

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

January 22, 2024

- The Power Read -

- **Spotlight:** Geopolitical conflict in the Middle East is escalating.
 - **Oil:** Large multinational firms are keeping oil between \$50-\$70/barrel.
 - **Policy:** The US DoE is seeking project developers for Carbon Negative Shot.
 - **Climate:** US emissions decreased 2% last year while the economy grew about the same.
 - **Electricity:** Musk vs. Pizarro: will electricity consumption in the US double or triple?
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- Fossil Fuels -

- Oil -

- From AES Energy Writer of the Year [Phil Verleger](#): In the early 1970s, oil producing countries, mainly in the Middle East, began nationalizing the industry (NOCs, etc.) with little or no shareholder compensation. [This situation may be changing.](#) Large multinational firms like ExxonMobil and Chevron are **taking back control of the market by increasing output** and preventing wild price swings, working to keep oil between \$50 and \$70 per barrel, where the market is profitable for them but not for the NOCs. Coupled with accelerating carbon capture projects, this appears to be the strategy majors' will use to regain influence over oil producing countries like Saudi Arabia and lead an energy transition to a lower emission energy economy.

- Natural gas -

- In the US, to produce 6,000 cubic feet of natural gas [requires](#) about 3,000 cubic feet of natural gas (or, 1/2 barrel of oil equivalent to produce 1 full barrel of oil equivalent).

- Coal and mining -

- **Sand is the most extracted solid material on Earth.** Contrary to popular opinion, it's not an infinite resource. As a foundational material for the modern world, demand is surging (construction sand, sand for concrete, foundations for the built environment, etc.). [AES Members](#) have access to a peer-review study of sand supply chain networks.

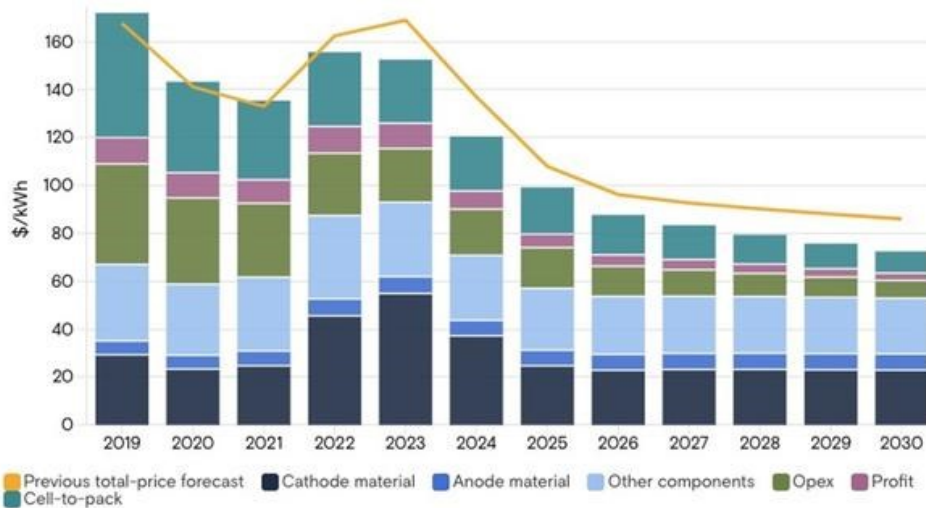


- Carbon capture and removal -

- AES recommends "[Roads To Removal](#)," an interactive and comprehensive map of carbon removal options for every county in the US, by LLNL.

No- / Low-Carbon and Renewable Energy

- It appears that **battery prices are falling faster than anticipated** (a 40% decrease by 2025; the forecast was a 33% decline). Almost all of the decline comes from [falling](#) raw material prices for lithium, nickel, and cobalt. *Insert:* global average battery pack prices. (*Note:* all costs are for packs not cells.)



- Related, **US utility-scale battery storage capacity is on pace to [double](#) this year.**

- Again related, it appears that **every dollar spent on wind and solar generation also requires [another](#) \$.80 of additional investment** in supporting technologies, like batteries or transmission lines.

- **With \$11B in financing secured, construction of a 3.5-gigawatt wind farm has begun.** It will be the [largest](#) wind development project in the Western Hemisphere when it comes online in 2026, and it will send power from New Mexico to California via a 550-mile transmission line.

- Three mines near the US four-corners (Utah, Arizona, New Mexico and Colorado) have begun **extracting uranium** for the first time in the last eight years.

