

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:** The Freeport LNG export terminal (3% of total global market) is reopening.
- **Low-/no-carbon:** Of the top 11 global cleantech hubs, US has 4, Asia 5, and Europe 2.
- **Policy:** The White House launched a series of "Nature-Based" funding initiatives.
- **Markets:** There are more than one million unfilled jobs in the energy sector.
- **Quotes:** On the "Roaring 20s" Energy Jobs Market.

- News from the Society -

- Did you miss the last issue of [Energy Today](#)? It was about **conservation, once the dominant strain of environmentalism that has more recently been overlooked**. In appreciation of the issue, [Wild Idea Buffalo](#) has kindly offered all Members and Friends of AES a 15% discount on their buffalo ribeye, jerky, links, burgers, and more. Be sure to use **AES15** at checkout.

- If you are a Member, did you miss the "Battery Spotlight," a survey of the state of storage by the numbers? Access the [Spotlight](#) now.

- There is a lot of talk about an economic recession, but the energy sector is hiring! [Contact us](#) if you're curious about new professional opportunities.

- [CERAWeek](#) is happening now. [Contact us](#) if you have questions or want insights.

- Fossil Fuels -

- Oil -

- *Exclusive for AES:* **US gasoline demand is [unlikely to recover](#) to pre-pandemic levels** as increased internal combustion engine efficiency, wider EV adoption, and changes in commuter patterns have created a **[new normal](#) for road fuel use in America**. (In August, 2019, the US consumed 9.8mn b/d of gasoline; today it is about 9.1mn b/d.) *Note:* while US gasoline demand remains stunted, jet fuel has room to grow as the Chinese economy re-opens and airlines address capacity constraints. US diesel demand — tied closely to the overall state of the economy due to its use in industry — is expected to [eventually recover](#) to or exceed pre-pandemic levels.

- Natural gas -



- Last summer, an explosion forced the Freeport LNG terminal on the Gulf Coast outside Houston to shut down, which took about one-fifth of total US liquified natural gas export capacity offline (or about 3% of the global market). **The Freeport terminal has been [repaired and is reopening](#); in the interim, however, the global market pivoted and found new supplies**, so the Freeport terminal missed out on a robust market. Most likely, its first buyers will come from Asian markets that saw shipments shift to Europe during the Ukraine crisis. *Insert:* US LNG export capacity, in billion cubic feet.

- Coal and mining -

- In 2022, **China approved the largest [expansion](#) of coal-fired power plants since 2015**, granting permits for 106 gigawatts of capacity across 82 locations.

- Carbon capture and removal -

- Geothermal plants use steam to generate low-carbon electricity, and **the leftover heat from this process is the ideal temperature for [“solid sorbent”](#) DAC**, one of the main methods for filtering CO₂ out of the air.

- It doesn't look like the energy sector is in a recession ... the energy and sustainability sectors are hiring! [Contact us](#) if you are open to work or curious about new professional opportunities.

