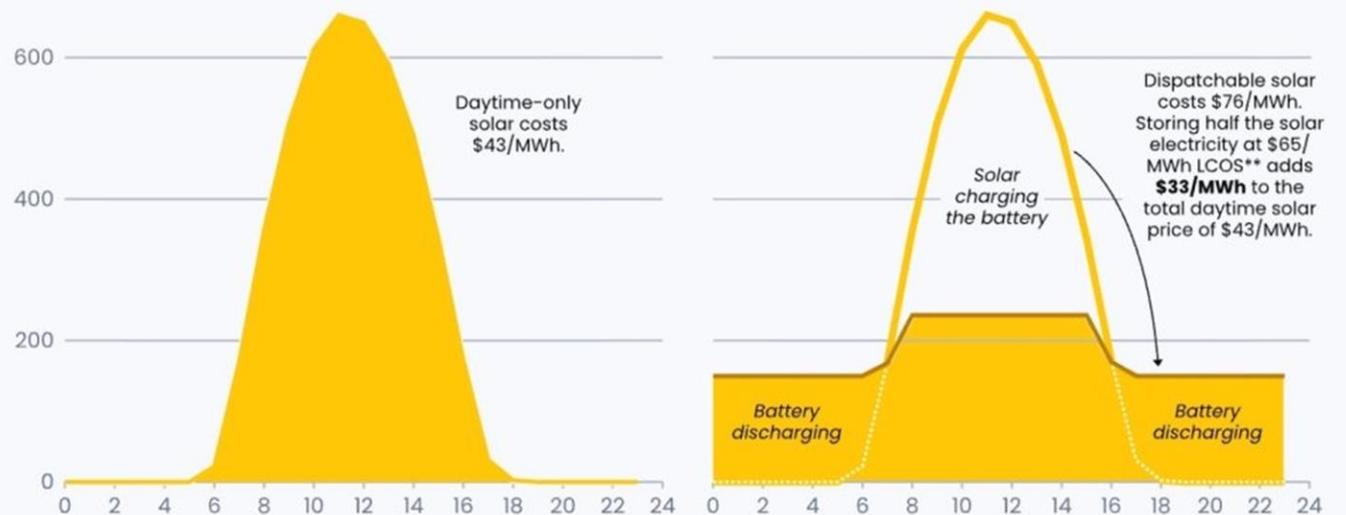
It costs just \$33/MWh to transform daytime solar into dispatchable solar

Example hourly solar profile, kW*

Daytime solar



Dispatchable solar

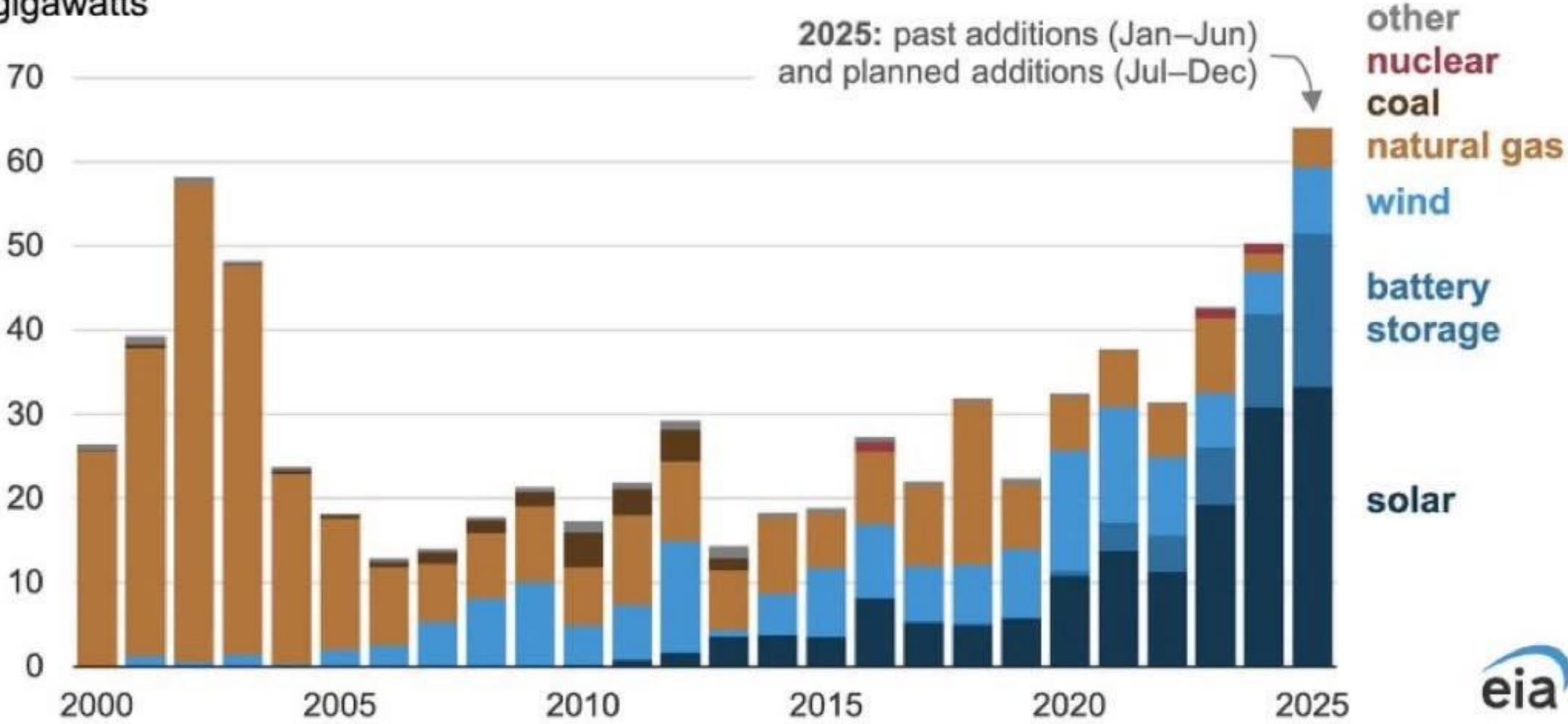


The growth of cheap batteries increases the demand for solar, and the growth in cheap solar drives increases the demand for batteries

Something Big is Happening

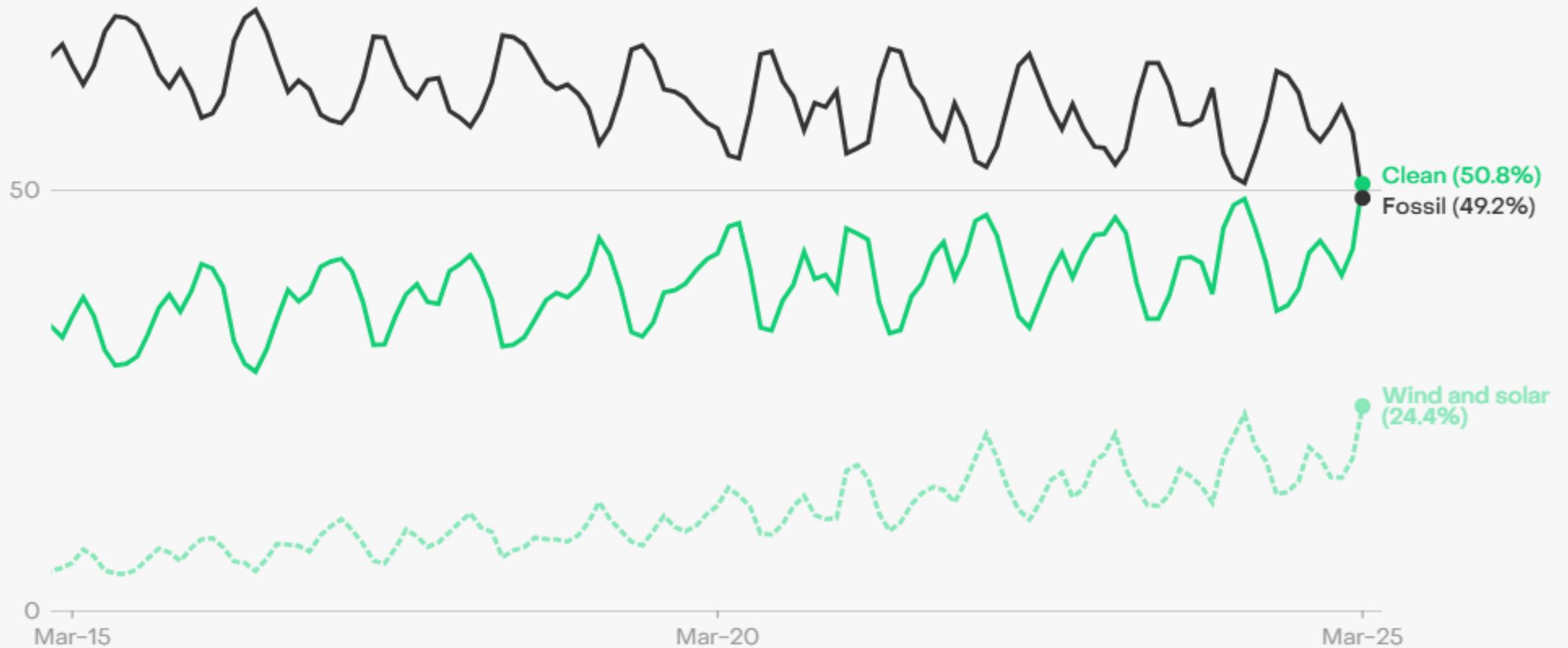
U.S. utility-scale electric generating capacity additions (2000–2025)

gigawatts



Fossil fuels accounted for less than 50% of the US electricity mix for the first time ever in March 2025

Share of electricity generation (%)

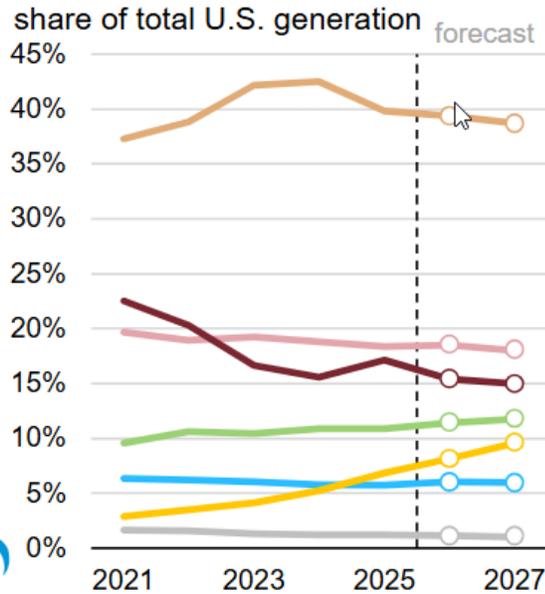
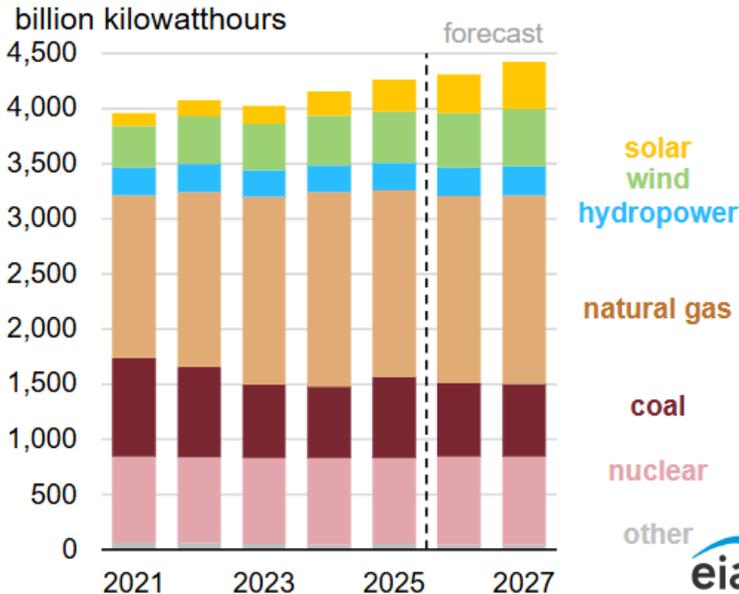


The federal government predicts that the trends of adding solar and retiring coal will continue

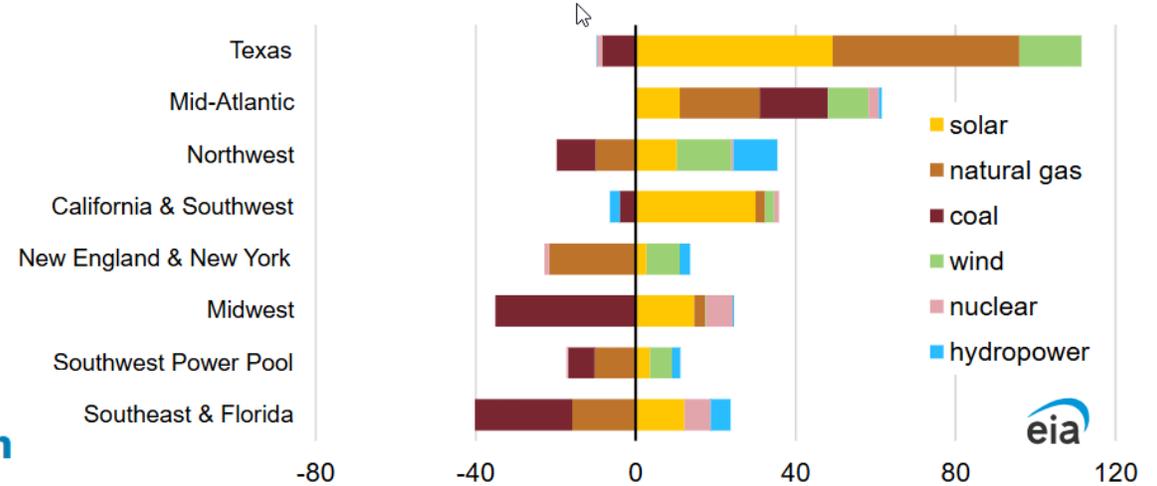
JANUARY 16, 2026

Solar power generation drives electricity generation growth over the next two years

U.S. annual electric power sector generation by source

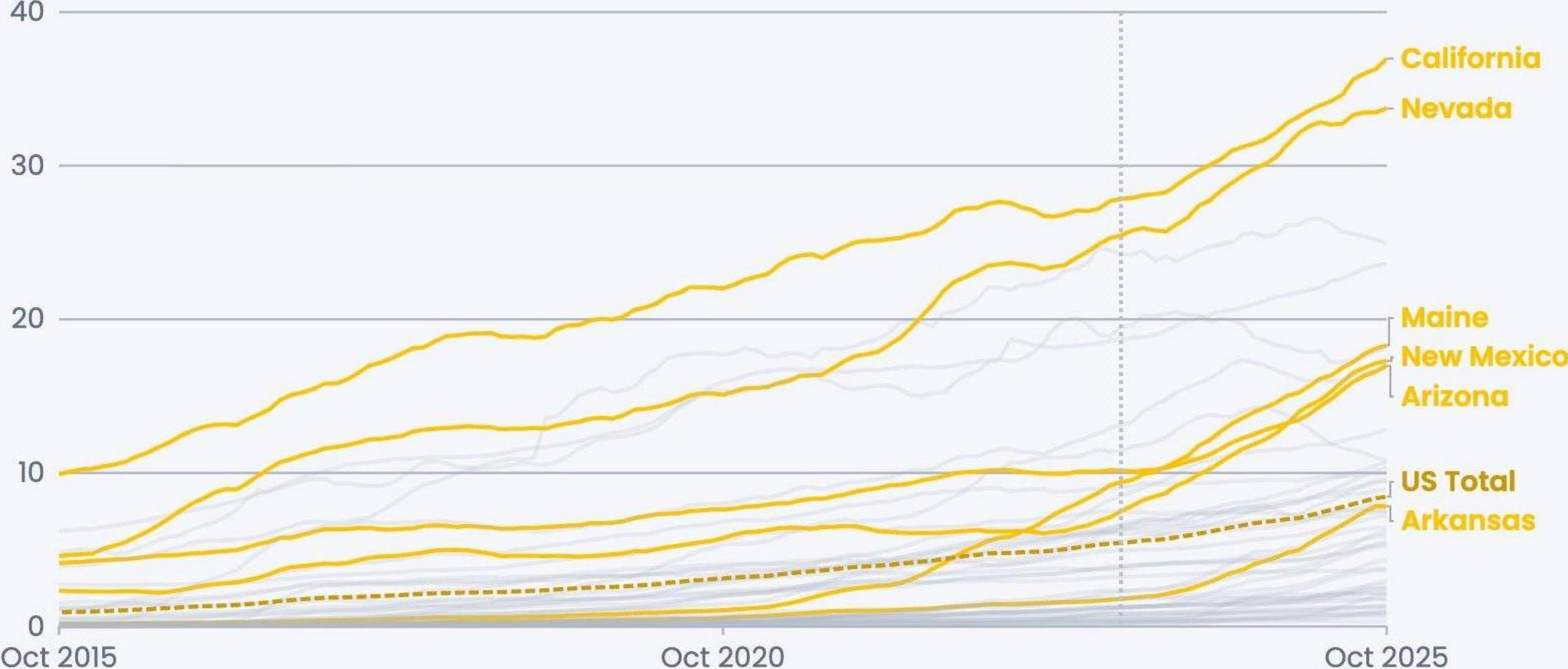


U.S. electricity generation change from 2025 to 2027 by fuel, electric power sector
billion kilowatt-hours



Six US states saw their solar share surge by 5+ percentage points in the 24 months to October 2025

12-month rolling share of solar generation (%)



Which uses more energy?

