

# ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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AN OFFICIAL PUBLICATION OF



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July 11, 2022

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## - The Power Read -

- **Natural gas:** In H2 2022, there will be nine new natural gas projects in the GOM.
- **Carbon capture:** Big Tech is at the forefront of carbon removal.
- **Renewables:** US offshore wind generation will begin to increase in 2024.
- **Policy:** **AES recommends a series of articles about *West Virginia v EPA*.**
- **Markets:** OPEC+ continues to underproduce despite the global energy shortage.
- **Power:** Total EU LNG imports from the US exceeds Russian piped gas.
- **Electricity:** ERCOT is still working through the market effects of winter storm Uri.

## - News from the Society -

- *Sneak peek:* AES will soon publish the **Hydrogen SME Watch List**, a global directory of thought leaders shaping the next energy-tech revolution. [Contact us](#) for more information.

- The [ONS Foundation energy conference](#) in Stavanger, Norway, August 29 – 31, 2022. If you're an **AES Member** and would like to attend but cannot, AES offers "scouting insights and updates" from the conference. [Contact us](#) for more information.

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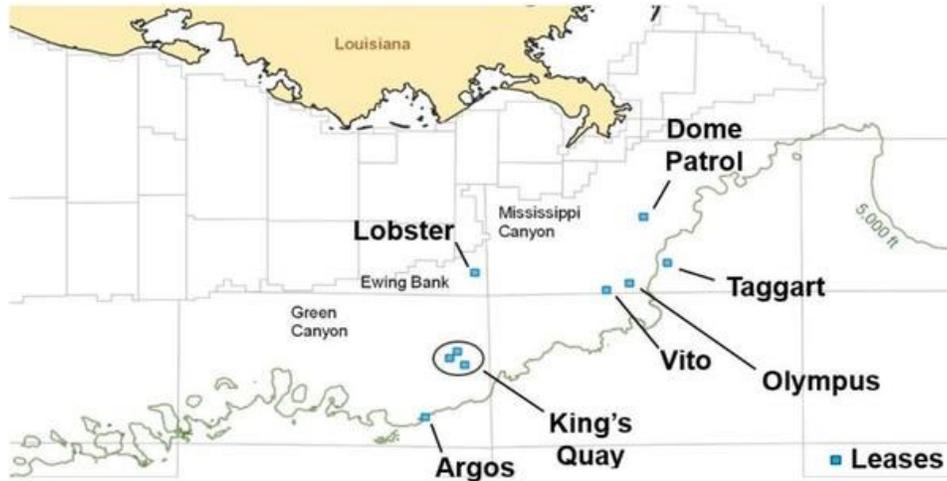
## - Fossil Fuels -

- Oil -

- **The US uses about 97 quadrillion British thermal units (quads) of primary energy each year. About 79% of energy consumption comes from fossil fuel sources;** about 21% is derived from renewable sources and nuclear. (*Note:* this is the first time since 1900 that the US generated less than 80% of its energy from fossil fuels.)

## - Natural Gas -

- In 2021, 2% of all US natural gas production came from the Gulf of Mexico (GOM); however, **in the second half of 2022 there will be [nine new natural gas projects](#) started in the GOM**: 1) Lobster, 2) Dome Patrol, 3) Taggart, 4) Olympus, 5) Vito, 6) Argos, and 7) three individual projects in the Kings Quay block. *Insert*: US federal offshore GOM new natural gas projects in 2022, by block:



## - Coal -

- **A sample of products that require carbon supplied by coal** (source: US DoE, Office of Fossil Energy, as per *American Coal*, issue 1 2022, p. 29):

<u>Carbon product</u>	<u>Coal production, in mmt</u>
Charcoal for air/water filters	22
Li-Ion battery anodes	35
Carbon black to strengthen rubber	14
Graphite electrodes	12
Carbon fiber for cement, etc.	47
Carbon nanomaterials (incl. cement)	12
Conductive inks	1
Roofing tile	2

## - Carbon Capture -

- **Big Tech is at the forefront of carbon removal**: Stripe invited Alphabet, Meta, and [Shopify](#) to launch Frontier, a fund which will invest \$925 million in nascent carbon removal companies that will accelerate research and development efforts and lower costs.

