

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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The Power Read

- **Fossil fuels:** China's consumption of natural gas is declining.
- **Low-carbon:** 8 fusion companies are informally competing for DoE grand prize.
- **Policy:** The IRS has finalized its rules for 10% PTC and ITC bonus credits.
- **State policy:** States are passing either pro- or anti-ESG investment laws.
- **Climate:** The climate crisis is also an insurance (and re-insurance) crisis.

News from the Society

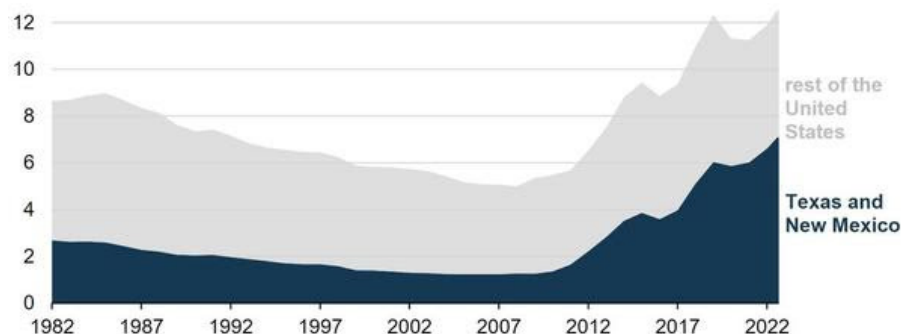
- The energy sector is hiring! There are thousands of unfilled jobs. [Contact us](#) if you're curious about new professional opportunities, including openings at Schneider Electric. Or, [join the SE talent community](#) to hear about more job opportunities.

- Members can share this issue of Energy Matters with colleagues; we would appreciate it if they joined as Members too, or they can sign up as a [Friend](#) (*free*) of the Society.

Fossil Fuels

- Oil -

- **US crude oil production grew 5.6%** (or 0.6 million barrels per day), in 2022. The two Permian Basin states—Texas and New Mexico—contributed [the most growth](#) to total US production. *Insert:* US crude oil production 2022, in mb/d.



- Natural Gas -

- China's consumption of natural gas is declining (-1%) for the [first time](#) since 1990.

- Coal and Mining -

- The top 3 [uranium](#) mining companies (by a combination of volume and revenues):

1. Cameco (Canada)
2. Kazakh (Kazakhstan)
3. Fresnillo (Mexico)

- Carbon Capture -

- Article 6.4 of the Paris Agreement governs international trade of carbon credits. The Article's Supervisory Body [announced](#) that **it will not recognize engineered solutions (such as direct air capture, enhanced mineralization, enhanced root crops, or ocean-based carbon removal) because they are unproven and risky.**

No- / Low- Carbon and Renewable Energy



- The \$46M funding for fusion RD&D by the US DoE is basically **a competition between eight nuclear fusion startups**, and the winner may qualify for \$415M (if certain minimum milestones are met). The participants in the competition include [Type One Energy](#) and [Tokamak Energy](#), as well as a slinky-like [stellarator](#) (rendering insert).

- **About \$1 billion (USD) a day will be spent on solar development globally in 2023.**

- The PJM grid operator is the **farthest behind** on reviewing and approving **transmission interconnection requests** for all energy projects. *Note:* Wind, solar, and battery projects make up 95% of the 250 gigawatts in the PJM interconnection queue.

- **Four countries are powered entirely by renewable energy:** [Iceland](#) (geothermal), [Norway](#) (mostly hydropower, but one of the world's largest oil producers), [Paraguay](#) (entirely hydropower after closing its last geothermal plant), and [Costa Rica](#) (a mix of hydro, geothermal, solar and wind, in that order).

- The Riverside East Energy Zone is a **huge solar farm that covers about 150,000 acres** of the Chuckwalla Valley in California's Mojave desert (or, 10X the size of Manhattan).



Energy Policy & Geopolitics

- Beltway Buzz -

- The US EPA released a new proposal to cut emissions from existing power plants ([Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants](#)). This is the EPA's **third** attempt to regulate CO2 emissions from fossil fuel-fired power plants. To meet the new requirements, a utility must use "proven, cost-effective control technologies," such as carbon capture and storage (CCS) technology. *Note: this new proposal is the most aggressive carbon standard ever suggested by the EPA for the power sector.*

- The US IRS released long-awaited guidance on **bonus credits that provide a 10% increased production tax credit (PTC) or investment tax credit (ITC)** on any energy project, facility, or energy storage technology that satisfies "domestic content requirements."

- Though it may be too late to start a new application, the US EPA will provide \$250M to states, municipalities, air pollution control agencies, territories, and tribes **to develop or update a climate action plan** with air pollution control districts and municipalities. Funds will be distributed according to the following formula:

- \$3M to all 50 states, District of Columbia (DC), and Puerto Rico (for a total of \$156M).
- \$1M to each of the 67 most populous metropolitan areas, for a total of \$67 million.
- \$25M to tribes and tribal consortia and \$2M to US territories.

