

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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AMERICAN ENERGY SOCIETY

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- The Power Read -

- **Fossil fuels:** Spotlight on CTFs.
- **Mining:** 600 students enroll in US university mining degree programs each year; 44 universities in China are dedicated solely to mining.
- **Low-carbon:** The low-carbon energy economy is becoming privately owned.
- **Policy:** Biden will veto the solar tariff bill passed by Congress.
- **State policy:** The US Gulf Coast property insurance market is collapsing.
- **Climate:** China's "war on pollution" is working.
- **Climate II:** Ocean temperatures are setting records.
- **Quotes:** Unsubstantiated and source-less rumors.

- News from the Society -

- The energy sector is hiring! There are thousands of unfilled jobs. [Contact us](#) if you're curious about new professional opportunities, including openings at Schneider Electric. Or, [join the SE talent community](#) to hear about more job opportunities.

- *Recommended event:* [Tribal Energy Equity Summit](#), May 22 - 25, 2023, in Ojibwe & Dakota Territory, St. Paul, Minnesota.

- *Recommended resource:* [Developing a Robust Hydrogen Market in Texas](#), by the Baker Institute's [Center for Energy Studies](#) at Rice University.

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- Fossil Fuels -

- Oil -

- Spotlight on commodity trading firms (CTFs):

- *What is a CTF and what do they do?* Commodity traders have a [critical role](#) in the global energy supply chain. These firms help bridge gaps between producers and consumers and balance supply and demand. They must be aware of both micro- and macro- factors (economic cycles, geopolitical developments, technologies, etc.)
- *Who are CTF customers?* Through structured transactions, CTF's provide various forms of financing and risk management services to their customers, like futures exchanges as well as national governments like the United States.
- *How big is the industry?* Two of them, Vitol and Trafigura, [sell](#) about 8.1 million barrels of oil each day, or about the combined exports of Saudi Arabia and Venezuela. Or, Vitol's revenues are about twice as much as Apple Inc.
- *Why are we hearing about them now?* Commodity trading firms were operating in relative obscurity until the recent IPO by Glencore put trading houses in the spotlight.
- *What is the future of CTFs?* There is a new trend in oil commodity trading led by ExxonMobil, which is creating its own global trading division.
- *What CTFs are the biggest in energy?* The four most [profitable](#) oil-CTFs are:
 1. Vitol (\$15 billion profit in 2022)
 2. Trafigura (\$8.5 billion)
 3. Gunvor (\$5.4 billion)
 4. Mercuria (\$4.9 billion)

- Natural Gas -

- The 5 largest gas reserves, by country:

1. Russia - 38 trillion cubic meters
2. Iran - 32 tcm, or 16% of the global total
3. Qatar - 25 tcm; the 2nd largest LNG exporter in the world
4. Turkmenistan - 19.5 tcm; production totals are very low
5. US - 13 tcm; the top producer and exporter of LNG

- Coal and Mining -

- Each year, about **600 students enroll in a US university mining degree program**. By comparison, there are 44 universities in China solely dedicated to mining. *Below:* a list of accredited US mining engineering schools:

[University of Alaska, Fairbanks](#)
[University of Arizona](#)
[Colorado School of Mines](#), (ranked #1)
[University of Kentucky](#)
[Michigan Tech](#)
[Missouri University of Science & Technology](#)
[Montana Technological University](#)
[University of Nevada, Reno](#)

[New Mexico Tech](#)
[Penn State University](#)
[South Dakota Mines](#)
[University of Utah](#)
[Virginia Tech](#)
[West Virginia University](#)

Source: Mining Schools Act of 2023 - S.912

- Carbon Capture -

- **Oceans** contain about 50 times more CO₂ than the atmosphere.



- Recommended resource -

- AES recommends an online, interactive, and comprehensive [map](#) of China's key energy infrastructure.

No- / Low- Carbon and Renewable Energy

- **Private equity firms like Carlyle and Brookfield are financing a significant proportion of the energy transition.** As a result, the energy economy is gradually transforming from one dominated by publicly traded fossil fuel companies into one dominated by privately held low-carbon companies that may operate with less oversight of their finances and operations by regulators and the public.