A – An EV cruising
at 55 MPH



B - Gas-powered car
idling in a parking lot



Which uses more energy?

A – An EV cruising
at 55 MPH



B - Gas-powered car
idling in a parking lot



Midsized gasoline engine at idle burns just over 0.3 gallons per hour = 11-12 kW electricity equivalent.

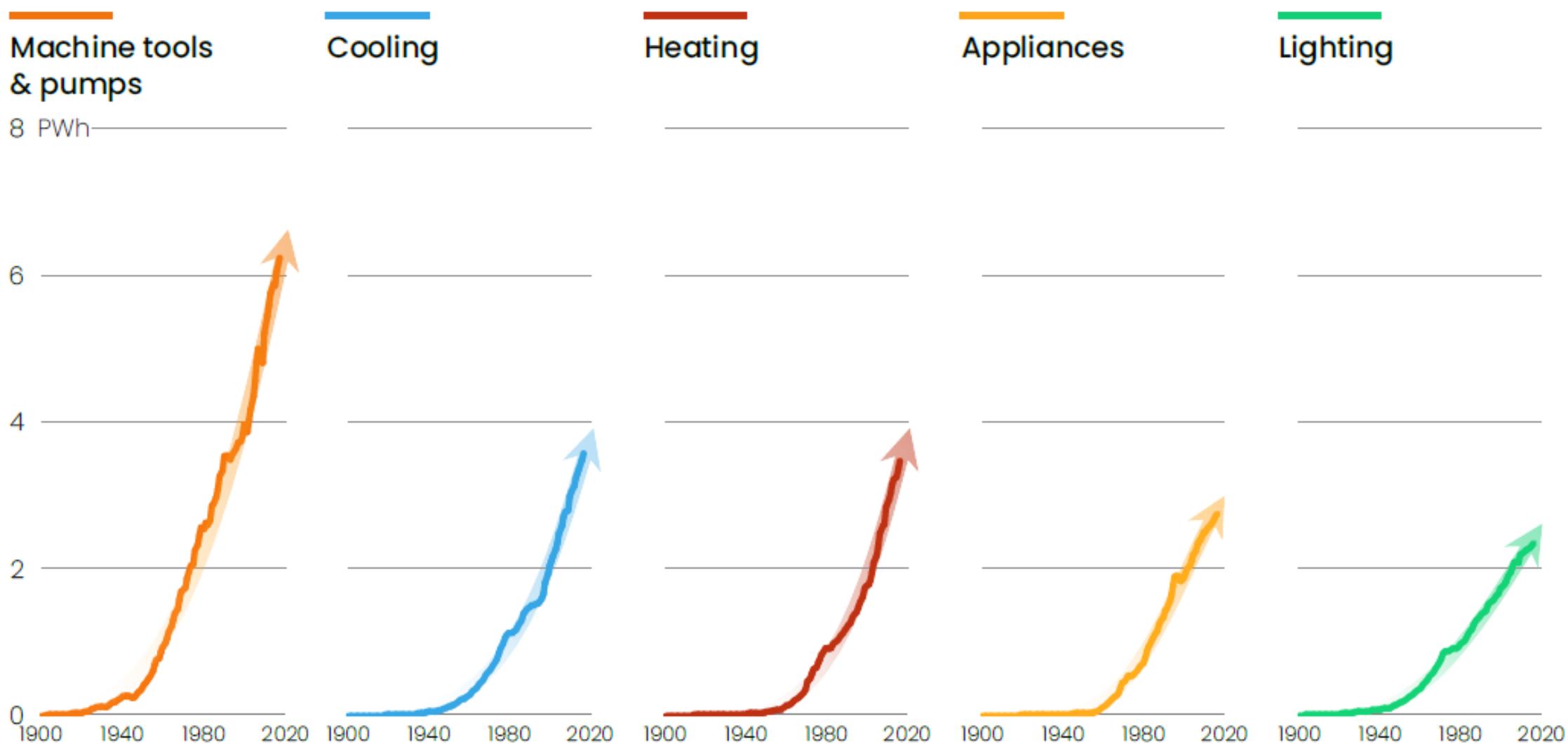


Electric cars use about 0.2 kWh per mile at 55 MPH speed. And $55 \times 0.2 = 11$ kW



The long march of electrification

We've been electrifying the global economy for over a century

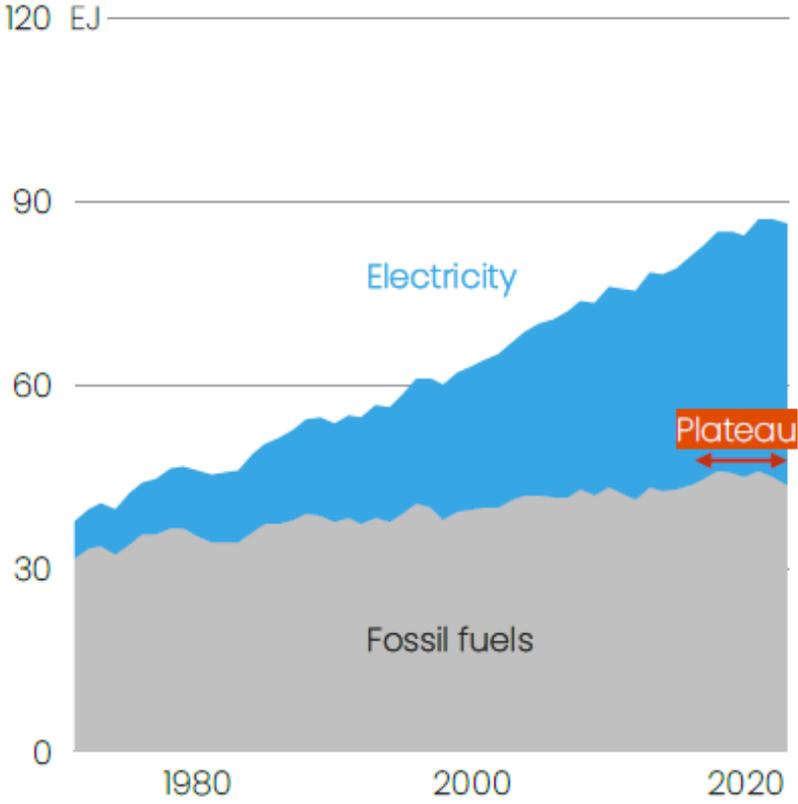


Electricity is taking all the growth in final demand

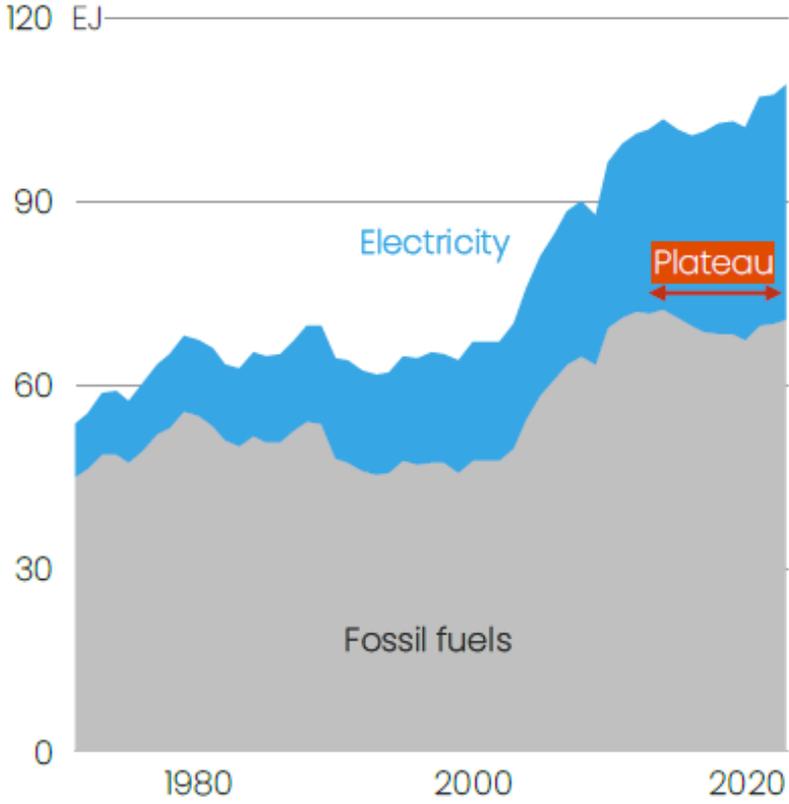
Peak fossils in industry was 2014 and in buildings was 2018

Final energy demand by sector

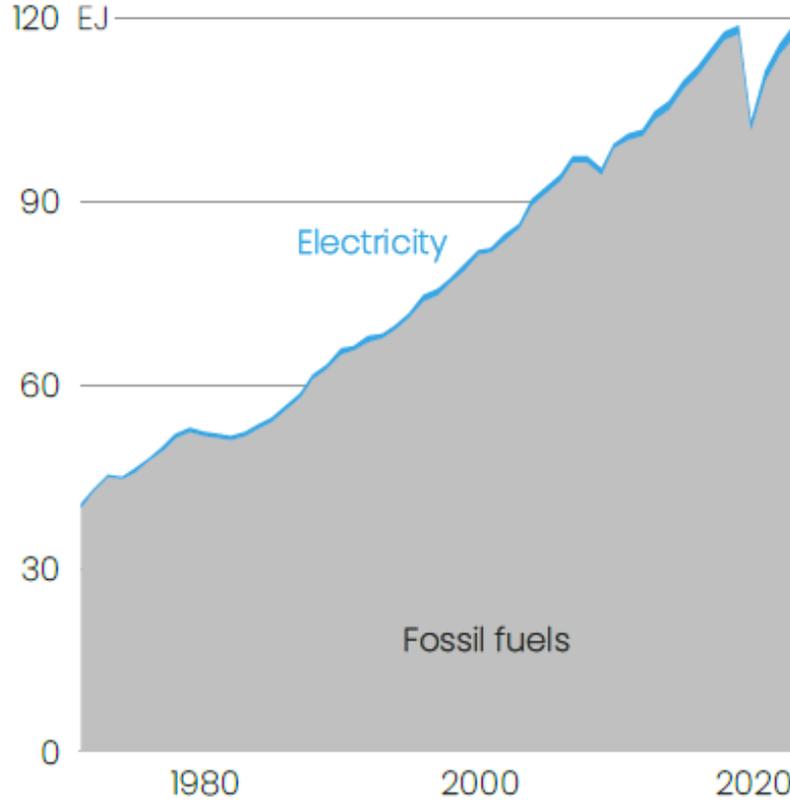
Buildings



Industry

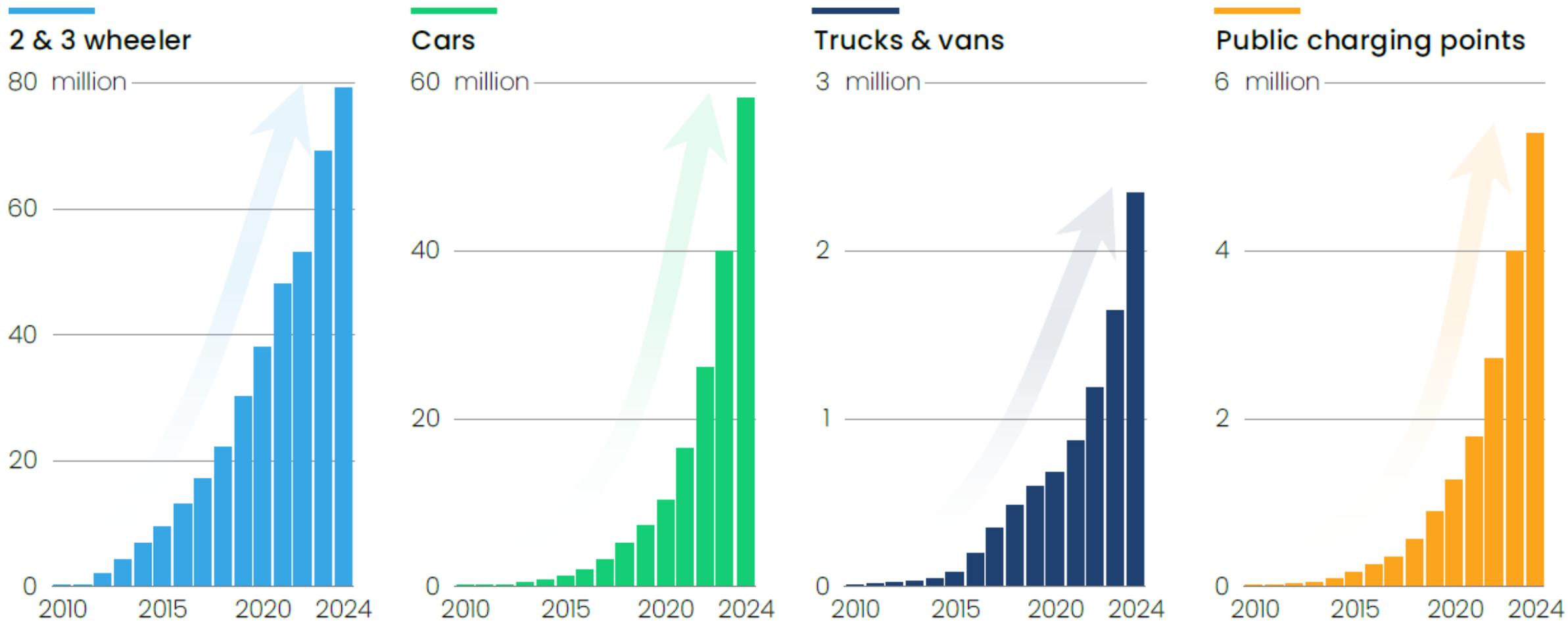


Transport



The EV revolution is taking off

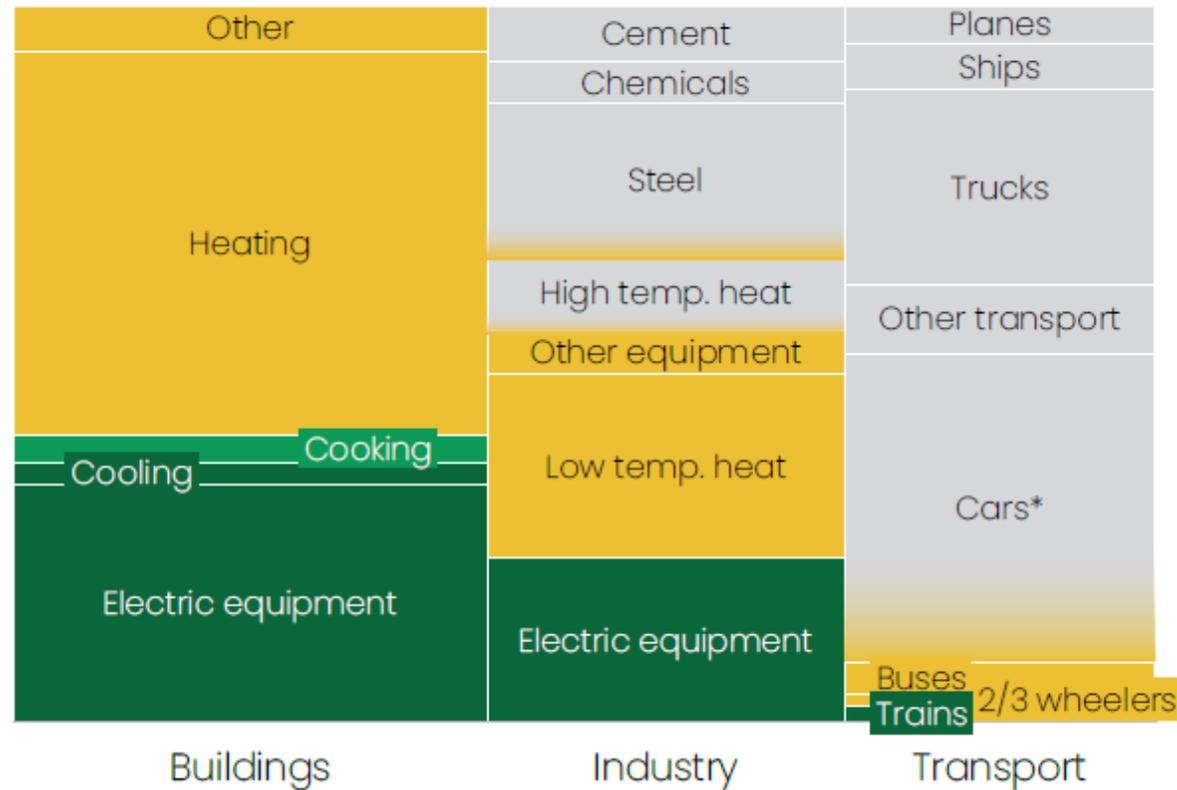
Electric mobility is growing exponentially across vehicle sizes