No- / Low-Carbon and Renewable Energy

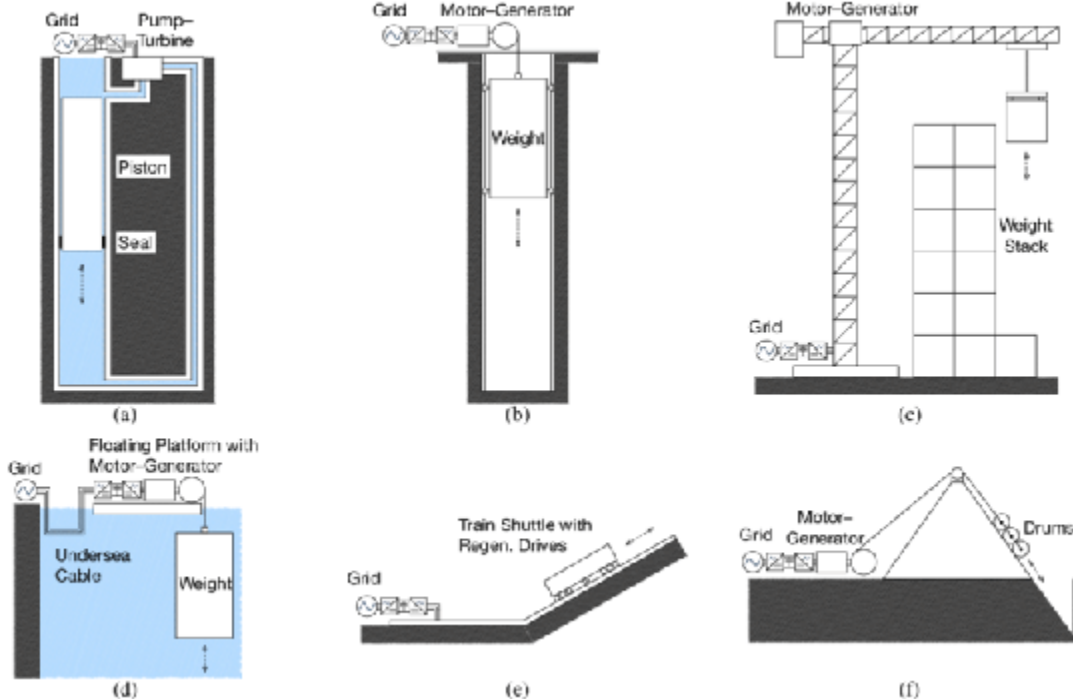


- If you are thinking about installing a new [heat pump](#), here are a few things to consider:

- If your furnace is old, start planning — heat pump systems are in high demand and unavailable on short notice.
- An effective heat pump works much better if the home has decent insulation.
- The average [cost](#) is about \$14,000 for an entire house, and much less if it is for a single unit.
- Apply for a [tax credit](#) (between \$1,200 - \$2,000, annually) for electric or natural gas heat pump water heaters, or electric or natural gas heat pumps.
- Find a good contractor who can also perform home energy audits.
- Connect with AES Member and SME [Brian Meneghan](#) about heat pumps.

- **The main challenge to the energy transition? Hiring qualified people.** The bottleneck is most significant in the construction and manufacturing sectors. The [US Bureau of Labor and Statistics](#) reports 413,000 unfilled jobs in construction and 764,000 in manufacturing, while [McKinsey](#) projects about 550,000 job openings related to the energy transition. *Note:* the US [oil and gas sector](#) laid off about 160,000 workers in 2020 in order to maintain tight budgets, adapt to declining demand during the pandemic, and shift toward automation. Now the sector is hiring in a very tight market. Utilities are also struggling to hire employees.

- There are six types of [gravity batteries](#) (insert: all six schematic designs):



- **Top-11 climate tech hubs**, by VC funds

1. San Francisco Bay Area
2. Shanghai (China)
3. Beijing (China)
4. Los Angeles
5. Boston
6. Guangzhou (China)
7. London (UK)
8. New York City
9. Berlin (Germany)
10. Nanjing (China)
11. Bengaluru (India)

Note: AES recommends the [China Cleantech podcast](#) by Marilyn Waite and Andrew Chang.

- Energy Policy & Geopolitics -

- Beltway Buzz -

- AES Members should be aware of the **Tribal Energy Finance Program** within the **DOE Loan Programs Office (LPO)**. The Program offers generous loans and loan guarantees to Indian tribes or a tribal energy development organization (TEDO). *Editor's note:* qualification guidelines are not absolute or rigid; program officers will consider any project that is "economical," very broadly conceived.

- Lost amid coverage of all federal spending programs is the **announcement by the White House of the "Nature-Based Solutions" initiative (NBS)**. The Council on Environmental Quality, Office of Science and Technology Policy, and Office of Management and Budget (OMB) are co-leading NBS. The primary objective is conservation in support of ecosystem services (or, conservation on behalf of discrete ecosystems like coastlines or forests). In addition, several agencies — notably Commerce, Interior, and OMB — are implementing "conservation" into their programmatic evaluations and economic analysis. (Thank you AES Member and SME [Wendolyn Holland](#) for the insight.)

- Keep an eye on the Partnerships for Energy Security and Innovation Act (S. 1359 – previously known as the IMPACT for Energy Act); if it passes, it will establish a nonprofit foundation for the US DoE that would channel private-sector investments to support DoE's mission and to accelerate the commercialization of innovative technologies. A number of AES Member SMEs are saying that the plan for a federal government non-profit foundation is already "fraught with challenges." [AES Members](#) have access to a true and correct PDF copy of the S. 1359 amendment.