- Storage: Depending on their duration, **different storage technologies are best-suited for different problems.** The optimal storage technologies for a range of durations:

- Li-ion: for intraday (<24 hours) peak-shifting and grid stability.
- LDES: for overnight power needs and periods of poor conditions for variable renewables, such as storms.
- Gas [peakers](#): for the natural variability of solar and wind between seasons and increasingly frequent extreme weather events. (However, because they're designed to fire up quickly in response to spikes in energy demand, peakers are incredibly inefficient; it takes 50% more natural gas to operate peaker plants compared to combined-cycle plants that provide baseload power.)

- Hydropower. **The construction of large dams (including pumped hydro) has decreased** significantly, from a late-1970s peak of about 1,500 a year to 50 per year today.

- EVs. **Electric vehicles are hundreds to thousands of pounds heavier** than similarly sized ICE gas vehicles because EV batteries are much heavier than engines.

- Nuclear. **Vogtle Unit 3 in Georgia reached initial criticality for the first time**, meaning operators have successfully created a nuclear reaction and produced heat needed for creating electricity. Note: the 1.1 GW plant won't be fully online until May (or June).

- Solar. The IRS has determine whether solar, storage and other renewable energy projects qualify for a bonus tax credit for using enough domestic content ([Notice 2023-38](#)). Note: the **qualifications are more complicated than expected**, making it harder for projects that use any components that contain any imported parts.

- Energy Policy & Geopolitics -

- Beltway Buzz -

- **Congress must make a decision on the US debt ceiling by June 1**, which means that Congress must make decisions about permitting reform and revisions to the IRA, too.
- Related, **Senator Manchin (D, WV) is trying again with another bill that would speed permitting of both fossil fuel and renewable energy projects**. The legislation, which largely mirrors Manchin's proposal that failed to pass the Senate last year, would set a limit of two years on environmental reviews of major federal energy projects and one year for smaller ones, reduce court delays, and direct the president to prioritize at least 25 high-level energy projects. The White House has announced it supports the newest permitting bill.
- **The US EPA has issued a waiver that will allow the sale of higher-ethanol E15 (15% ethanol) gas blends during the summer**, when it is typically restricted. EPA Administrator Michael Regan said the ongoing war in Ukraine required the waiver.
- **President Biden will veto a bipartisan bill aimed at reinstating tariffs on solar imports** from four Southeast Asian countries. The Senate passed its version with all Republicans and 9 Democrats; the House passed its version of the bill with a 221-202 vote and with the help of 12 Democrats, which is not enough to override the veto.

- State Spotlights -

- **Florida and Louisiana**. The property insurance market in the US Gulf Coast is [collapsing](#). Following a series of destructive storms, about a dozen insurers have become insolvent.
- **Massachusetts** filed a [draft](#) Request for Proposals that seeks up to 3,600 MW of offshore wind projects, more than 25% of the state's electricity demand.
- **New York** is the first state in the nation to pass a law that [bans](#) natural gas and other fossil fuels in most new buildings.

- Global Spotlights -

- **Africa**: The war in Sudan is on the verge of becoming a "nightmare for the world," including but not limited to another potential disruption of global energy markets, in part because Sudan is located at the intersection of the most active oil E&P and trade routes. It has a substantial Red Sea coastline and is surrounded by seven countries in the Middle East.
 - **Asia**: South Korea will provide \$5.32 billion in financial support to [help](#) the country's battery makers invest in and capitalize on the US Inflation Reduction Act, which allows automakers to source 50% of critical EV battery resources outside the US. Samsung, LG, and SK, among others, qualify for the financing.
 - **C/S America**: Chile, the second largest producer of lithium in the world, announced a plan to become the majority stakeholder of and [nationalize](#) its lithium mining industry.
 - **Europe**: All six reactors at the Zaporizhzhia nuclear plant in Ukraine have been [shut down](#) and the facility has been evacuated.
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- Climate and Sustainability -