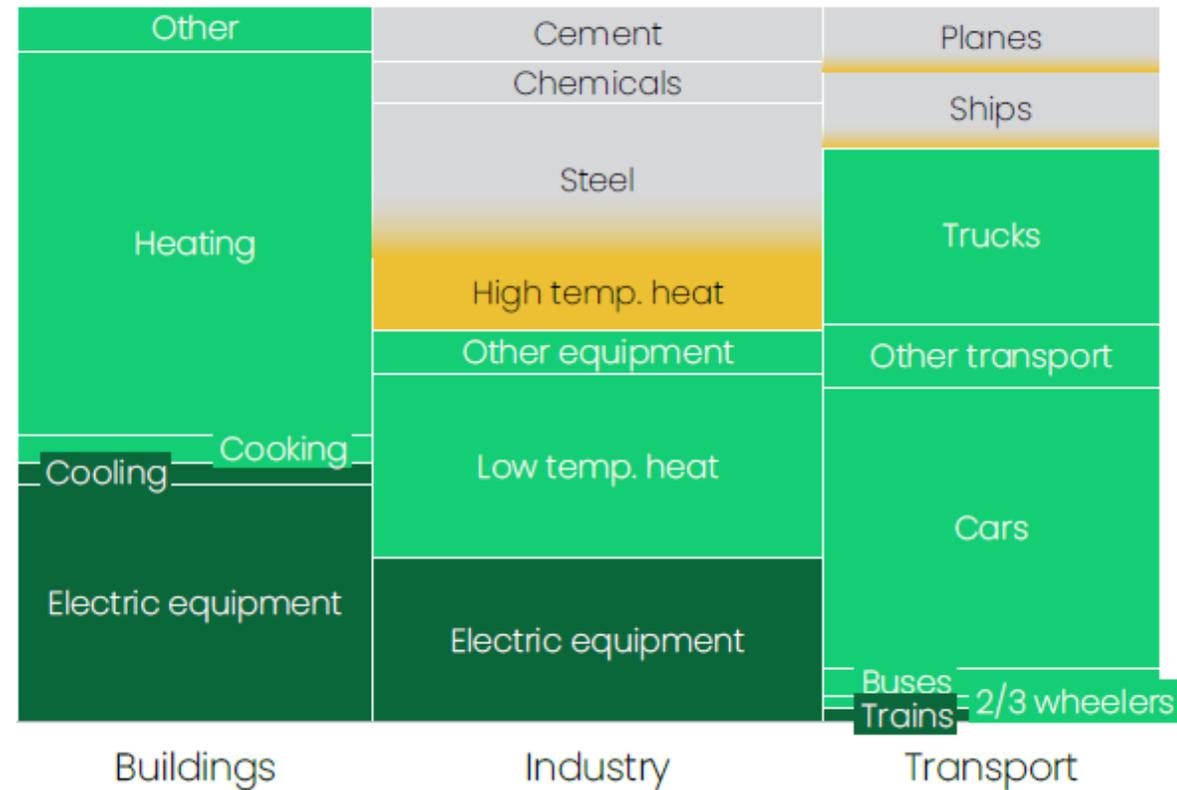
Over 75% of the global energy system can now be electrified

- Already (largely) electrified
- Can be electrified technically
- Can be electrified economically
- Still under development

2000



2025





Which country has the highest percentage of new electric car sales?

Germany



The largest economy in the EU

United States



The largest economy in the world

China



2nd largest economy in the world

Nepal

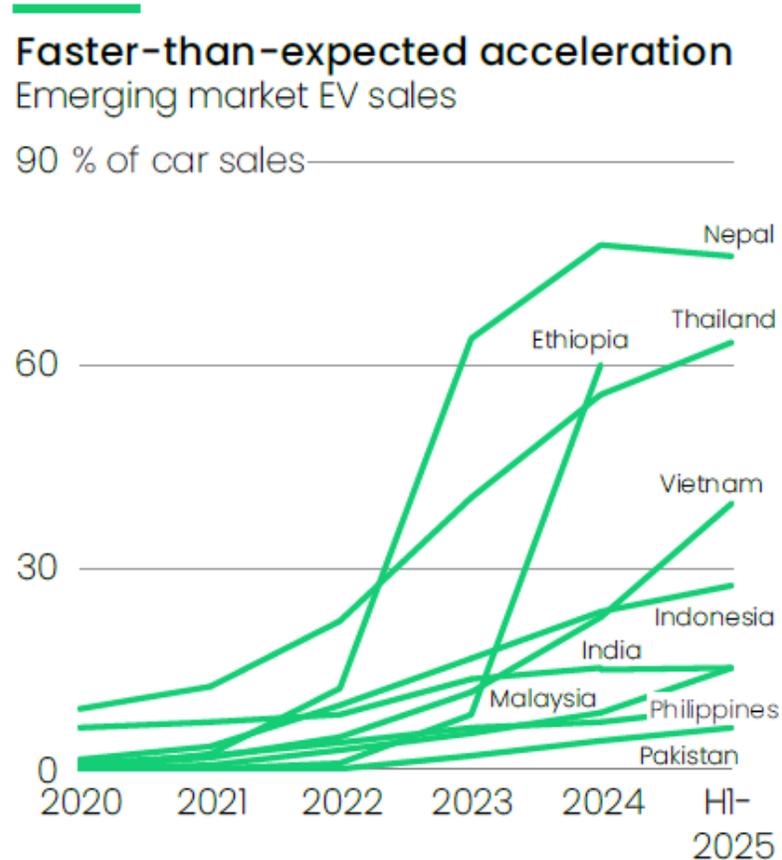
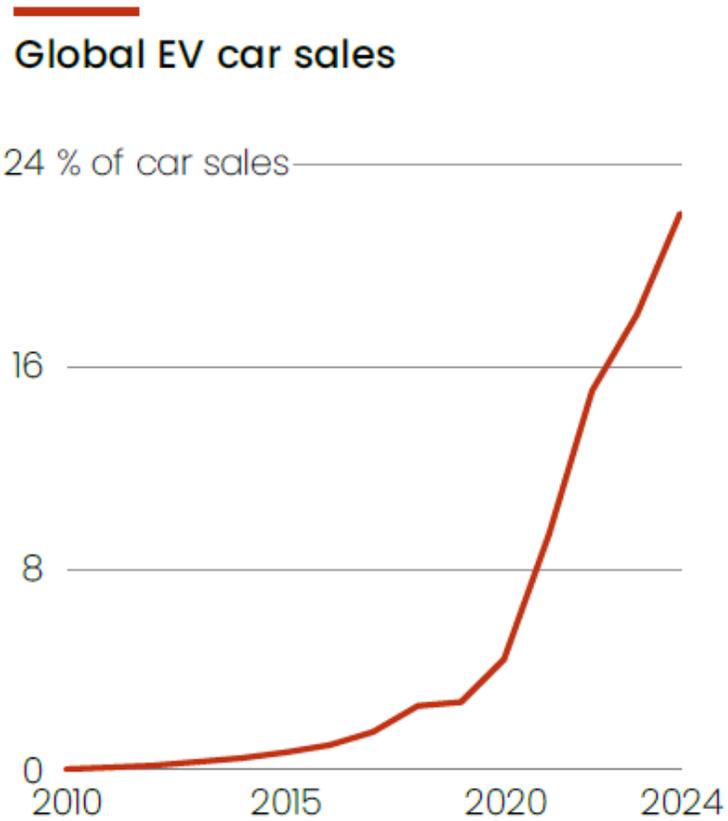


The largest mountain in the world

Nepal

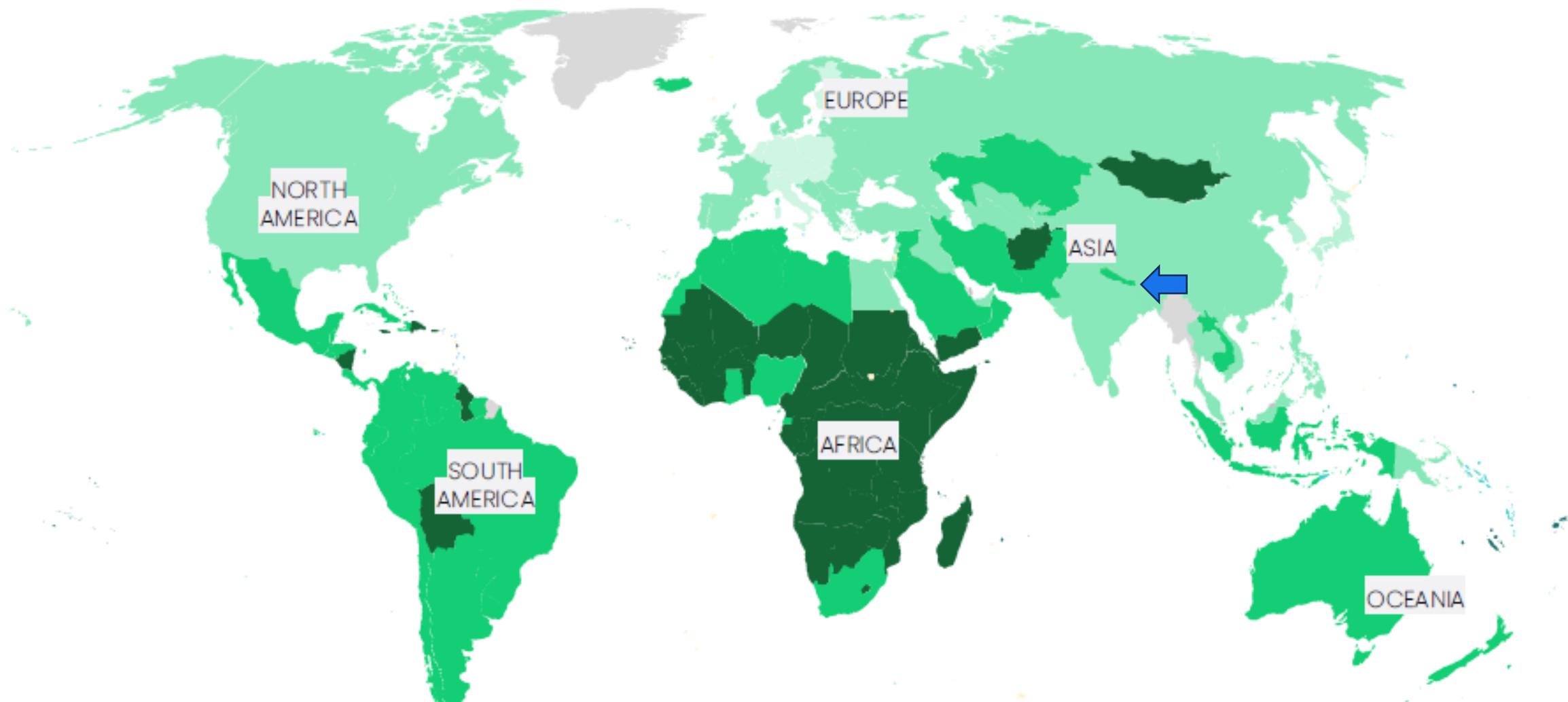


The largest dam in Nepal



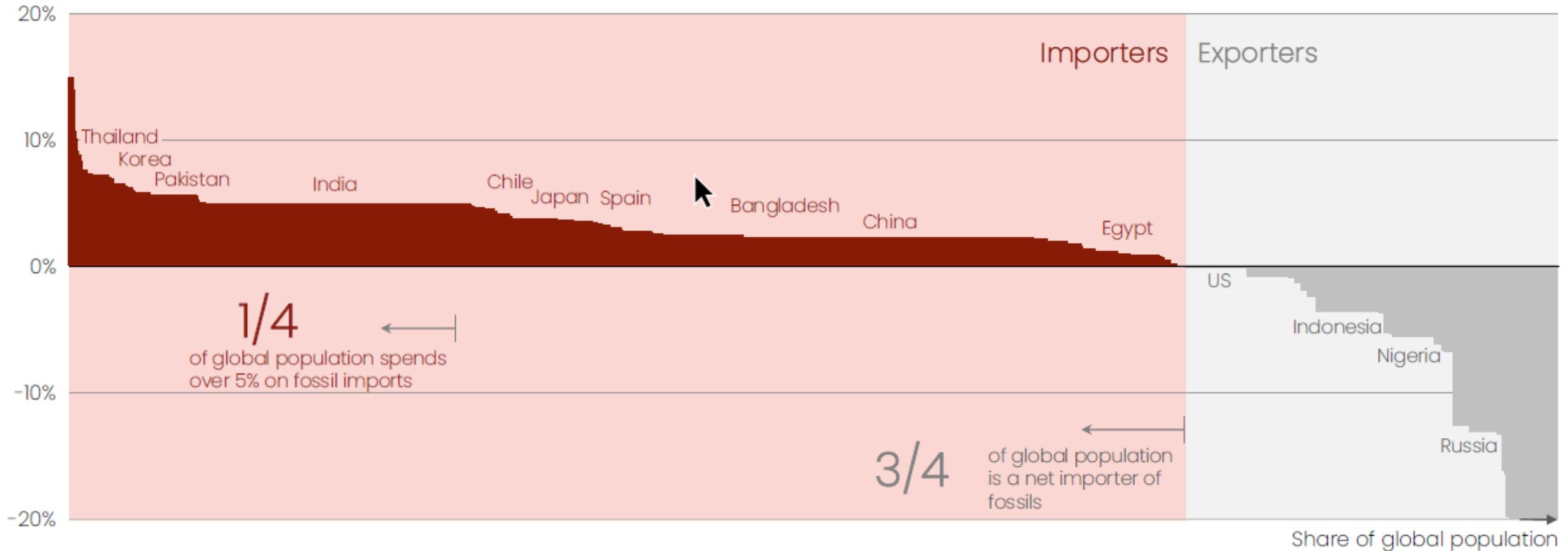
Renewable potential as a multiple of energy demand in 2022

■ Superabundant: >1,000x ■ Abundant: >100x ■ Replete: >10x ■ Stretched: <10x ■ No data



75% of Countries are Net Importers of Fossil Fuels

Fossil fuel net imports (-) and exports (+) value as share of GDP, 2022

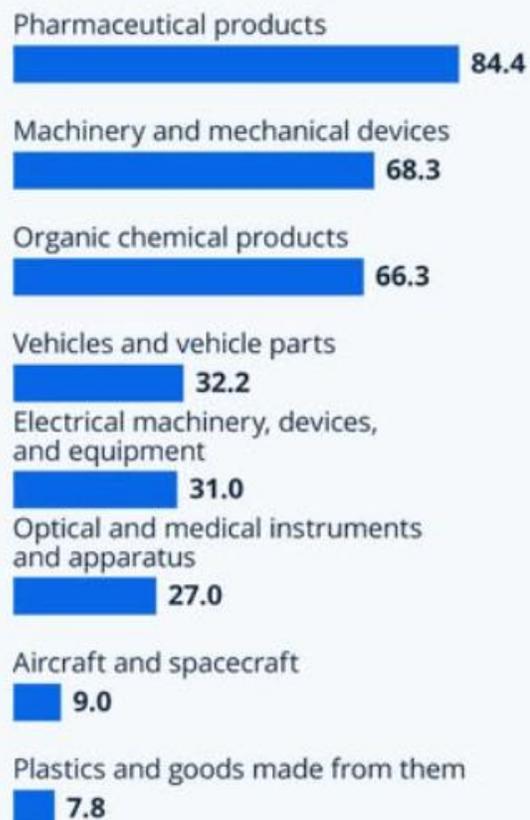


The State of U.S. Trade with the EU

Top EU exports to and imports from the United States in Q1-Q3 2025 (in billion euros)



Exports to the United States:



Imports from the United States:



Source: Eurostat

Putin Orders Preparation Of Proposals For 'Unfriendly Countries' To Pay In Rubles For Gas

By RFE/RL's Russian Service

Trump Announces New European Tariffs in Greenland Standoff; Allies Outraged

The president escalated his drive to take charge of the Danish territory, targeting Denmark and seven other European countries with a 10 percent rate.