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## No- / Low-Carbon and Renewable Energy

### - 4 [takeaways](#) from the recent DoE Energy Jobs report ([USEER](#)):

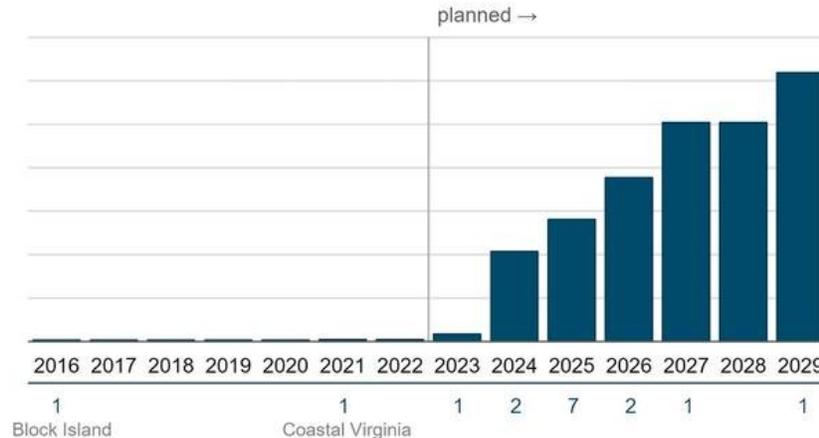
1. Energy industries added 300,000 jobs and grew 4% from 2020-2021, outpacing 2.8% growth in the overall workforce. More than 7.8 million Americans now work in energy.
2. Clean energy—renewable energy, biofuels, transmission, distribution, storage, and energy efficiency—all saw growth in employment in 2021. Energy efficiency remained one of the largest employers in energy, with over 2.1 million jobs. Jobs in electric and hybrid vehicles saw a 25% increase.
3. Although the US energy workforce is growing, economic opportunity is not being realized equitably. In particular, women and Black Americans are underrepresented across most energy industries relative to the overall US workforce and population.
4. The most energy jobs were added in Michigan, Texas, and California, followed by Appalachia and the Midwest. Electric power generation saw high growth in the Midwest and West Virginia, and Pennsylvania had the highest percent growth for jobs in transmission, distribution, and storage. Florida also gained about 15,000 energy employees, with a third of those working in efficiency.

### - New and existing job portals and other resources:



- A [video](#) by US DoE and actor Robert Downey Jr. highlights work related to climate change and clean energy.
- Breakthrough Energy Ventures launched a new [jobs platform](#).
- [Dayaway Careers](#) serves early and advanced career professionals.
- [Green Jobs Network](#) posts opportunities that can make an impact.

### - Total number of US [offshore wind projects](#) operating or coming online:



- Agrivoltaics. Def: **the combined fields of agronomy and solar**; when solar power and agriculture co-exist on the same land. For instance, shade provided by solar panels helps broccoli turn a deeper shade of green, which makes the vegetable more appealing for grocery stores and consumers without a significant loss of the crop's size or nutritional value. [AES members](#) have access to peer reviewed research.



## - Energy Policy & Geopolitics -

- The SCOTUS ruling in *West Virginia v EPA* is not really significant for coal-fired power plants; new technologies and market economics changed coal's trajectory well before the Justices heard oral arguments in the case. For example, about [72%](#) of existing coal plants are more expensive to operate than a new wind or solar power plant. But, *West Virginia v EPA* is important because it "limits the regulatory authority of *all* federal agencies."

### - Recommended readings about the SCOTUS ruling in [West Virginia v EPA](#):

- A thought-leadership piece, [System Failure](#), by **Wilson Sonsini**
- A [video](#) and an [article](#) by **Legal Planet**
- A summary of [key takeaways](#) by **National Law Review**
- AES Members have access to the e-magazine, [Energy Today: Oyez! Oyez!](#) The Four Most Important Energy and Environment US Court Cases in 2022.

### - Other ways that federal agencies address climate change:

- Rules that apply to newly built power plants;
- Rules on leakage from oil and gas production;
- Encourage more aggressive state and municipality rules;
- Incentivize and/or subsidize private sector efforts to become more energy efficient.