- State Spotlights -

- **The average US state gas tax is \$0.316/gal, and for diesel \$0.339/gal**; last year, 13 states increased the taxes and five lowered them, with New York increasing the most.

- Wind and solar capacity in the US grew 16% last year; when development is compared between red (Republican) and blue (Democrat) states — which are essentially balanced — **renewable sources of energy are growing faster in red (Republican) states**.

- Led by Georgia, **US southern states are becoming the "battery belt"** in the economic transition away from fossil fuels.

- Global Spotlights -

Europe: In October 2022, German Chancellor Olaf Scholz ordered his government ministers to prepare a plan to keep the country's last three operating nuclear power plants (Isar, Neckarwestheim, and Emsland), which were originally scheduled to close, operating until [April 15 of this year](#).

Africa: Angola is the largest recipient of Chinese loans in Africa, and Ethiopia is the second-largest. The latter has formed a creditor committee to [seek relief](#) by restructuring the country's \$28 billion external public debt, but China has made it clear it will not restructure any agreements.

Asia: Countries around the world are moving quickly into green hydrogen; Asia is probably leading at the first turn (*note:* AES Members have access to [H2 Influencers](#)).

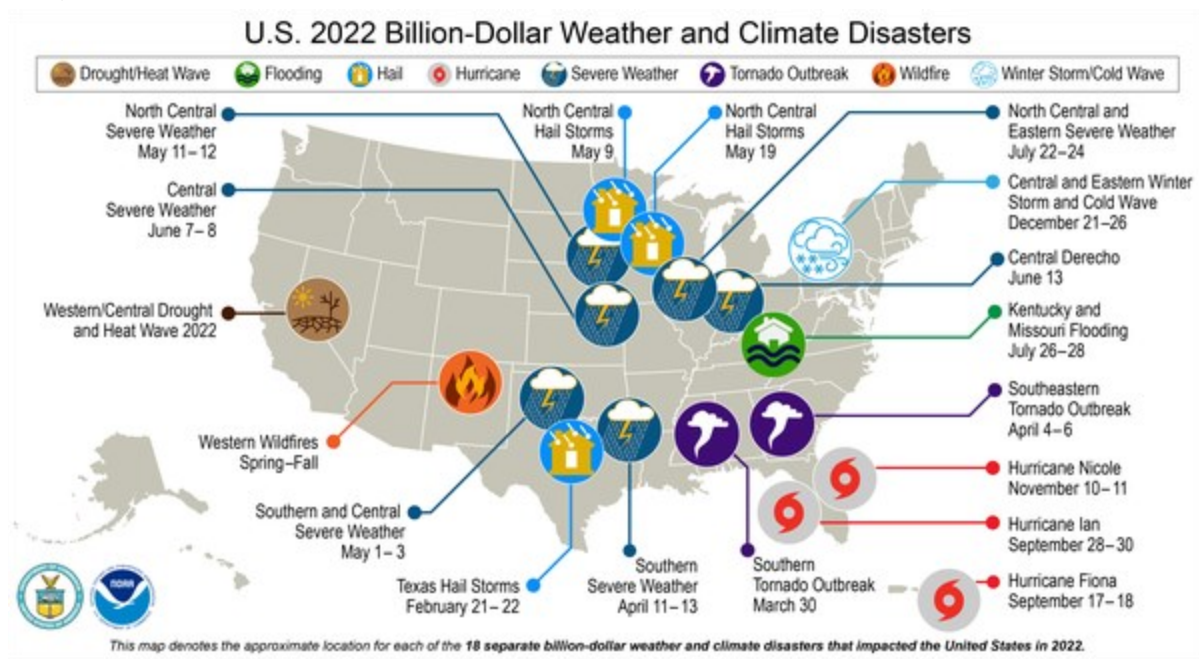
- China has established a regulatory [framework](#) for green hydrogen production, and its five main utilities have all invested in green hydrogen projects.
- Korea has a hydrogen economy [roadmap](#).
- Japan has a national [strategy](#) for hydrogen, fuel cells, and ammonia production.

L/S America: Global flaring from the oil and gas sector is at a record high, but the worst [offender](#) might be Pemex, the national oil company for Mexico (by [total](#) unit of production). In the last few years, Pemex has burned off gas and condensate — a mixture of liquid hydrocarbons similar to a very light crude oil — worth about \$275 million from the Ixachi field and \$67 million from the Quesqui field.