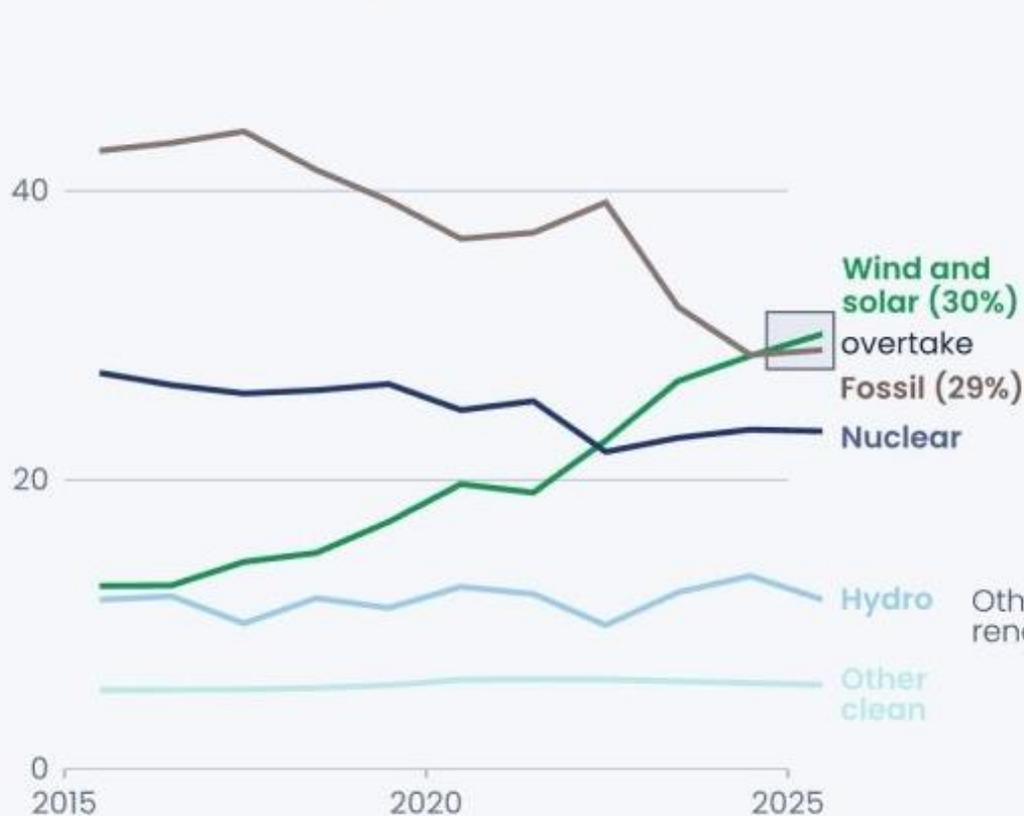
Trump Moves to Cut Off All Oil to Cuba as U.S. Takes Aim at Its Government

President Trump's threat to impose tariffs on any country that delivers oil to Cuba appeared to be directed largely at Mexico, the only nation that has sent any meaningful fuel shipments to the island.

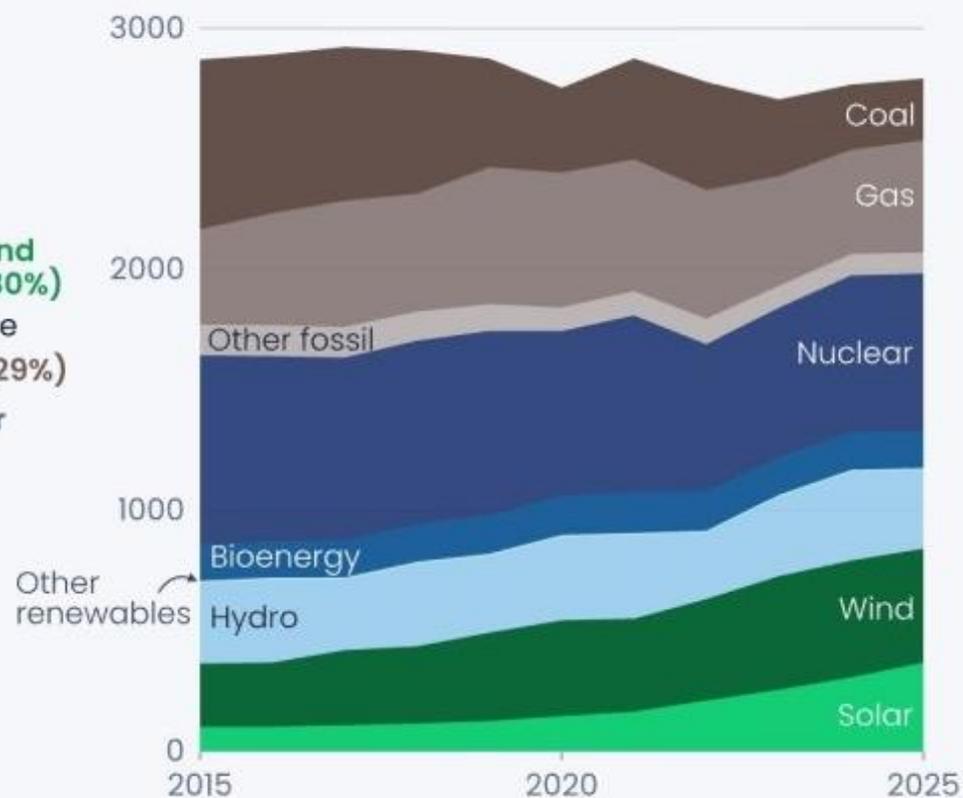
Gas not only makes the EU more vulnerable to energy blackmail, but it's also driving up prices.
- Dr. Beatrice Petrovich

Wind and solar overtake fossil power in the EU for the first time in 2025

Share of electricity generation (%)



Electricity generation (TWh)



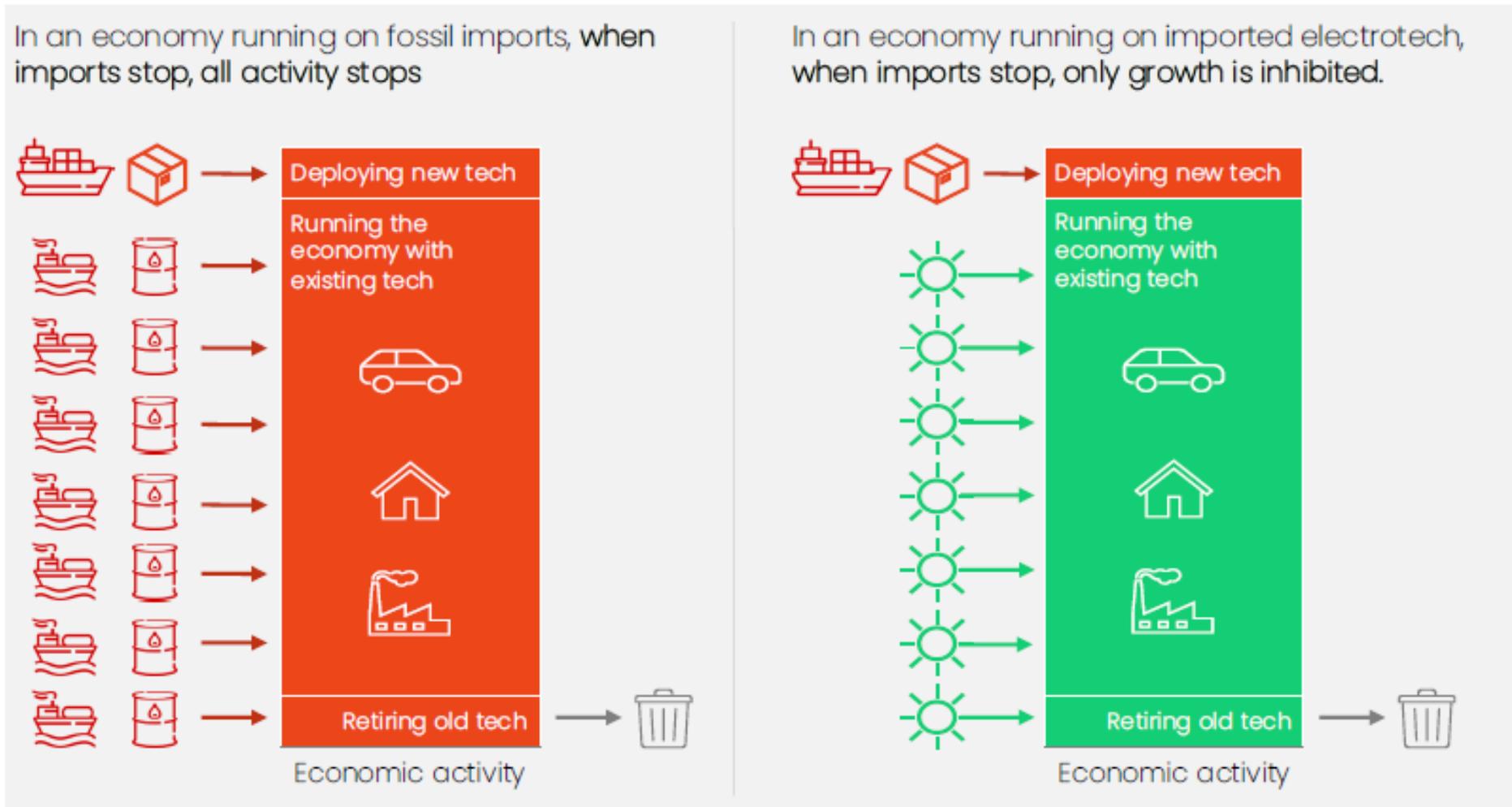
When fossil fuels stop, the economy stops.

When the electrotech flow stops, only growth is at risk

From fossil import dependency...



...to electrotech import dependency...



At immediate risks without imports

Not at immediate risk

"Many countries are drawing the same conclusions. They must develop greater strategic autonomy: in energy, food, critical minerals, in finance and supply chains.

"A country that cannot feed itself, fuel itself or defend itself has few options. When the rules no longer protect you, you must protect yourself," Carney said.