- *Zeitenwende*. Noun, def: "turning point"; **the geopolitical policy of turning away from dependence on Russian energy**; the policy of German Chancellor Olaf Scholz.

- Japan will [stop](#) providing yen loans for the construction of the Indramayu coal-fired electricity plant in Indonesia and the Matarbari plant in Bangladesh. Japan was heavily invested in these two plants but has since reversed its financing policy.

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## - Climate and Sustainability -

- Russia's invasion of Ukraine is entering its fifth month. According to a [Brown University](#) study, **the conflict has created emissions equal to the combined annual total emissions of Portugal, Denmark, and Sweden**. Meanwhile, a shelled chemical plant released toxic chemicals into the Severskiy, Donets, and Dnieper rivers, wildfires have damaged 11% of Ukraine's forest, and thousands of dolphins have been found [dead](#) in the Black Sea.

- **Geologists are finding that diatom populations may be [declining](#) due to ocean acidification associated with climate change.** (Note: diatoms contribute to global oxygen production, marine food webs, and carbon sequestration.)

### - [Maritime shipping](#), by the numbers:

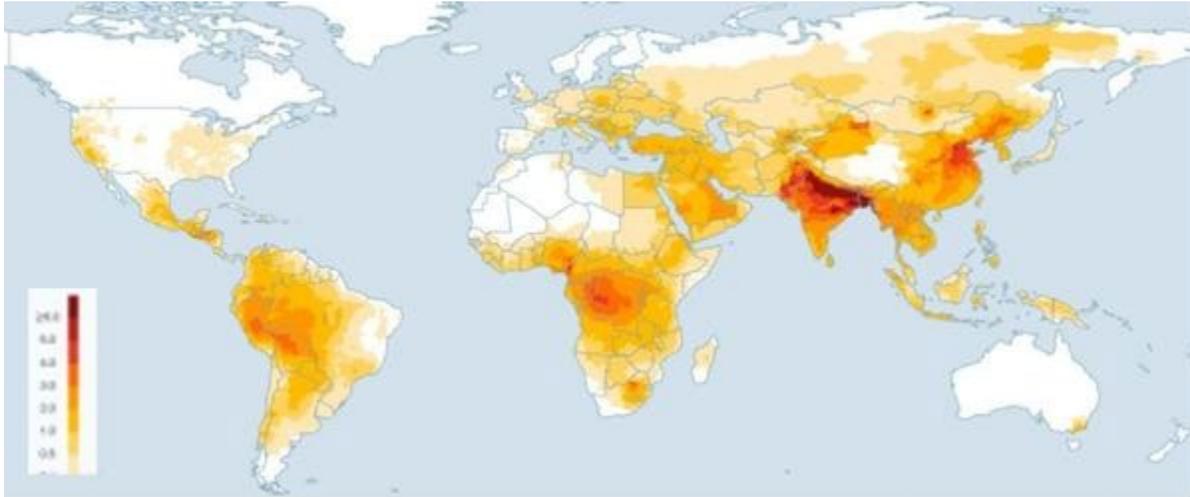
- Maritime ship traffic emits fully half the total amount of particulate matter as global road traffic.
- The fuel used by maritime shipping contains 3,500 times the sulfur content allowed in vehicles.
- Maritime shipping is responsible for 20% of sulfur dioxide emissions on the US West Coast and 38% of all sulfur dioxide emissions on the US East Coast.



- Summer average temperature [change](#) in the US, 2017 vs. 2021, in °F:

- West: +2.7
- South: +1.3
- Central: +1.3
- East: +1.5

- The WHO changed its particulate pollution guidance from 10ug/m3 to 5ug/m3. *Insert:* the University of Chicago [infographic](#) reflects the new WHO guidance:



## - Research and Markets -

- In spite of the recent global energy shortage, OPEC+ [restricted](#) its oil production by about 100,000 bpd; of all 13 cartel members, Saudi Arabia had the largest production [decline](#).

- There are about 3 million miles of natural gas pipelines in the US, an integrated network that includes more than 2 million miles of natural gas distribution mains and pipelines, 320,000 miles of gas transmission and gathering pipelines, and 175,000 miles hazardous liquid pipelines ... or, enough to [circle the Earth](#) about 120 times.