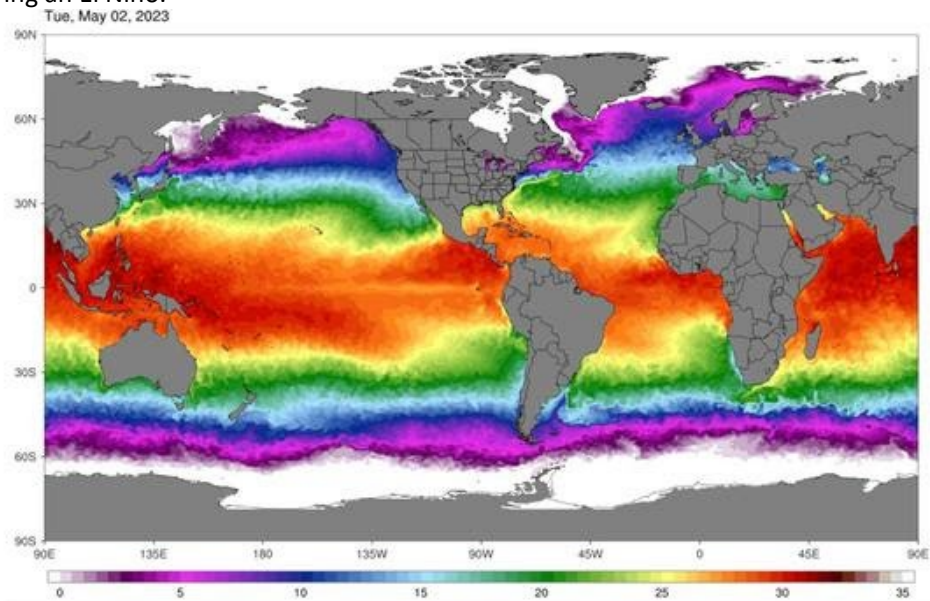
- About 76% of all US construction **waste** – including wood, drywall, asphalt shingles, bricks and clay tiles – ends up in landfills. And, each year about 37 million tons of that waste is wood.

- Eleven chemical plants in China and one in the US **emit nitrous oxide (N₂O)**, a climate pollutant with collective emissions that are 273 times **more potent** than CO₂. The gas is an unwanted byproduct in the production of adipic acid, a key ingredient used in airbags and car tires.

- China's "**war on pollution**" is working, in 3 charts:



- Ocean temperatures continue to **set records**. The previous ocean surface temperature record was set in 2016 during an El Niño.



- Research and Markets -

- The winners at the **NREL Industry Growth Forum**:

- Best venture, overall: [UbiQD](#) - Fluorescent quantum dots.
- Outstanding early-stage venture: [EvolOH](#) - An electrolyzer system that splits water.
- Outstanding venture at commercialization stage: [Summit Nanotech](#) - Li-extraction.
- Outstanding venture at growth stage: [Vutility](#) - Wireless submetering monitor.
- Outstanding software venture: [Salient Predictions](#) - AI weather forecasts.
- People's Choice award: [Harvest Thermal](#) - Smart controller HVAC and water.

- Norway's [sovereign wealth fund](#)—the largest in the world at more than \$1.3 trillion—has made about 10,000 investments across the global economy, and has been very clear about its support of and interest in a clean energy transition. However, **it has made only three total investments in renewable energy projects.**

- **Probably the top-3 TCU's (tribal colleges and universities) for energy RD&D and energy workforce development** are, in no particular order:

1. [Haskell Indian Nations University](#), including industrial workforce training (Kansas)
2. [College of Menominee Nation](#), and Sustainable Development [Institute](#) (Wisconsin)
3. [Navajo Technical College](#), including an exceptional science, technology, and engineering advisory [board](#) and a PhD program (New Mexico).

- Related, the White House published a new [guidebook](#), *Inflation Reduction Act for Tribes*.

- Electricity, Power and Efficiency -

- The US EPA released the **111 Rules**, new carbon pollution standards for power plants; (b) and (d) are most crucial.

- By aggregating distributed energy resources (DERs), **virtual power plants (VPPs) help utilities and energy providers modernize and update the grid.** VPPs integrate siloed and site-specific energy solutions into wholesale markets. VPPs will soon be authorized by the Federal Energy Regulatory Commission (FERC), [Order 2222](#). In addition to the US, VPPs are being deployed all over the world, with Europe, Australia, and other Asian Pacific markets leading the charge.