- There is still time to apply for the 2024 MIT Climate and Energy Prize, a global climate tech startup competition for students at any university. [Contact AES](#) for help with the application.

- Energy Policy & Geopolitics -

- Spotlight: geopolitical conflict in the Middle East -

On October 7, Hamas attacked Israel. Since then, **geopolitical conflict in the Middle East has intensified:**

- Israel is engaged in armed conflict on four front lines (Hamas on the southern border, Hezbollah with Lebanon on the northern border, random Sunni and Shiite militant groups, and a shadow war with Iran taking place in Syria).
- The Houthis are fighting on three fronts, including against a US-led series of attacks on dozens of Houthi military sites in Yemen and attacking a US warship in the Red Sea.
- Iran fired missiles at strategic enemy targets in Pakistan, Iraq, and Syria, all of whom are allies of Iran, which makes retaliation unlikely.
- Meanwhile, US forces are still deployed in Iraq and Syria to contain the collapse of the Islamic State caliphate.
- **Note: Iran seems to be at the center of multiple wars that have the potential to escalate into a broader global conflict;** for now, global trade is being disrupted (oil tankers are being rerouted away from the Suez and around the African Cape).

- Beltway buzz -

- The SCOTUS is hearing two cases ([Relentless Inc. v. U.S. Department of Commerce](#) and [Loper Bright Enterprises v. Raimondo](#)) that **could flip the Chevron Deference**, a 40-year-old legal doctrine that provides a key foundation for modern administrative law. Meanwhile, the Justices decided that Minnesota's lawsuit accusing the energy industry of engaging in decades of deceptive marketing to undermine climate science [belongs in state court](#). Lawyers for Exxon Mobil, Koch Industries, and the American Petroleum Institute had asked the federal court to hear the case.

- **The US DoE is implementing Carbon Negative Shot** to bring carbon removal solutions to gigaton scale.

The program includes:

- First round awards for the Regional Direct Air Capture (DAC) Hubs program.
- A Notice of Intent to fund a range of carbon removal approaches, including the launch of the first-ever government carbon removal purchasing program.
- Request For Comments seeking public input about supporting CO2 removal (CDR) project developers.

- The Bureau of Land Management published the [Western Solar Plan](#), **a roadmap to develop solar power on federal land in 11 states** (Arizona, California, Colorado, Nevada, New Mexico, Utah, Idaho, Montana, Oregon, Washington, and Wyoming). All of the regions are within 10 miles of planned or existing transmission lines.

- Another federal **court ruled against Berkeley's attempt to ban natural gas**. (*Note: In 2019, Berkeley was the first city in the US to ban natural-gas in new buildings.*)

- Wilson Sonsini updated its Clean Energy and Climate Solutions Federal Funding [database](#).

- Global energy politics -

- **Africa:** The continent's [fastest growing](#) energy economies in 2024 are:

1. Niger (+12.5% this year, driven by its oil sector)
2. Senegal (+8.8%, owing in large part to growth of its oil and gas sector)
3. Rwanda (+7.5%, all petroleum products are imported)

- **Asia:** In response to its weak real estate market, China's central bank approved a 100 billion yuan loan to companies in eight pilot cities to buy commercial residential property. [Energy markets in China responded positively](#); for instance, iron ore futures, rare earth mining stocks, and steel manufacturing are all surging.

- **C/SA:** The [fastest growing](#) energy economy in the world right now is Guyana at +38.2%, driven almost entirely by its expanding oil sector.

- **Europe:** For the last full quarter, Europe's power producers generated [more](#) electricity from wind than from coal. Meanwhile, imports of natural gas continue to increase. As a consequence, concern in Europe has shifted from energy insecurity to energy [oversupply](#).

- Climate and Sustainability -

- **US emissions [decreased 2%](#) last year** while the economy grew at about the same rate.

- **The US experienced 28 disasters last year that each cost at least one billion dollars**, the [highest number](#) on record (the previous record was 2020, which saw 22 billion-dollar events). There are two reasons for the rise in billion-dollar disasters: the growing frequency and severity of extreme weather events; and, continued development in vulnerable places, such as coastlines and fire-prone areas.

- **Oceans absorb 90% of excess** global warming. (*Note:* in 2023, oceans absorbed record levels of heat. [AES Members](#) have access to the peer-reviewed research.)

- **Parts of the East Coast are sinking** at about .06 inches per year (and, the three main airports for New York City are sinking at 2mm/year). In addition, sea levels are also rising along the East Coast. [AES Members](#) have access to the peer-reviewed research.