- Climate and Sustainability -

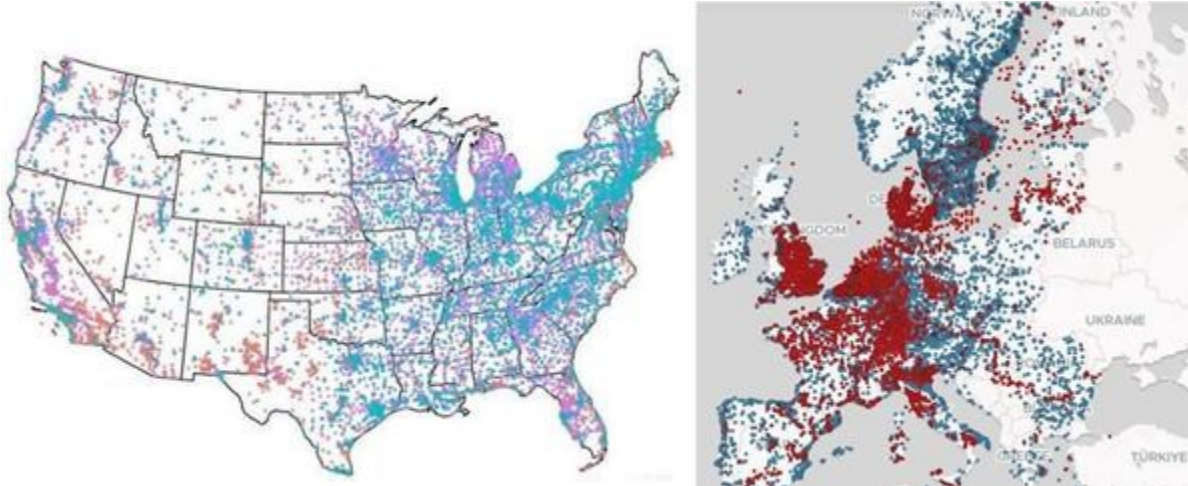
- **Top 3 years for [extreme weather](#) events in the US** since 1880 (*Insert* - a recap of extreme weather in 2022):

- 2020: 22 events
- 2021: 21 events
- 2022: 18 events (tied with 2017 and 2011)
-



- [Greta Thunberg](#) participated in a **protest against wind turbines**. More specifically, it was a demonstration against wind turbines on land traditionally used by indigenous Sami reindeer herders. Norway's supreme court in 2021 ruled that two wind farms built in central Norway violated Sami rights, but the turbines remain in operation more than 16 months later.

- Risk Factor has created a **website that forecasts the estimated risk** caused by extreme weather (flooding, wildfire, heat, and wind). Search by US postal mailing [address](#).
- Two maps that **compare sites that have dangerous levels of PFAS "forever chemicals"** in the [US](#) and [Europe](#). (Note: each dot represents either a confirmed or presumed contamination sites.



- Research and Markets -

- Unsurprisingly, all energy developers in the US confront complicated tax issues. But **the IRA will allow renewable project developers to sell their tax credits** without the hassle and expense of a frequently used type of financing known as tax equity. The market for renewables tax equity deals is about \$15-20 billion annually. If renewable project developers can sell their [tax credits](#) in a relatively painless way to any corporate taxpayer, it will at least double the amount of financing available.

- **The DoE Emerging Tech Studio will support entrepreneurs who investigate and build [new ventures](#) around technologies drawn from the US DoE national laboratories.**

- Lithium Americas has received a \$650 million investment from General Motors to **develop a [lithium mine](#) at Thacker Pass** in Nevada; and, a district judge in the state upheld a federal decision to approve Thacker Pass following challenges from environmental groups.

- The DoE Loan Program Office (LPO) has granted Li-Cycle, a lithium-ion battery recycler, a \$375 million (USD) [guaranteed loan](#) to **help finance construction of a resource recovery facility** in Rochester, New York.