China is the first major electrostate

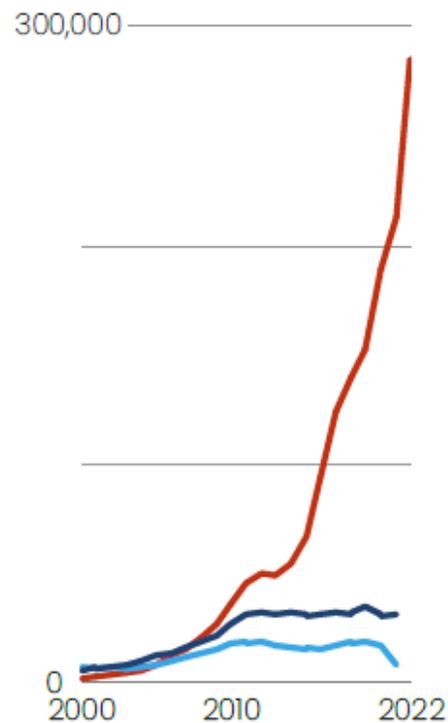
And that sparks a geopolitical race

China US Europe Other

Inventing

Patents

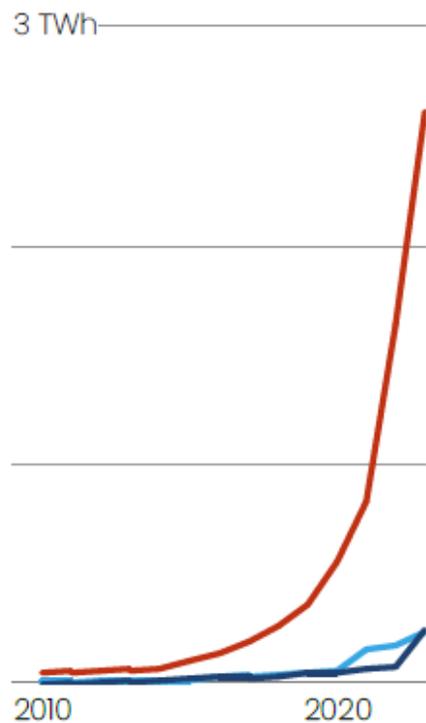
Annual cleantech patents



Producing

Manufacturing

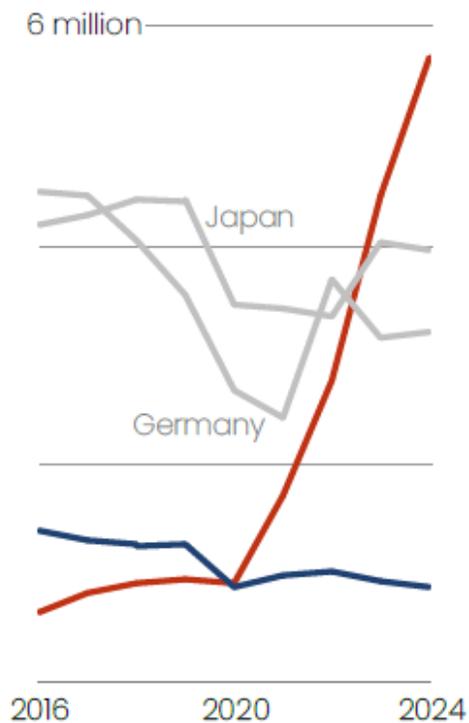
Battery manufacturing



Exporting

Cars

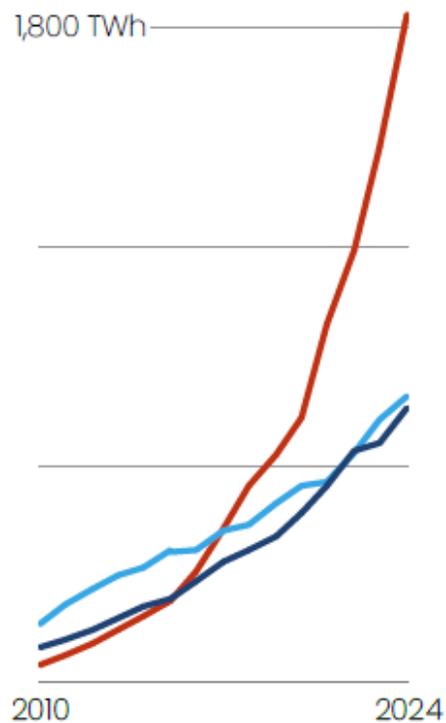
Cars



Deploying

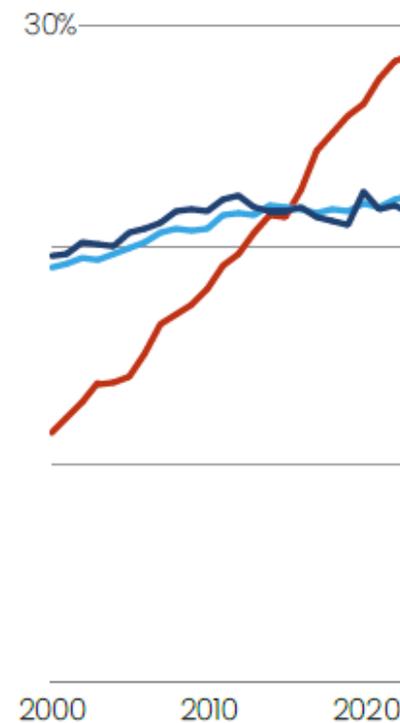
Renewables

Solar & wind generation



Electrification

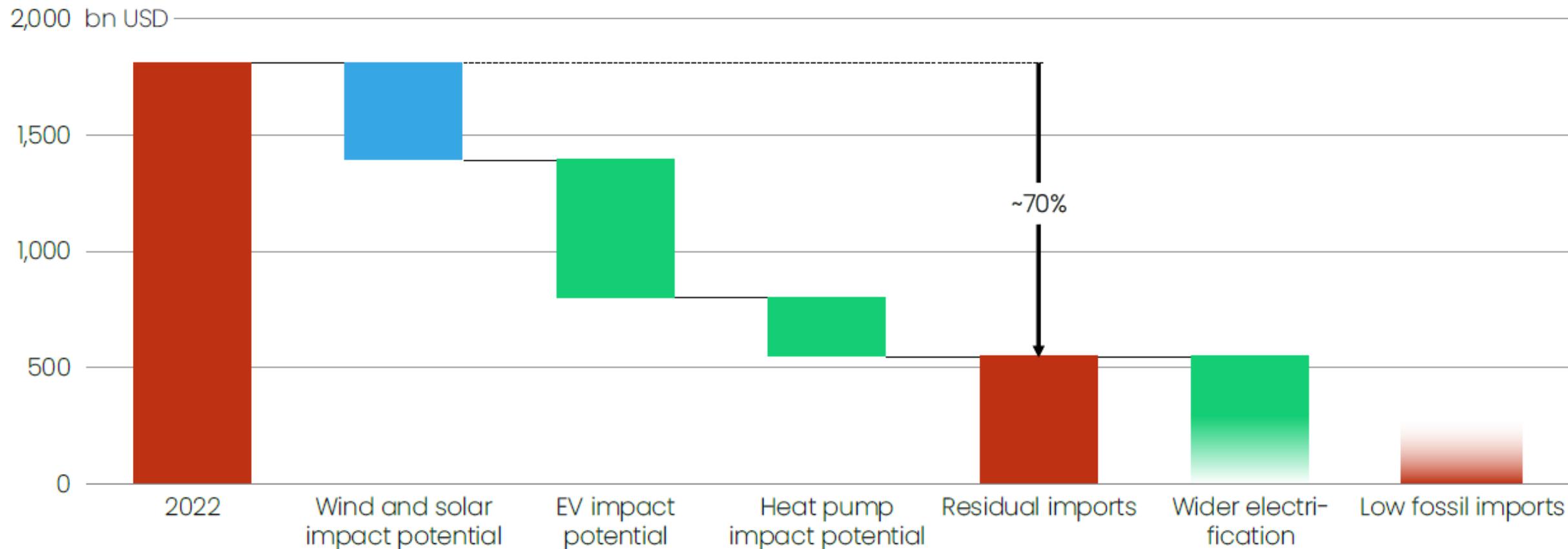
% of final energy



Renewables, EVs and heat pumps set you free

Just a few technologies can reduce global energy imports by 70%

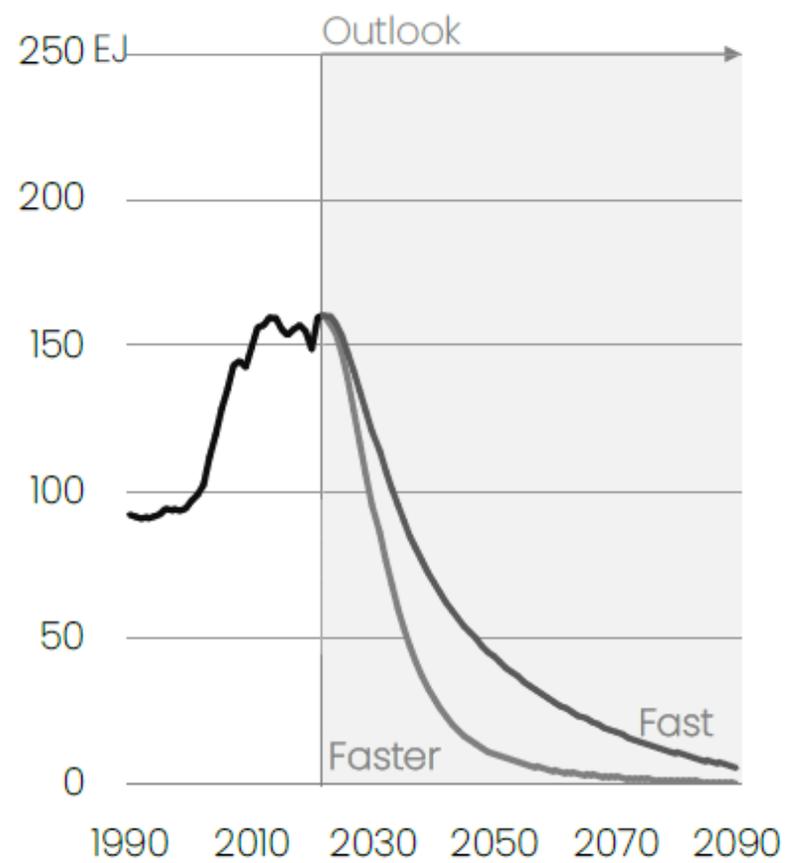
Global net spending on fossil fuels by importers



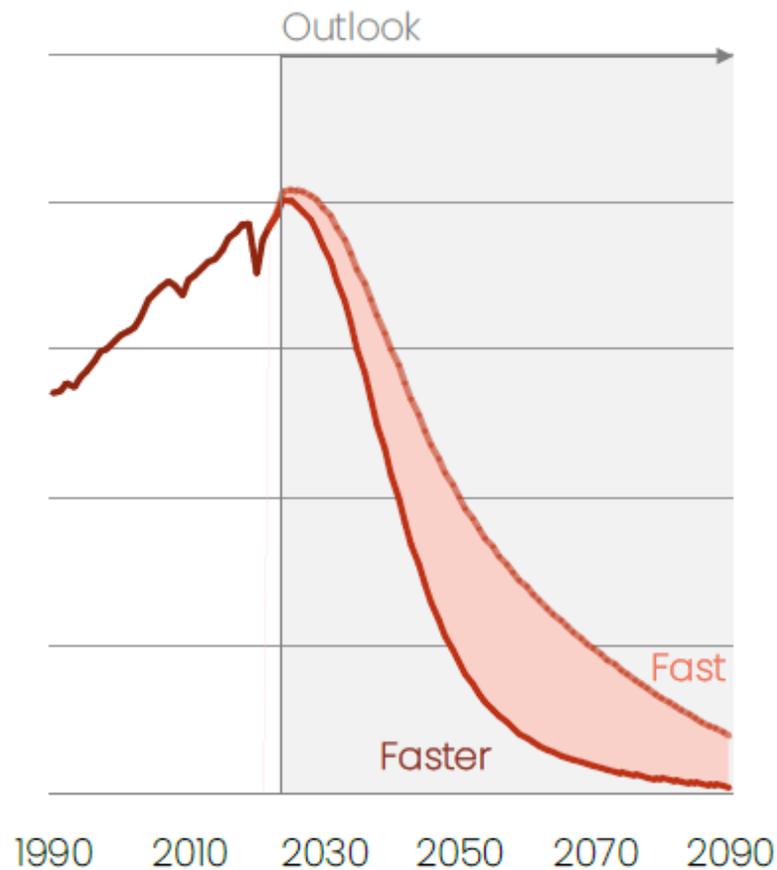
The growth of electrotech means the decline of fossil fuels

After taking all the growth by the end of this decade, electrotech will start to push fossils out

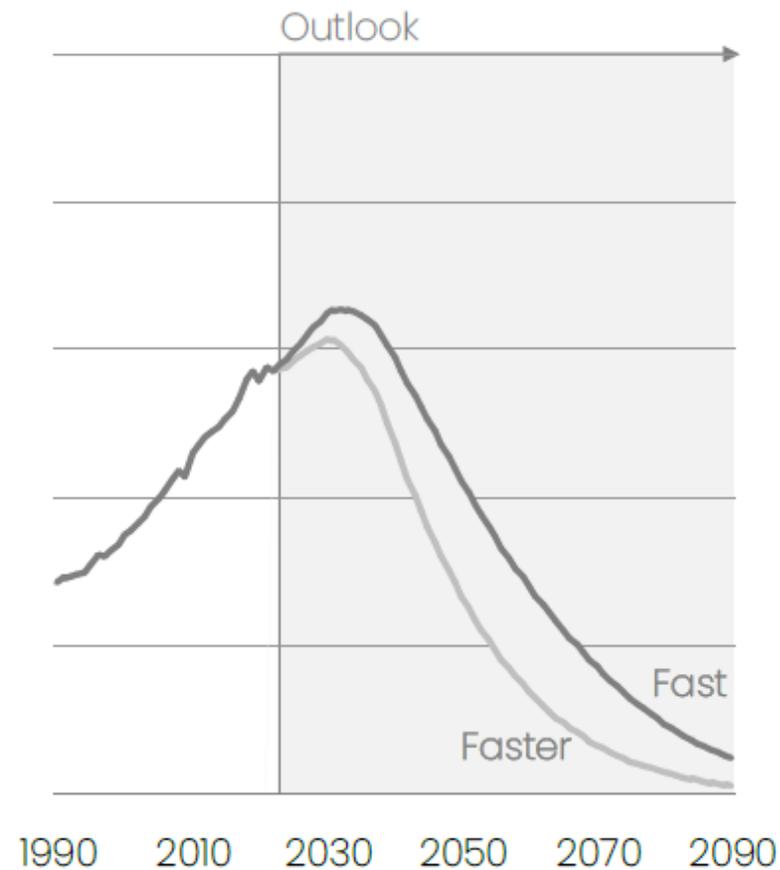
Global coal demand



Global oil demand



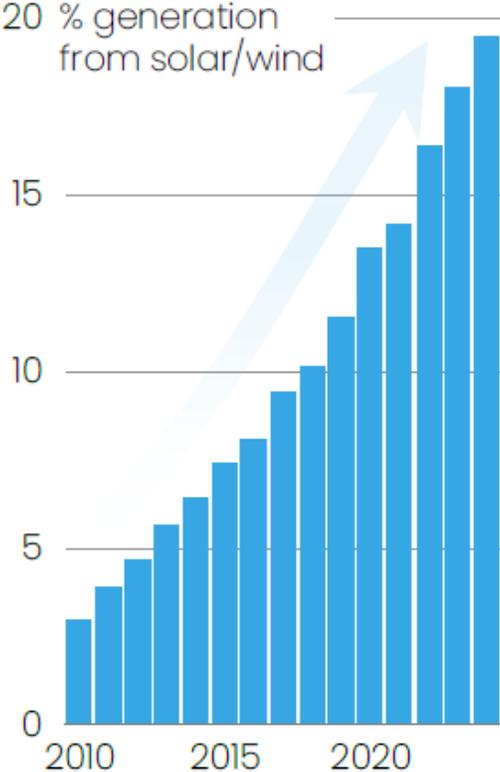
Global gas demand



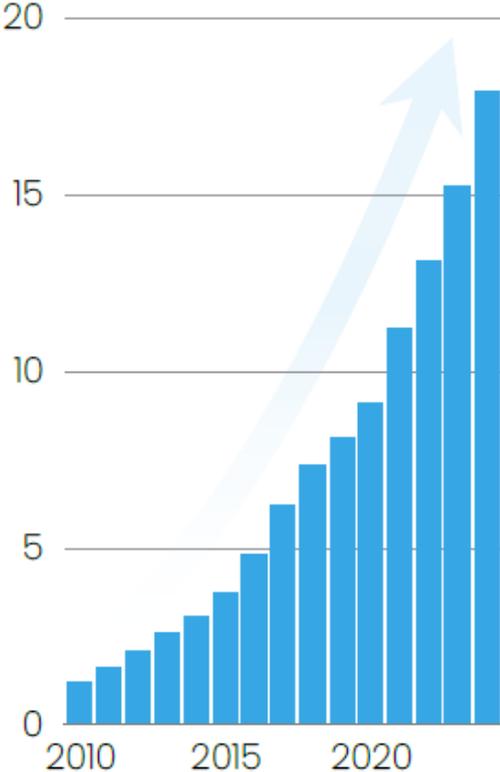
**Government
policies can
accelerate or slow
the inevitable
transition**