- Research and Markets -

- "[Charging Deserts](#)" (*noun*), def.: areas that lack widespread access to EV chargers, typically 150 miles or more between charging stations.

(*Note:* most charging deserts are in rural or impoverished regions.)

Map: black = a region with high density chargers; purple = low density in a rural region; red = low density due to economics.



- Related, the Biden administration is [releasing \\$623 million from the \\$7.5 billion pot of infrastructure funds to support development of EV charging stations](#). The largest portion of the grant, \$252 million, is for hydrogen fueling stations in Texas, Colorado, California, and New York.

- Related, the national average **cost of charging an EV (measured as an equivalent to gasoline price) is \$1.41 per eGallon**, about [half](#) the current gasoline price of \$3.09.

- **The energy transition in the Texas Gulf Coast (Houston), spotlight on [hydrogen](#):**

- The Texas Gulf Coast region produces one third of US hydrogen gas annually.
- The TGC has 48 hydrogen production plants supported by 900 miles of hydrogen pipelines (more than half of all H2 pipelines in the US, and one-third of the world's hydrogen pipelines).
- The hydrogen hub in TGC (1 of 7 in the US), will produce hydrogen at scale using natural gas and renewable energy sources.

- Electricity & Power -

- AES recommends a classic debate between Elon Musk vs. Pedro Pizarro, Chair of the Edison Electric Institute ([YouTube](#)). **Musk believes that future electricity growth in the US is a black swan event**; all forecasts should be *tripled* to accommodate the electrification of transportation and the conversion of heating and cooling from natural gas to electric power. Pizarro's forecasts are more conservative; he believes that all forecasts should be *doubled*, only because he believes the conversion to EVs and all-electric appliances will take a lot longer.



- **Basically, [all growth](#) of US electricity generation through 2025 will come from solar.**

- Related, solar photovoltaic and concentrated solar power systems (without integrated thermal energy storage) are variable renewable energy resources with output that depends on the time of day, season, and weather. These solar systems have a 12-29% capacity factor (aka the ability to reliably meet demand), so **an ISO's interconnection request from solar sources should be about 3 to 8 times [more](#) than what is needed to meet demand.**

- Universities in the Spotlight -

- A **Caltech** team launched a solar power demonstrator ([SSPD-1](#)) into space to demonstrate and test three space solar power technologies.

- **Drexel University** engineers are adding [reinforced fibers](#) to concrete, a living tissue system of self-healing bacteria that can repair the concrete's own cracks and damage.

- **Georgia Tech** engineers used [water](#) to slow degradation of metal perovskite solar cells.

- **University of Arkansas** is building a [graphene](#) harvesting device.

- **American University** professor Joshua Goldstein, who co-wrote *Nuclear Now* with filmmaker Oliver Stone, was [interviewed](#).

- Quotes -

A transition to a cleaner energy economy is harder than it looks.

"The immediate economic incentives on the farm don't always align with making the right decisions for the climate."

– New York farmer Ariana Taylor-Stanley, telling members of the US House of Representatives that she knew planting trees on her farm would help sequester carbon, but she couldn't afford it without conservation assistance

"We have determined that there is a low correlation between renewable energy investment and voting on renewable legislation."

– Study conducted by Nathan Jensen and Isabella Steinhauer, University of Texas, Austin, on the relationship between investment in clean energy and voting patterns

"Any levelized comparison of renewable energy must take into account the cost to store that energy in a battery. Those two totals — that is the true cost of renewable energy."

– *The Economist*, Sept. 21, 2023

"Sand mining is the biggest sustainability issue you've never heard about."

– Zachary Sickmann, geoscientist at the University of Texas, Dallas

- Bulletin Board -

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- **Clearpath** has excellent [primer resources](#) on Ag-Tech, CCUS, Water-Tech, Industrial Fuel...

- **Honeywell's Sustainable Building Technologies** (SBT) is hiring for a global [Senior Director Solutions Architect](#).

- **Ubiquitous Energy**, a leader in transparent solar technology, is [developing](#) energy generating windows and door products.

- **Orrick** has a recorded [webinar](#) on the Inflation Reduction Act, with emphasis on hydrogen.

- **Sunrun**, a residential solar and battery storage installer in the US, has partnered with Ford to launch a new [home electric vehicle \(EV\) charger](#) compatible with any EV model.

- Gratitude -

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