- Wilson Sonsini has released its latest update to its **Clean Energy and Climate Solutions Federal Funding Database**, which includes, but is not limited to, new funding opportunity announcements (FOAs).

- State Spotlights -

- **Anti-ESG state laws.** A number of states have enacted laws that limit the explicit use of certain ESG considerations. For instance, [Kansas](#) prohibits "any procurement regulation or policy" that discriminates based on any ESG criteria. [Florida](#) has enacted one of the most-restrictive anti-ESG laws to date, requiring that all state and local government investment decisions be based exclusively on pecuniary factors. States that have passed anti-ESG laws include: Arkansas, Florida, Idaho, Indiana, Kansas, Kentucky, Montana, North Dakota, and Utah. Meanwhile, states that promote or require ESG state-investment laws include: Illinois, Maryland, Massachusetts, New Mexico, and Oregon.

- **California:** The California Air Resources Board (CARB) approved new clean fleet Drayage Truck Requirements, which [phases out](#) sales of medium and heavy-duty trucks (including garbage trucks and passenger buses) with internal combustion engines by 2036.

- Global Spotlights -

- **Africa:** South Africa's government has [revoked](#) a national "state of disaster" electricity crisis caused by frequent breakdowns at its aging coal-fired power stations and years of corruption at Eskom, its state utility.

- **Asia:** The single greatest challenge to the energy sector in [India](#) is the lack of trained employees as companies struggle to expand capacity. (*Editorial note: every region in the world is struggling with workforce access and development.*)

- **C/S America:** Mexico has [reclassified](#) natural gas as "clean energy," allowing it to now [surpass](#) its Paris climate pledge targets.

- **Europe:** The European Union (EU) recently enacted five laws in furtherance of its “[Fit for 55](#)” legislative package, which aims to ensure that EU policies are in line with EU’s climate targets of reducing net greenhouse gas (GHG) emissions by 55 percent by 2030 and achieving “net zero” emissions by 2050. The Fit for 55 package includes more than a dozen legislative proposals and policies, including carbon pricing, energy efficiency, taxation, land use and forestry, transport, and renewables.

Climate and Sustainability



- **A new study evaluates the health of the Earth based on the conditions of its climate, biosphere, fresh water, soil nutrients, and air pollution.** The study determined that the Earth is "really quite sick." [AES Members](#) have access to the peer reviewed research and paper.

- Related, **insurance companies, uncertain about the consequences of and costs associated with the changing climate, are raising rates, restricting coverage, or pulling out of some areas.** For instance, State Farm will no longer sell new policies to homeowners in

California due to wildfires. (Note: California is the only state that does not allow insurance companies to use forward-looking modeling for climate change to price their risk.) The price of storm insurance has quadrupled in regions that have had recent severe storms, like western New York (snow) and eastern Kentucky (flooding). The insurance market in Louisiana is in crisis, and most of Florida cannot purchase storm coverage.

- **Only 9% of plastic is recycled; however, much of the rest can't be recycled** because most recycled plastic [contains toxic chemicals](#), such as bisphenols (like BPA), phthalates and per- and polyfluoroalkyl substances (PFAS), all of which eventually leach out of the recycled plastic.

- Related, PFAs are used in nonstick cookware, stain-resistant fabrics, and firefighting foams, and have been linked with higher cholesterol, lower fertility, developmental delays in children, and a greater risk of developing kidney, prostate, breast, and testicular cancer. A new study discovered that **two kinds of bacteria can break down a subgroup of PFAS.** [AES Members](#) have access to the peer reviewed research and article.

Research and Markets



- The energy permitting process in the US is [broken](#) and [deeply flawed](#). However, it appears that **Germany experiences similar permitting challenges.** *Insert:* a [photo](#) of the required application documents to install 3 wind turbines in Germany.

- 36,000 sheets of paper
- 15 moving boxes of paperwork
- 10,000 EUR printing costs

- **Electrofuels are produced from carbon dioxide (CO2) waste and renewable power** and can be used as a fuel with no engine modifications as an immediate replacement to petroleum-based fuel. *Note:* Amazon just signed a deal to [purchase](#) electrofuels from Infinium for the retailer's middle mile fleet.

- *Recommended peer-reviewed [research](#): energy harvesting from air humidity.*

- The Vogtle nuclear power plants in Georgia have started operations. [However](#), the project was seven years late, \$17 billion over budget, and led Westinghouse into bankruptcy.

- Applications for the Rising Solar Fellowship program are due June 30. The [Fellowship](#), hosted by GRID Alternatives and WRISE, supports aspiring solar professionals from diverse backgrounds who have a professional interest in renewable energy.