- Electricity & Power -

- The boards that oversee the Western Energy Imbalance Market (WEIM) [approved](#) the creation of a new day-ahead power market, known as the Extended Day-Ahead Market (EDAM). In other words, **operators of the western US power grids have agreed to cooperate**. Why? Grid management has become more challenging: extreme weather (wildfires, rain, and temperatures), natural gas supply constraints, closures of coal plants, and increasing demand in seven of the fastest growing state economies in the US along with support of the electrification of everything.



- **Hydropower production in the US was at its lowest rate in 2021**; in 2022, the rate [increased](#) 3% and will increase at the same rate again in 2023.

- In 2021, there were about 5,600 wind, solar and batteries ventures that applied for permission to connect to the electric grid. In 2022, there were **8,100 energy projects waiting for [interconnection](#)**.

- Related, **the US DoE published a [report](#) on interstate transmission cooperation and networking**. *Summary:* By increasing power-sharing capacity between regions, new interconnections between regions can help defend against extreme weather events and improve energy security. However, grid operators in Texas (ERCOT), the Southeast, and the PJM in the mid-Atlantic have asked for [more research](#).

- University spotlight –

- AES recommends a survey ([PDF](#)) of how IRA funds support sustainability efforts at universities and colleges.

- **RIT** is hosting the 2023 REMADE Institute [conference](#) on March 20 - 21, in Rochester, NY.

- The **GWU** Environmental and Energy Management Institute offers the Energy Resilience [Certificate](#) (ERC).

- The Institute for Sustainable Energy and the Environment at **Ohio University** is doing a deep dive on [sustainable shale development](#).

- **Northern Illinois University** Department of Earth, Atmosphere and Environment is developing a weather forecasting tool to [help farmers](#) with the uncertainty of climate change.

- The Advanced Energy Systems and Microdevices Laboratory at the **New Jersey Institute of Technology** (with research support from Brookhaven National Laboratory, CUNY, Rutgers, and the NJIT Center for Environmental Engineering and Science) is working on a cost-effective and fuel-efficient [energy conversion system](#).

- The Energy and Fuel Cell Laboratory at the **University of Arizona** Institute for Energy Solutions is working to improve the efficiency of high-volume energy storage and power dispatch using large-scale [concentrated solar thermal technologies](#).
- **Rollins College** Department of Social Entrepreneurship [invites](#) companies and organizations to collaborate on a project, be a guest speaker or social venture mentor, or brainstorm on company challenges.
- If you missed it, you can watch the [recorded presentation](#) "Building the Political and Public Will for the Energy Transition" by Michael Shank, hosted by the **Texas A&M** Energy Institute.
- AES applauds the Global Institute of Sustainability and Innovation, [the hub for all](#) sustainability research initiatives at **Arizona State University**.
- The Institute for Public Policy at **Rice University** Baker [published](#) "Developing a Robust Hydrogen Market in Texas", about the hydrogen economy and the role Texas will play in it.
- The full [agenda](#) for the 2023 **MIT** Energy Conference is out! (Register before March 17th to be automatically entered into the VIP Ticket Raffle.) Also, the MIT Climate and Energy Prize achieved a record number of applications in its 15 year history. Sign up for the [European](#) semi-final, the [US](#) semi-final, and/or the [finals](#) (in Boston).

- Quotes -

The Roaring 20s Energy Jobs Market

Note: Two years ago the American Energy Society, in partnership with LinkedIn, anticipated an energy sector workforce gap in its *Energy Today* issue, "[The Roaring 20s](#)."

- "Having enough technicians and the engineers and skilled mechanics."
- Washington Governor Jay Inslee, on the greatest challenge to the energy transition
- "The first thing I heard from everyone was the same thing: We can't find people to work."
- US Representative Bob Latta (R-Ohio), on the boom of manufacturing in the Member's district of northern Ohio
- "The need to grow the workforce is evident in all industries, from electricians to finance."
- Dawn Lippert, CEO of Honolulu-based Elemental Excelsior
- "It's incumbent on all of us to make sure that our labor markets and our workforce development systems catch up."
- Casey Katims, executive director of the US Climate Alliance

- Bulletin Board -

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- The 2023 [Spring Coal Forum](#), hosted by the **ACC**, takes place March 7 - 9, 2023, at the Hyatt Regency Clearwater Beach, Florida.
- **OurEnergyPolicy** hosts many [forums](#), including one on oil and gas (Hilton, Houston).

- **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.
- **Uneath** 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.

- Gratitude -

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