Different rates of adoption based on government policies

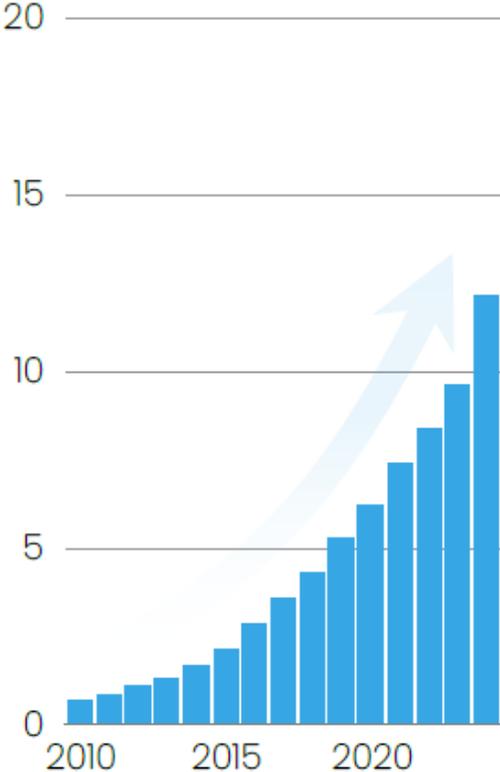
Mature markets



Greater China



Emerging markets

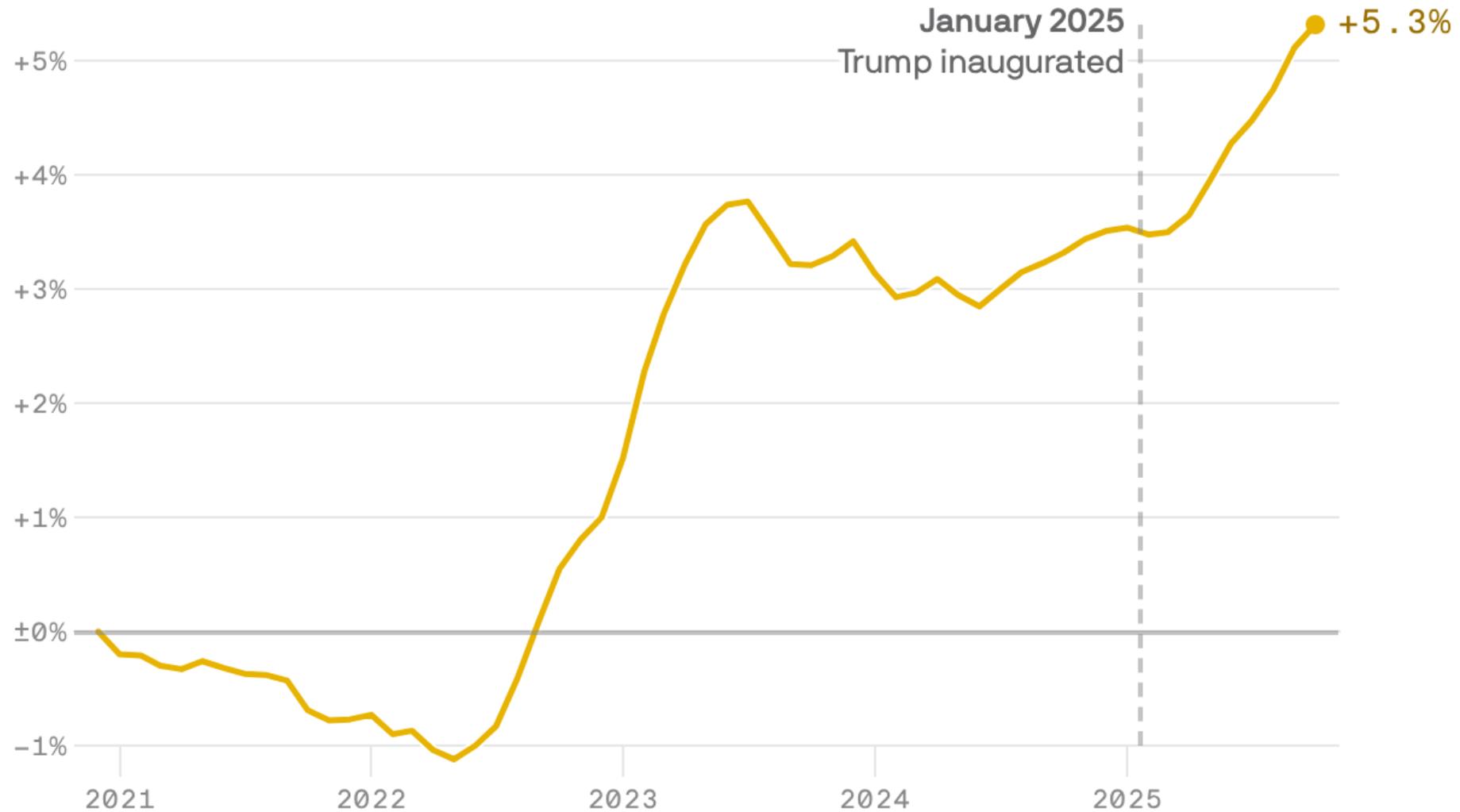


Petroregions

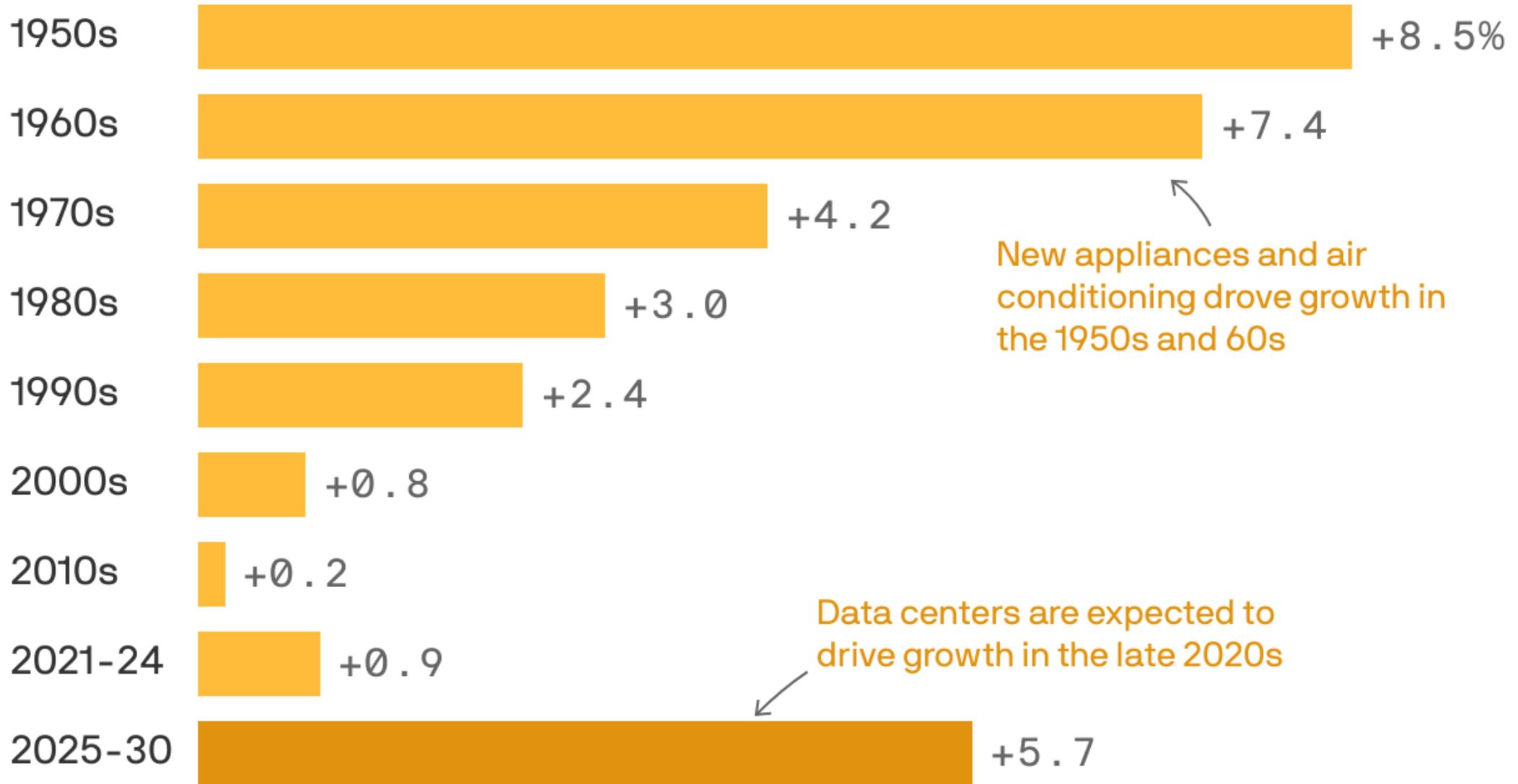


Change in the average price of residential electricity in the U.S. since 2020

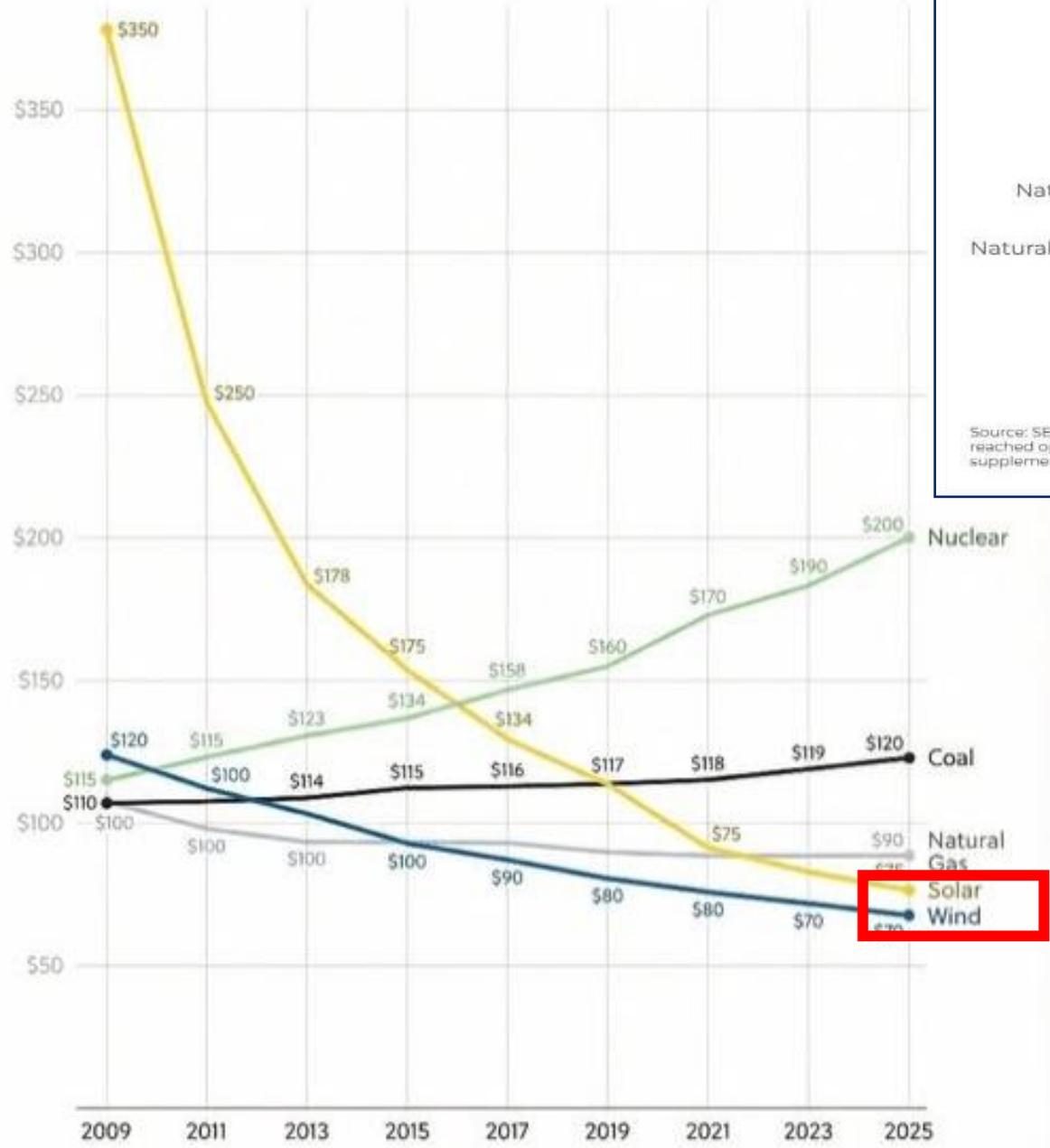
Adjusted for inflation; 12-month trailing averages, January 2021 to October 2025



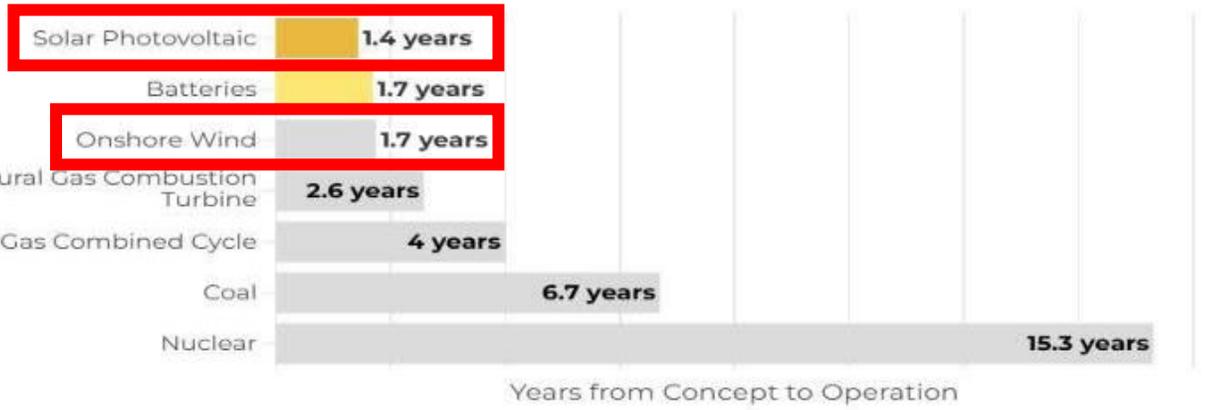
Average annual growth in U.S. electricity usage



'Cost of Power – U.S. dollars per megawatt



Average U.S. Power Plant Development Timeline



Source: SEIA analysis of EIA Form 860M data for plants that have started reporting to EIA prior to seeking regulatory approval and plants which have reached operating status. - Due to the low number of coal and nuclear plants developed over the past decade, additional desk research provided supplemental data for the last 3 nuclear facilities to come online and for all coal facilities commissioned since 2010.



Trump Administration Orders Work Halted on Wind Farm That Is Nearly Built

The order to stop construction on Revolution Wind off the coast of Rhode Island is part of a campaign against renewable energy.

Suddenly, the Trump Administration Tightens the Vise on Wind Farms

Federal agencies have recently issued a barrage of restrictions that could halt construction of solar and wind farms on public and private lands.

The Trump Administration Is Now Delaying Renewable Projects It Thinks Are Ugly

The Army Corps of Engineers is out to protect “the beauty of the Nation’s natural landscape.”

Interior Dept. to Put Wind and Solar Projects Through Stricter Political Review

Industry groups said the directive could create new delays and bottlenecks for renewable energy projects across the country.

AM BRIEFING

The U.S. Has Lost \$34 Billion in Clean Energy Projects

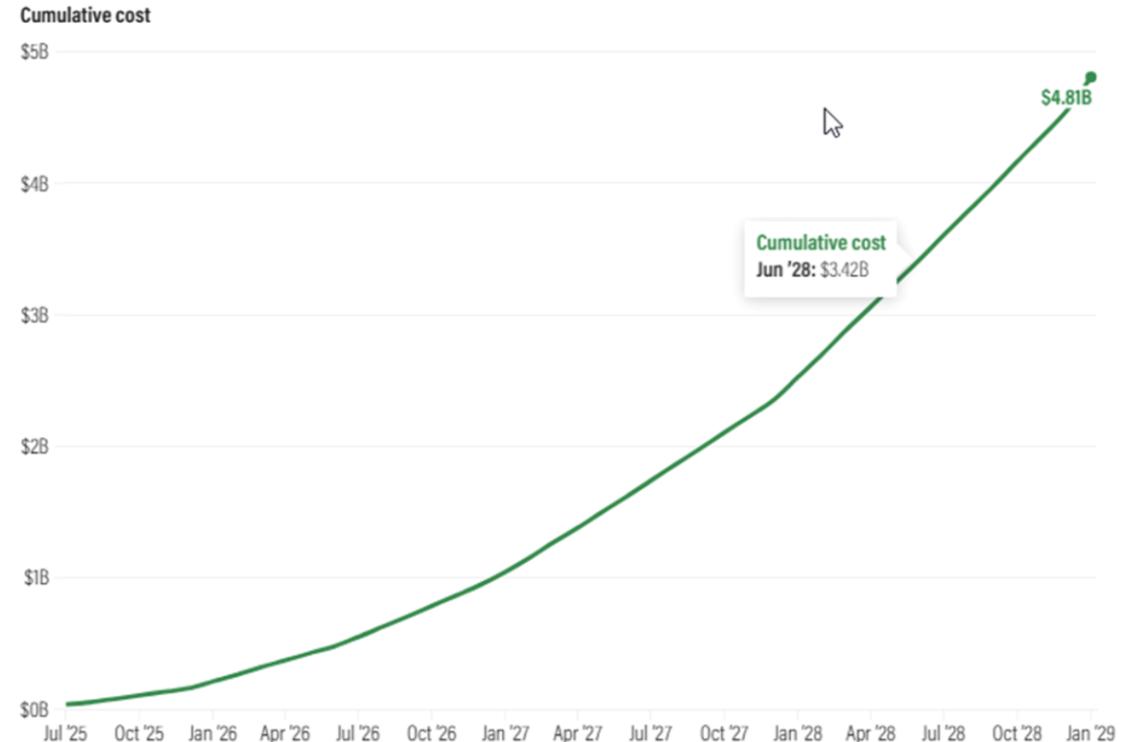
Trump Wants to Halt Almost All Coal Plant Shutdowns. It Could Get Messy.

Even as administration officials vowed this week to head off scheduled retirements, some aging plants are now breaking, and costs could run to the billions.

The Trump administration is using emergency powers to keep coal plants open even when they are not economical.

Keeping select coal plants online could cost \$4.8 billion by January 2029

Estimated cumulative cost of DOE mandates for coal plants with retirement dates through 2028, low estimate



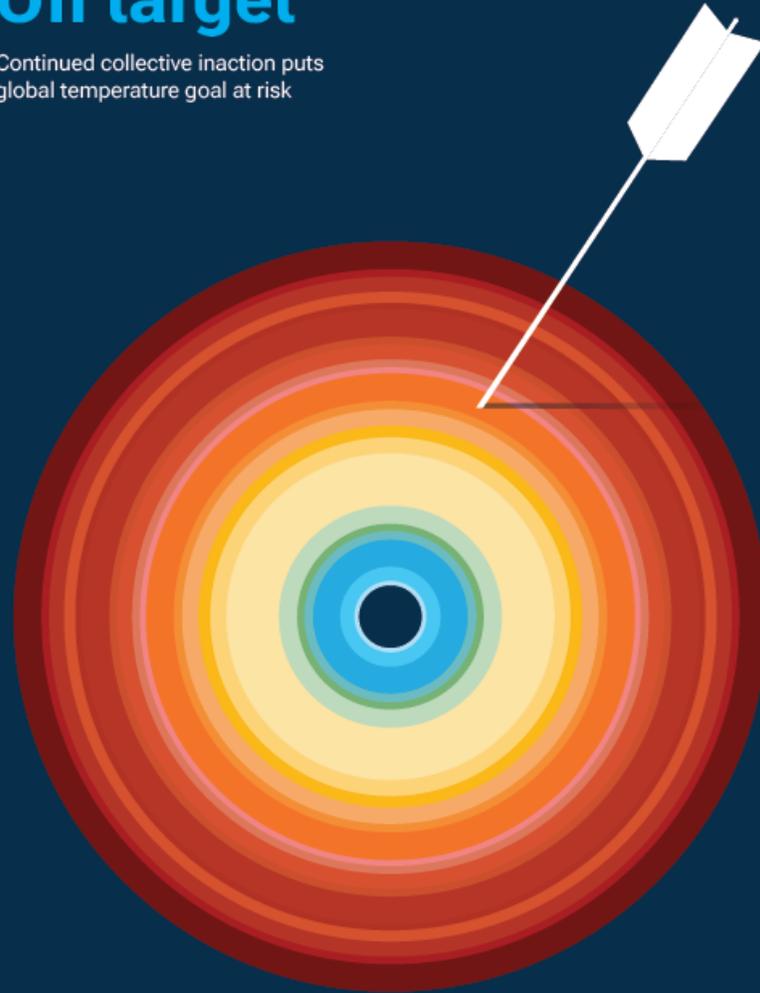
Source: Grid Strategies LLC

GridStrategies

WORLD RESOURCES INSTITUTE

Off target

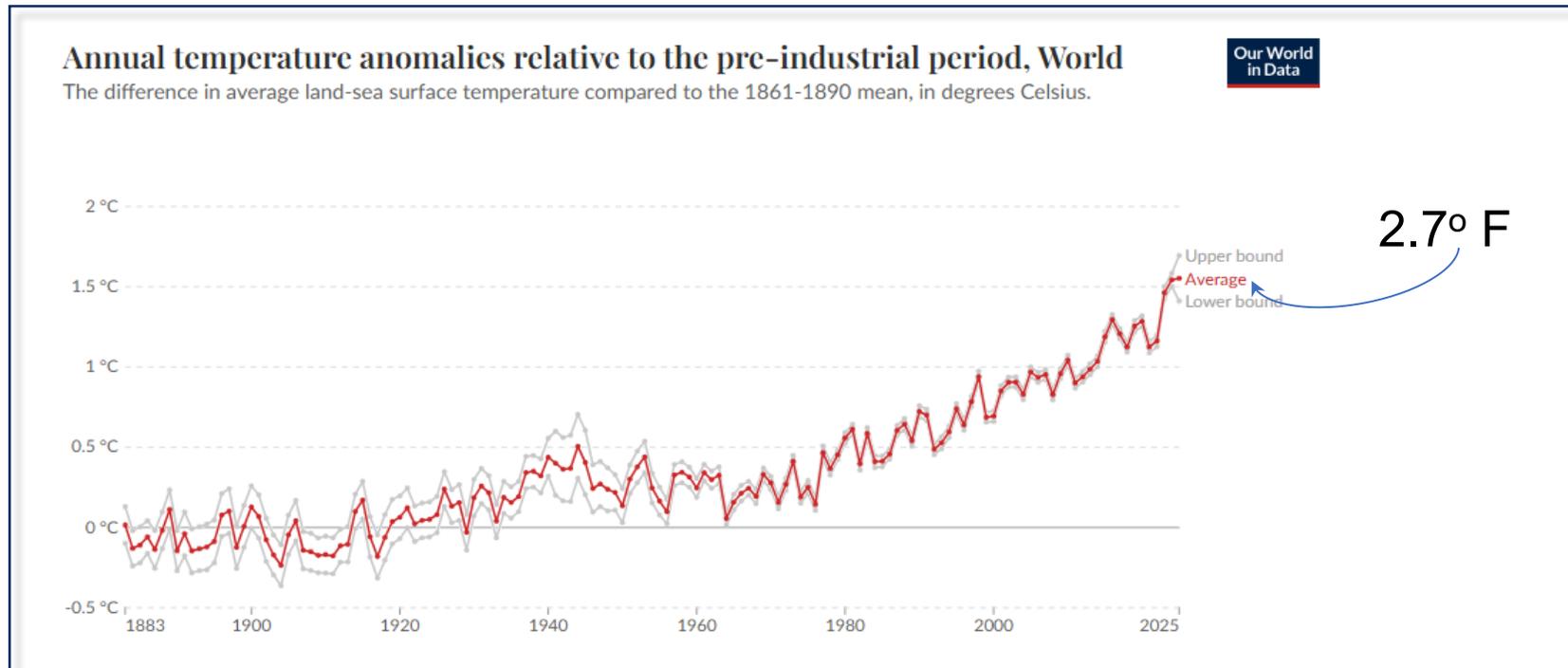
Continued collective inaction puts
global temperature goal at risk