- New and forthcoming federal funding opportunities to watch:

- \$725 million to help states [clean up](#) abandoned coal mines.
- \$2.3 billion to strengthen grid resilience against extreme weather. The funding can cover a range of projects including hardening the grid, building distributed energy resources, and setting up microgrids. [Applications are due](#) by September 30, 2022.
- A Request For Information to help shape a \$500M program funded by [BIL](#) to place clean energy demonstration projects on current or former mine lands across the US.
- The [Geophone Prize](#) of \$850,000 to support work with NREL on technologies that address the challenges of operating seismic sensors in geothermal environments.

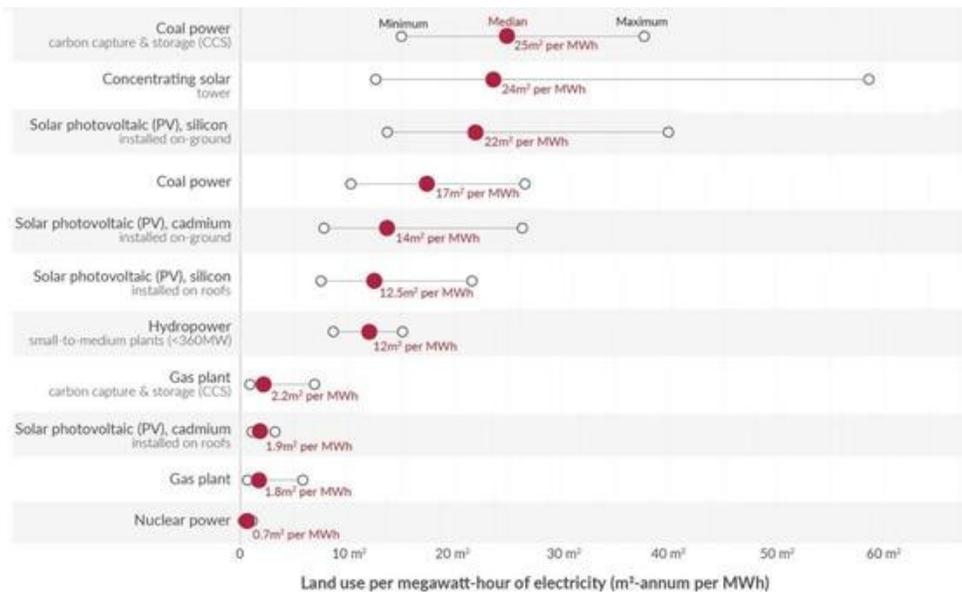
- A new interactive [map](#) created by the Climate Solutions Lab in Brown University's Watson Institute allows users to see **what investment in clean energy would mean by ZIP code**.

- Hawaii is acquiring Tesla Megapacks to replace its last coal-fired power plant with the [largest battery system](#) in the world (185 megawatts/565 megawatt-hours).

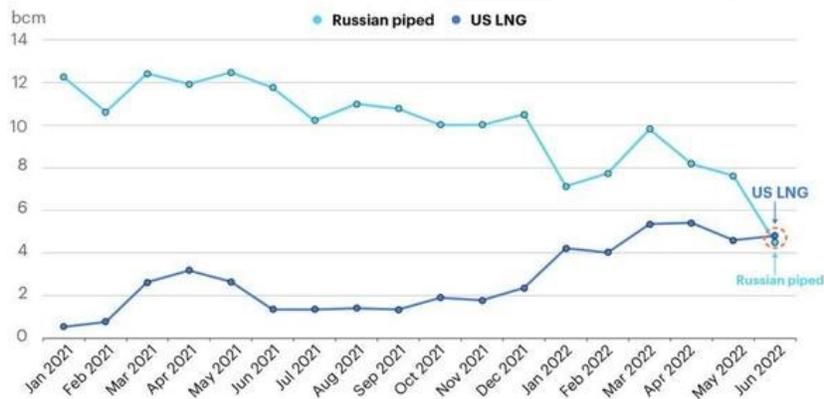
## - Electricity, Power & Infrastructure -