Electricity, Power and Efficiency



- There are about **857,000 people employed in the US electricity generation sector**. [AES Members](#) have access to the special *Energy Today* issue, "Roaring 20s; The Hot Energy Jobs Market." *Insert:* Workforce distribution among various electricity generation technologies. [Summary...](#)

- * Annual growth rate of employment in renewables sector: 4.4%
- * Annual growth rate of employment in broader power sector: 2.9%
- * Percent of clean vs. fossil fuel energy jobs 77% | 23% (*Note:* clean includes advanced natural gas and nuclear power)

Note: it is interesting to [compare and contrast](#) the total number of jobs in each sector with the total energy generated by that sector. For instance ...

- o Natural gas (39.8%)
- o Renewables, total (21.5%)
- o Coal (19.5%)

- Energy insecure households in the US pay **\$0.20 more per square foot than the national average** and \$0.26 more than households that do not experience energy insecurity. On average, US households pay \$1.04 per square foot for energy usage across all energy sources. (*Note:* "household energy insecurity" is defined as the inability to afford basic household energy needs because of access, cost, or both.)

- *Spotlight on [data centers](#):* The US has the most data centers in the world, in terms of total number (2,500+) and aggregate value (closed transactions in 2022 = \$33 billion, or £24bn). In 2014, data centers in the US consumed an estimated 70 billion kWh, representing about 1.8% of total US electricity consumption; though the number of data centers in the US has grown significantly, **the total amount of power that US data centers consume has remained essentially the same**. *Note:* AES recommends the [LBNL report](#) on power consumed by datacenters, and Inspiratia's [restricted resource](#) on data centers.

Primary US data center markets

Silicon Valley (NorCal)
Northern Virginia
Dallas
Phoenix
Chicago
Atlanta
Portland
New York/New Jersey
Seattle
Los Angeles

Secondary US data center markets

Austin (Texas)
Boston
Charlotte (NC)
Columbus (Ohio)
Denver
Houston
Kansas City
Las Vegas
Miami
Minneapolis
Salt Lake City
San Antonio

University Spotlight



- AES applauds the **University of Arizona** Institute for Resilience and its 15 unique programs, including but not limited to the [Indigenous Resilience Center](#), the Institute for Energy Solutions, and the Water & Energy Sustainable Technology Center.

- The 11th annual [Appalachian Energy Summit](#) will be held in-person on the campus of **Appalachian State University** June 7-9, 2023.

- [Upstate 2.0](#), a partnership between **Cornell University** and **SUNY College of Environmental Science and Forestry**, has received a \$1 million NSF development award to transform upstate New York into an innovative bio-economy.

- The Space Solar Power Project at **Caltech** seems to have beamed [solar power](#) from a satellite in space to Earth without wires.

- AES recognizes the Andlinger Center for Energy and the Environment at **Princeton University** and its [support](#) of interesting work in fusion, carbon capture, and cement, among other topics.

- The Utah FORGE project, managed by the **University of Utah**, has begun drilling its [second](#) deviated deep well, a crucial step for Enhanced Geothermal Systems (EGS) technologies.

- The Security and Sustainability Forum (SSF) at **George Washington University** hosts over 300 educational [webinars](#) covering a range of topics, from Decarbonization and Energy to Policy and Equity.

Quotes

Pricing climate change ...

"Climate change ... has created a crisis of confidence around the insurance industry's ability to predict loss."

—McKinsey report on the state of the insurance industry

"Just as the US economy was overexposed to mortgage risk in 2008, the economy today is overexposed to climate risk."

—Aon PLC President Eric Andersen to the US Senate Budget Committee

"We're currently in the midst of an insurance crisis. With climate change, the big question is: How much do these catastrophes cost, and how is that going to be funded?"

—Louisiana Insurance Commissioner Jim Donelon

"The California FAIR plan is unsustainable."

(The FAIR plan is a California law that says insurance companies must give all property owners access to basic fire insurance, which is why State Farm is pulling out of the state.)

—Milliman actuary Nancy Watkins

- Bulletin Board -

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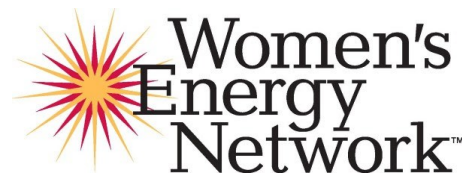
- **SPOTLIGHT:** **Schneider Electric** is hiring [Project Development Managers](#), [Senior Account Executives](#), [Automation Engineers](#), and [Performance Assurance Consultants](#).
- Join leaders from tribal and federal governments at the **Tribal Energy Equity Summit**, May 22-25, Ojibwe & Dakota 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.
- **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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