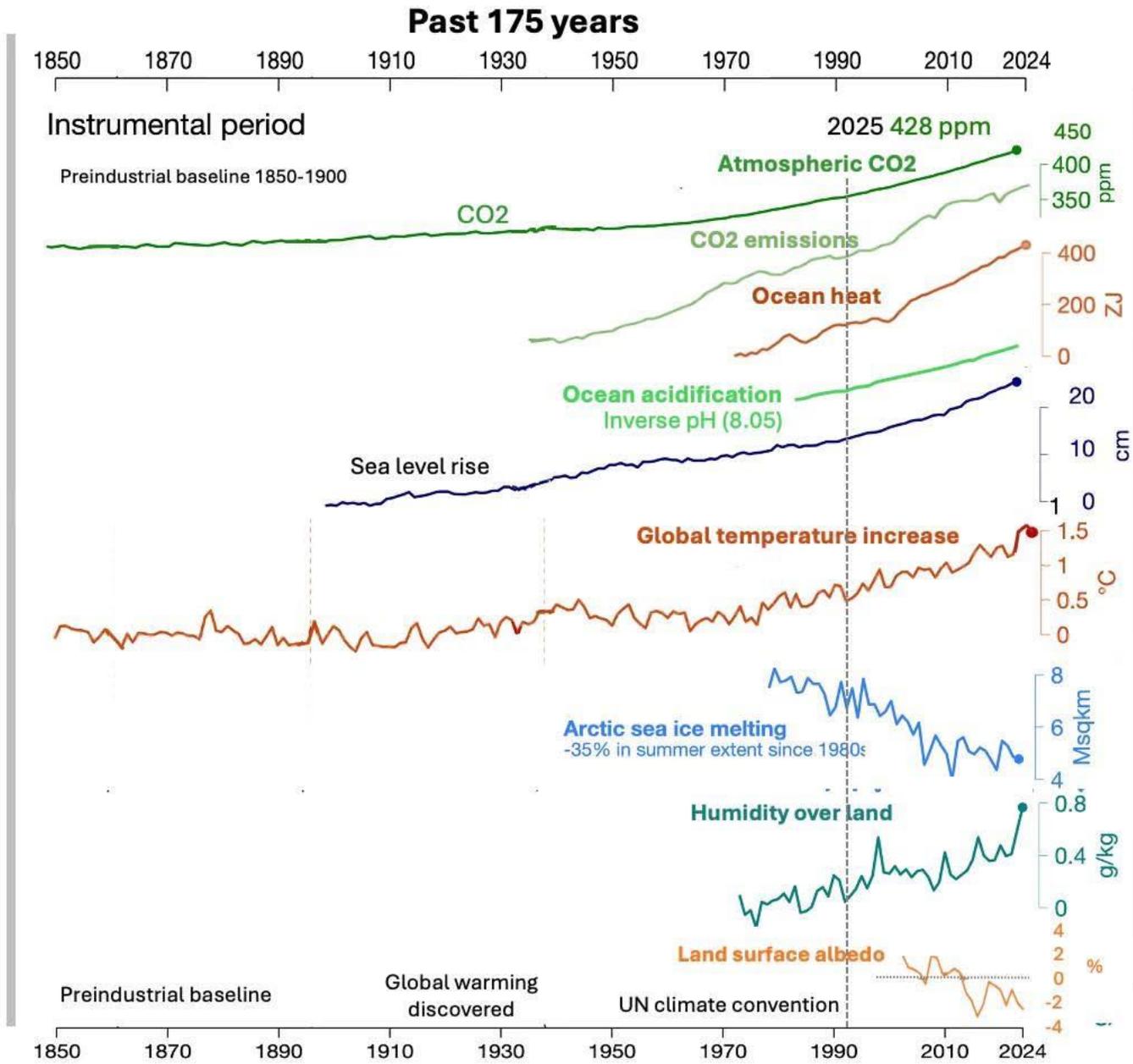
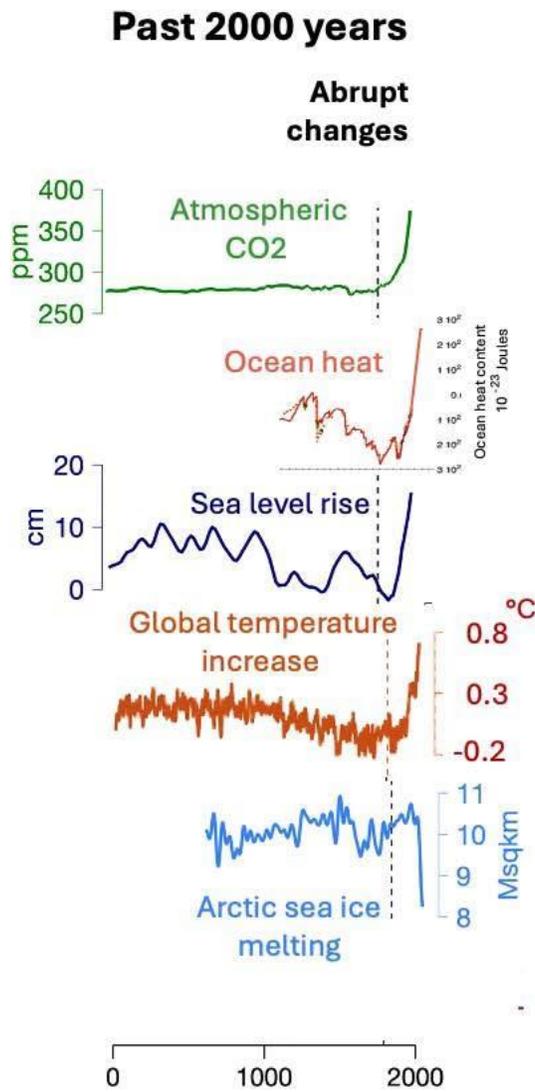
+5.9°F

MIT Sloan model based on current trends.

Temperature Increase by 2100



Surging Indicators of Catastrophic Climate Destabilization (to 2024-2025)

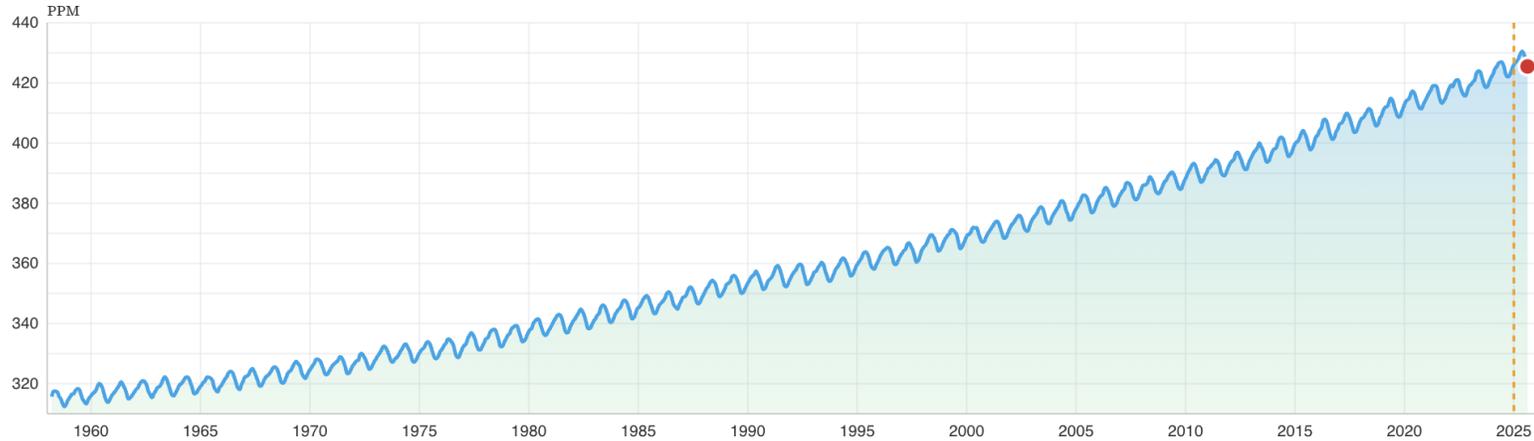


- Atmospheric CO2 increase accelerating
- CO2 emissions 2025 Rapid increase
- Ocean heat 2025 accelerating increase
- Ocean acidification Accelerating
- Sea level rise accelerating
- Global warming 2025 1.47 $^{\circ}\text{C}$ Accelerating 2024 1.55 $^{\circ}\text{C}$
- Arctic summer sea ice decline
- Humidity accelerating increase With warming dangerous humid heat
- Albedo (cooling) decline more warming

Data sources: Prof. Ed Hawkins (concept), NOAA, NASA GISS, Global Carbon Project, Copernicus, Mercator Ocean

Emissions over the past centuries will affect the climate for 500 to 1,000 years

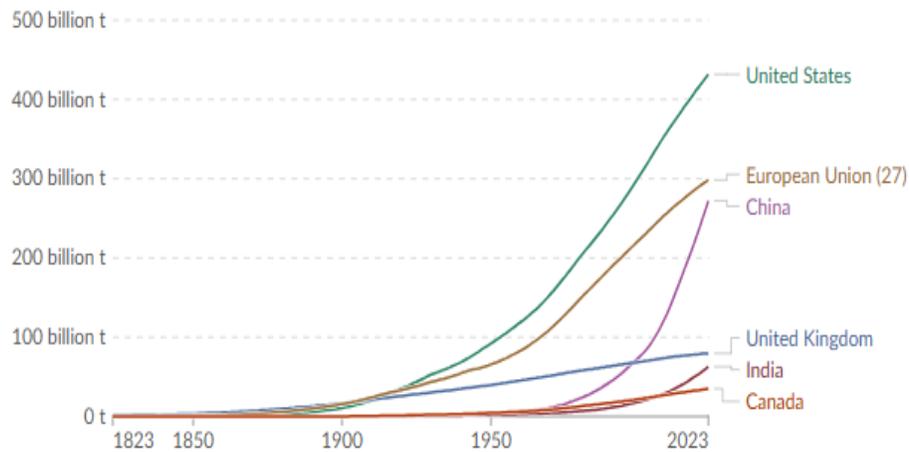
The Keeling Curve - Atmospheric CO₂ (1958-Present)



Cumulative CO₂ emissions

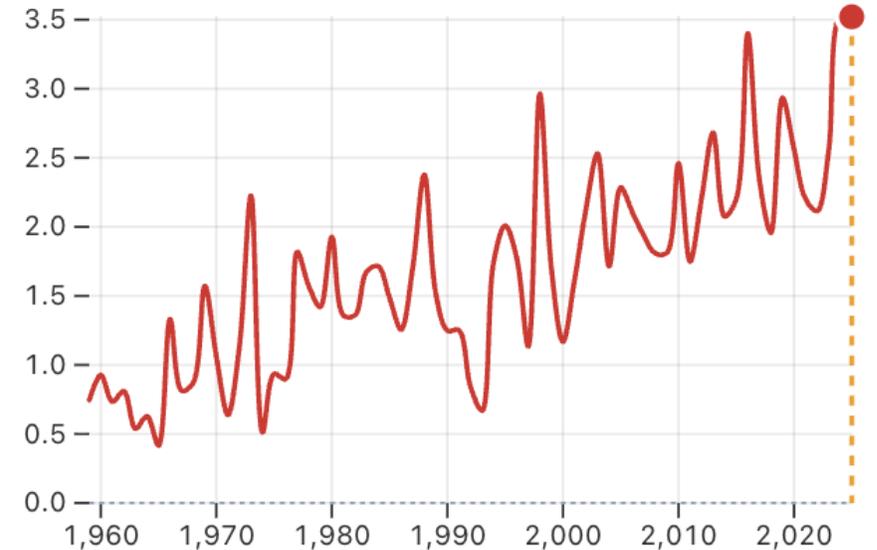
Running sum of CO₂ emissions produced from fossil fuels and industry since the first year of recording, measured in tonnes. Land-use change is not included.

Our World
in Data



Annual Rate of Increase

↑ Annual Increase (PPM/year)



Impact of Climate Change

UN Intergovernmental Panel on Climate Change (IPCC)

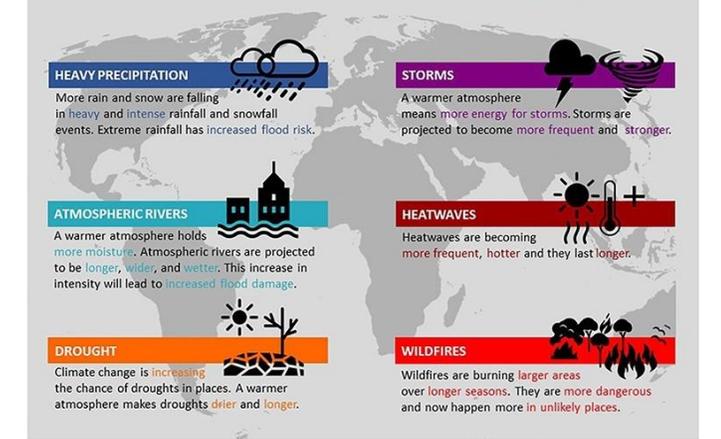
Refugee Crisis



Agriculture

Extreme Weather

More **EXTREME EVENTS** in a **warmer** world



1 million species face extinction

Naperville's Energy Situation

*Our findings show that innovative **local policies** and market-driven clean technology investments can keep the U.S. on a path toward **significant emissions reductions, even in challenging times.***

- Nate Hultman, Director at the Center for Global Sustainability



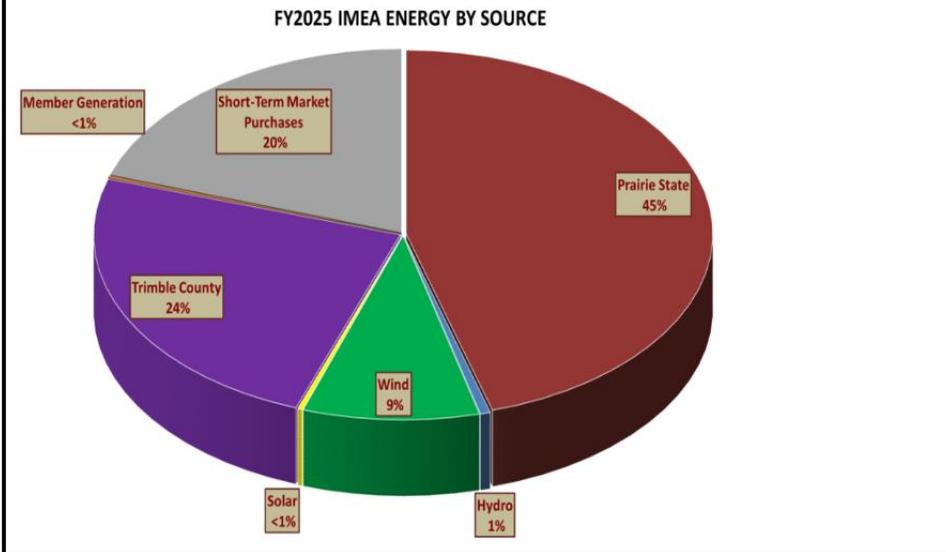
IMEA's Coal Problem

Of the electricity IMEA generated in FY25, **86% came from burning coal**

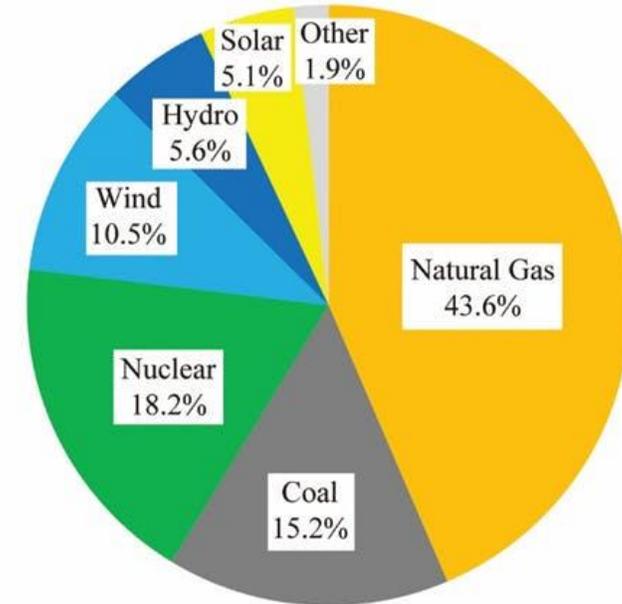
The federal government said **15%** of the national's electricity came from burning coal

IMEA Fiscal Year 2025 (May 1, 2024 thru Apr 30, 2025)

The following information was received from IMEA and shared by the Naperville Electric Utility:



US Electricity Production by Source 2024

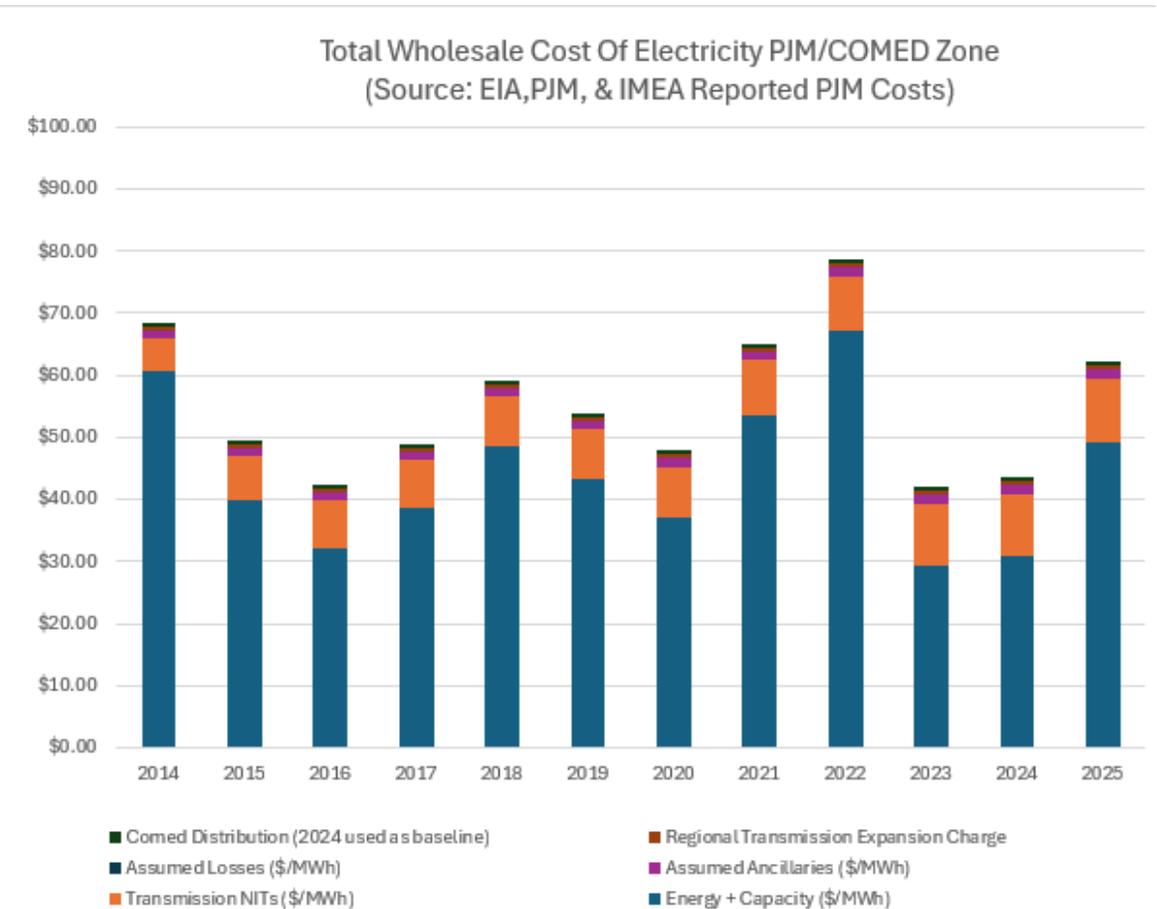
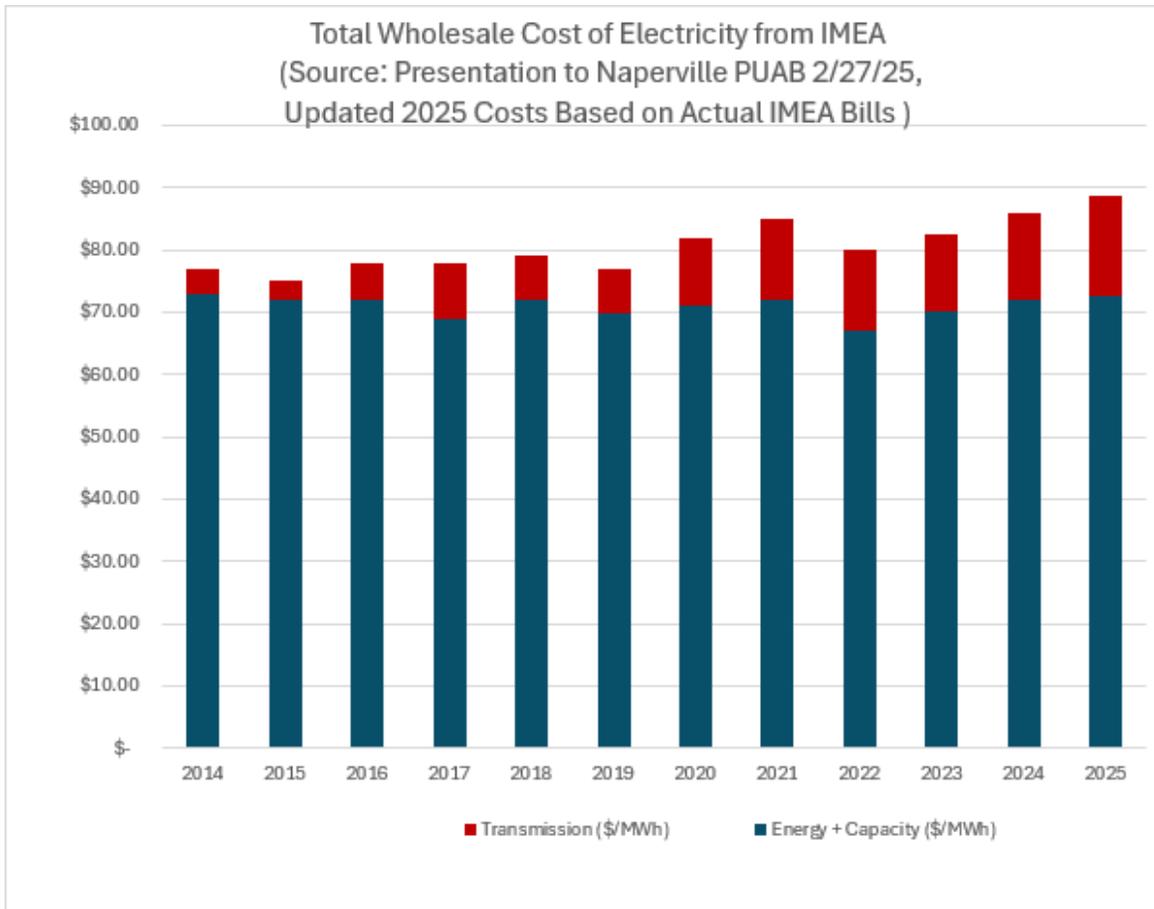


US Energy Information Administration (2025)

In 2025 IMEA \$88.84 vs Market \$62.20 MWh

IMEA was **43%** more expensive in 2025

Over the contract, ratepayers could have saved almost \$400 million

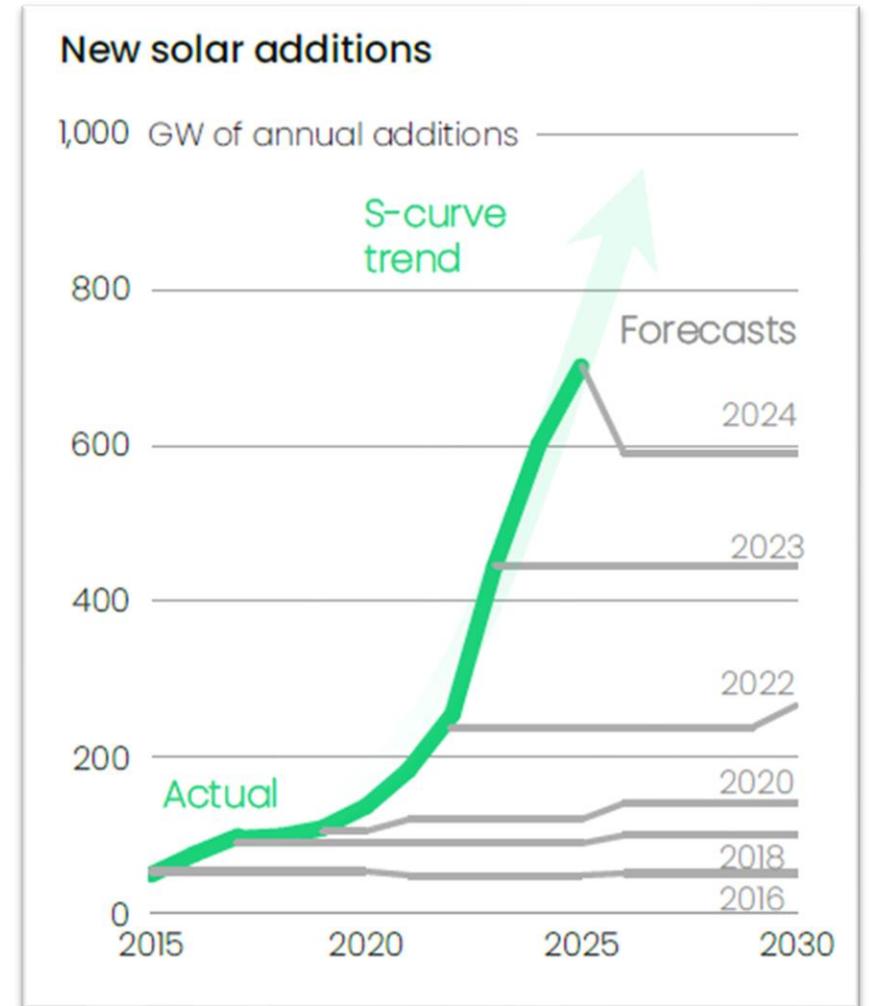
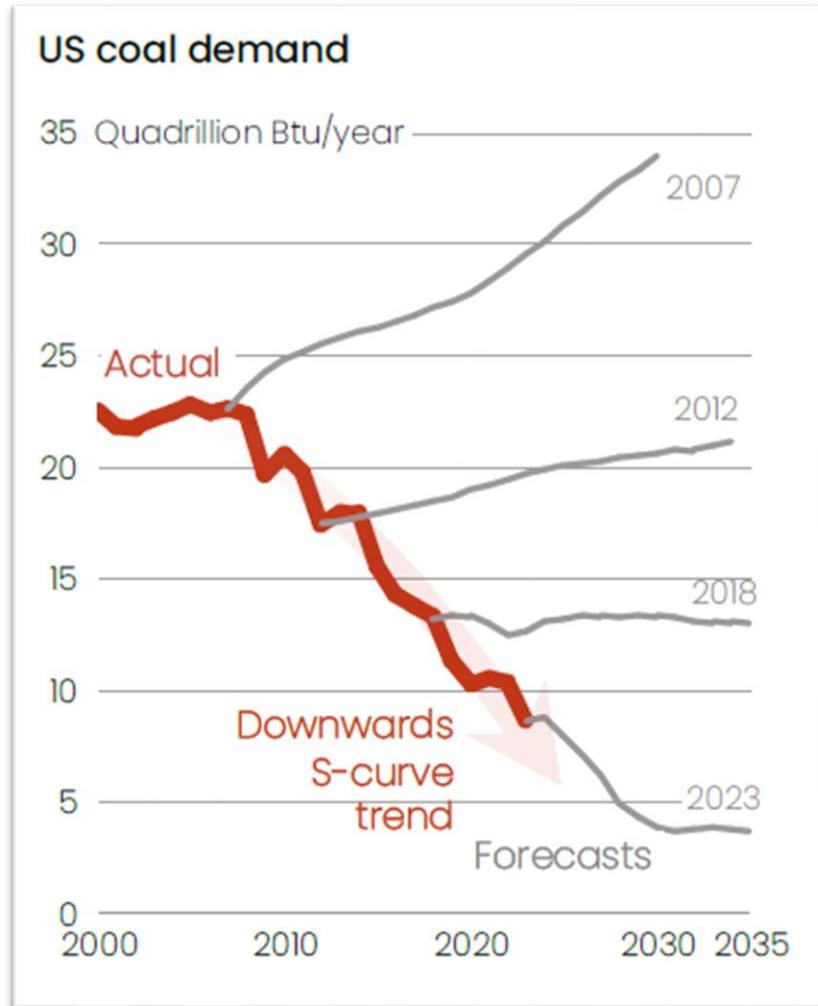


IMEA's coal plant is the **largest source of air pollution** in IL

IMEA's Prairie State Coal Plant	Impact
Largest emitter of carbon dioxide in IL	Major contributor to climate change and global warming
Largest emitter of methane in IL	Leads to smog, respiratory issues, cardiovascular disease, and premature death. Also, a powerful greenhouse gas pollutant
Largest emitter of sulfur dioxide in IL	Irritating human respiratory systems, forming dangerous fine particulate matter, and causes acid rain
Largest emitter of Nitrogen Oxides in IL	Act as precursors to harmful ground-level ozone and fine particulate matter, causing smog and severe respiratory issues

Plant name	Plant annual NOx emissions (tons)	Plant ozone season NOx emissions (tons)	Plant annual SO2 emissions (tons)	Plant annual CO2 emissions (tons)	Plant annual CH4 emissions (lbs)	Plant annual N2O emissions (lbs)	Plant annual CO2 equivalent emissions (tons)
Prairie State Generating Station	3,924	1,607	9,280	12,434,140	2,873,753	417,978	12,529,754

Even the Experts are Getting this Wrong



Like countries,
Naperville could protect
itself from some market
volatility

- Behind-the-meter
battery
- Demand / Response
- Virtual Power Plant
- Physical hedges

"Many countries are drawing the same conclusions. They must develop greater strategic autonomy: in energy, food, critical minerals, in finance and supply chains.

"A country that cannot feed itself, fuel itself or defend itself has few options. When the rules no longer protect you, you must protect yourself," Carney said.

WATCH | 'The old order is not coming back': PM says:



Takeaways

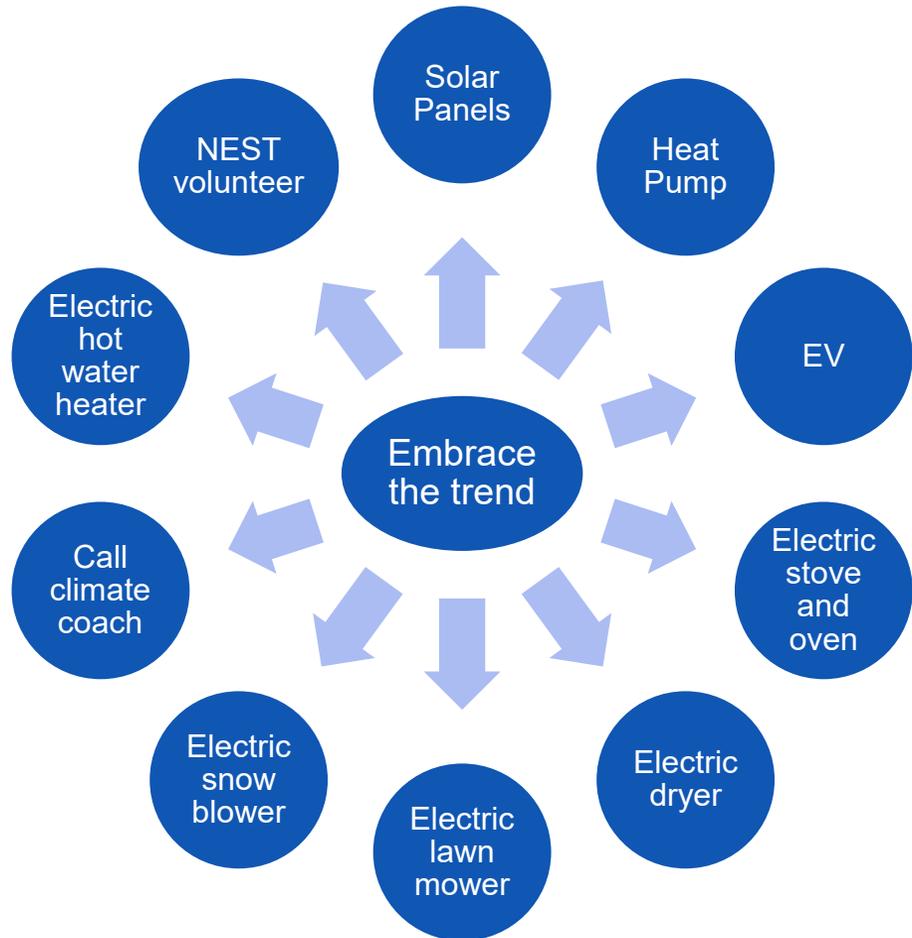
3 reasons the electrotech transition is inevitable

- Wright's law is driving down costs
- Electric devices are more efficient
- Geopolitical drivers

Naperville, like other governments, can delay or accelerate the inevitable

Climate Change is happening, and we should prepare. Our actions can reduce the impact

What you can do



Energy decisions are a political matter, so find candidates who align with your values