- *Special insight:* In late February 2021, Winter Storm Uri destroyed property and damaged power plants and transmission infrastructure in Texas and neighboring states. The storm also led to a spike in electricity demand and a shortfall in supply because a significant amount of gas-fired generation was taken offline and renewables (and wind in particular) were affected as well. To incentivize more electricity generation, ERCOT increased the spot electricity price. The result was that for a three day period, the spot market price for electricity went from \$20 to \$40 per MWh to \$9,000 per MWh. Net sellers of electricity in ERCOT benefited enormously while buyers paid a steep price. The Texas power market created extreme conditions for "hedge merchants" — electricity was sold into the spot market and the revenues were then swapped or otherwise hedged for a fixed payment stream. (The [hedge](#) is a way of reducing the volatility of electricity revenue so that the project can be financed.) **The ERCOT electricity market is still working through the hedging contracts caused by Uri that continue to affect current and planned future hedges.**

- *Table insert below:* **A sample of energy sources, by estimated total amount of [land used](#) to generate a common unit of electricity** (*Editor's note:* this sample is somewhat arbitrary; true totals are affected by location, waste is not factored into total land use, and some categories consider land for mining but not manufacturing).



- For the first time, total EU LNG imports from the US [exceeded](#) Russian piped gas:



- *Cybersecurity spotlight*: The North American grid is perhaps the most complex technology on Earth. For instance, the entire grid is interconnected to help protect against countrywide outages. However, use of **common software across the entire grid creates opportunities for cyber attacks and digital sabotage**.

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## - Universities in the Spotlight -

- AES recognizes the Center for research in Energy and Environment ([CREE](#)) at **Missouri S&T** as an "influencer" in its [report](#) on energy and sustainability research in higher education.

- **Central Michigan University** won first place in the 2022 Campus Race to Zero Waste [sustainability](#) competition.

- **Clemson University** is leading a consortium of [partners](#) (**Greenville Technical College** and **Spartanburg Community College**) to create a workforce development program on behalf of electric and autonomous vehicle manufacturing and cybersecurity.

- The interdisciplinary Institute for a Sustainable Environment ([ISE](#)) at **Clarkson University** is for faculty and students interested in the energy, food, water, and land nexus.

- **East Carolina University** received a \$1.4 million [grant](#) to develop desalination systems.

- The Center for Midstream Management and Science at **Lamar University** has launched a "midstream information clearing house" [research resource](#).

## - Quotes -

[President Biden on why he is traveling to Saudi Arabia](#)

- "[No](#), I'm not going to ask them to increase oil production."
- "I've indicated that I thought they should be [increasing](#) oil production."
- "It's not about the oil – that's [not the purpose](#) of the trip."

Meanwhile, according to Prince Abdulaziz, "Relations between Saudi Arabia and Russia are as [warm](#) as the weather in Riyadh."

## - Bulletin Board -

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- The Infrastructure, Investments and Jobs Act, also commonly known as the Bipartisan Infrastructure Law (BIL), offers funding to help develop sustainable domestic critical material supply chains. [On July 14](#) (in-person) and on [July 19](#) (virtual), the US DoE will accept suggestions and questions regarding funding and participation in these programs.

- On Thursday, July 21, 2022, **C3E** will host the [webinar](#), "The Storage Opportunity: Customer Demand, Market Reform, and Technology Innovation."

- On July 13, OurEnergyPolicy is hosting a [webinar](#) on new battery technology innovations.

- **Uneath** is a dynamic Mobile GIS that connects assets, data, and field teams for critical infrastructure providers. Start your [free](#) trial today.

- **ClearPath** is looking for either an upcoming graduate or undergraduate with relevant experience to join its [policy](#) team as a 2022–2023 Policy Fellow. The fellow will work to advance the entire suite of clean energy technologies.

- **Ubiquitous Energy**, a manufacturer of transparent solar products, has a new [partnership](#) with Citrine Informatics, an artificial intelligence service provider for materials development.

- If you have [data](#) but not the talent or staff to make it valuable, please consider the **proSkale** platform— it helps organizations manage and invest their data ... like cash.

## - Gratitude -

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