- Related, Brattle published a new **study on the benefits of virtual power plants (VPP)** that draw from distributed energy resources (DERs). A [summary](#) of the study (which was paid for by Alphabet/Google) include:

- **Reliability:** A VPP leveraging commercially-proven residential load flexibility technologies could perform as reliably as conventional resources.
- **Cost savings:** The net cost to the utility of providing resource adequacy from a VPP is roughly 40–60% of the cost of the alternative options; 60 GW of VPP deployment could meet future US resource adequacy needs at \$15–\$35 billion less than the cost of the alternative options over the ensuing decade.
- **Additional benefits:** 60 GW of VPP could provide over \$20 billion in additional societal benefits – such as those related to emissions and resilience – over ten years.

- University Spotlight -

- **Global Schools** is [accepting applications](#) for its fourth cohort of the Advocates program to help schools develop a long-term strategy to implement Education for Sustainable Development (ESD) in their curricula.

- **GCP** is looking for college students who are interested in serving as a [climate ambassador](#). If you are faculty, please distribute this notice to your classes; if you are a student, please distribute this notice to your clubs and networks.

- Spotlight on the College of Engineering at the **University of Toledo**: it is adding endowed [professorships](#) focused on power systems; [NASA](#) is funding research on solar-powered spacecraft propulsion and navigation.

- June 2, **UCSB** will host a [book talk](#), *Not Too Late*, by editor Rebecca Solnit.
- AES recommends [Fueling our Future](#) by Robert Evans, professor emeritus in Mechanical Engineering at the **University of British Columbia**.
- AES also recommends [Knock-for-Knock Indemnities and the Law](#): Contractual Limitation and Delictual Liability, edited by Svendsen (**Tulane University**), Stavang (**University of Arizona**), and Gordon (**University of Aberdeen**).
- On June 8, GLEI at **Case Western** will participate in a [townhall](#) meeting to discuss what it means to be globally engaged and connected in the 21st Century.

- Quotes -

A few unsubstantiated and source-less rumors

- Alder Fuel's CEO and founder Bryan Sherbacow may have used embezzled funds to pay for a vintage Mercedes-Benz sports car, a Range Rover sport utility vehicle, a down payment on a condo, payments to an art auction operator, personal tax liens, personal credit card payments, rent payments on residences, payment to a beach club, installation of an audio-visual system at a personal residence....
- To exact revenge for rejecting its efforts to acquire the bank, Goldman Sachs may have retaliated by leaking rumors about SVB's overleveraged vulnerabilities.
- The CEO of a major Canadian energy company said at a private dinner that he wanted to buy more refineries in the US. The problem is that this particular energy company has a pretty good history of blowing up the refineries it runs.
- LyondellBasell's Houston refinery is slated for closure by the end of the year; President Biden wants to shut down all petroleum refineries, but not so soon as to cause a fuel crisis during his presidency.

- Bulletin Board -

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- **SPOTLIGHT**: **Schneider Electric** is hiring [Project Development Managers](#), [Senior Account Executives](#), [Automation Engineers](#), and [Performance Assurance Consultants](#).
- Join leaders from tribal and federal governments at the **Tribal Energy Equity Summit**, May 22-25, Ojibwe & Dakota Territory, St. Paul, Minnesota.
- **Clearpath** has completed a white paper that examines the development of wind power in [Iowa](#), the #2 wind state in the US. The study highlights proponents and advocates of the industry and its plans to expand in the future.
- **Fire2Fission** is currently looking for a volunteer podcast editor who is interested in gaining experience in media creation and wants to get access to some energy industry professionals.
- **Unearth** is a dynamic Mobile GIS that connects assets, data, and field teams for critical infrastructure providers. Start your [free](#) trial today.

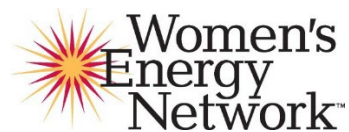
- **Ubiquitous Energy**, a leader in transparent solar technology, is [developing](#) energy generating windows and door products.
- **Sunrun**, a residential solar and battery storage installer in the US, has partnered with Ford to launch a new [home electric vehicle \(EV\) charger](#) that is compatible with any EV model.
- **SustainabilID** offers strategic advice, leveraging thought leadership, tailor-made tools, top talent, and an ecosystem of industry associations and knowledge platforms focused on [innovating](#) to net zero.

- Gratitude -

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