

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

May 31, 2022

- The Power Read -

- **Awards:** Last chance to nominate a candidate for Subject Librarian of the Year.
- **LNG:** The US installed nine new pipelines in Q1 2022.
- **Mining:** Argentina is the site of the new lithium rush.
- **No-/low-carbon:** There is an as-yet-unidentified Moore's Law-like phenomenon happening in the evolution of wind turbine size and output.
- **Special policy insights:** 3 new things to know about Russia's invasion of Ukraine.
- **Climate:** 2007 is the historical peak of energy-related global emissions.

- News from the Society -

Academic/Research Subject Librarian of the Year Award



Last chance: [nominate](#) a deserving candidate for the American Energy Society Subject Librarian of the Year. The winner, announced at the [ALA conference](#) in June, receives an all-expenses paid personal day of their choice (some restrictions apply).



- The ACORE [Finance Forum](#) returns to New York on June 7–8, 2022.

Get your ticket to **attend in person** before they sell out, or register for **virtual live stream**. Don't miss this opportunity to hear from some of the nation's leading

investors, developers, utilities, manufacturers, advisors and buyers.

- July 7–8, the American Energy Society co-hosts the 12th annual SISE Conference: [Celebrating the Prosumer](#), in partnership with the University of Illinois, Chicago, and Argonne National Laboratory.

- Fossil Fuels -

- *Retrospective:* In 1900, roughly 50,000 horses pulled carts, cabs, and buses around the streets of London and generated roughly 1,000 tons of dung per day. All this manure attracted rats and flies, which spread disease. At the same time, coal-fired industry contributed a nearly permanent level of **600 PM** air pollution (significantly worse than Beijing or Delhi today). In other words, **in London during the early industrial era, the coal-powered manufacturing sector and the pre-fossil fuel transportation system were literally making citizens very sick.**

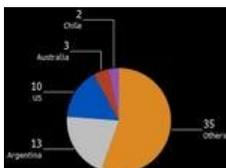


- Gas -

- In Q1 2022, **9 new natural gas pipeline projects received FERC approval or were completed**, which will provide 0.43 Bcf/d of pipeline capacity. This was the lowest quarterly addition since 2016. (*Insert below: a [map](#) of the recently approved or completed LNG pipelines.*)



- Mining, Minerals and Coal -



- **Argentina has 13 lithium mining projects, [more](#) than any other country.** The US has 10 either active or in development.

- Carbon Capture -

- The US DoE filed a Notice of Intent (NOI) to [fund DAC hubs](#), a kind of save-the-date for companies interested in applying for about \$3.5B. (Note: currently, all the direct air capture facilities in the world combined have the capacity to [capture](#) about 0.01 million metric tons of CO2.)

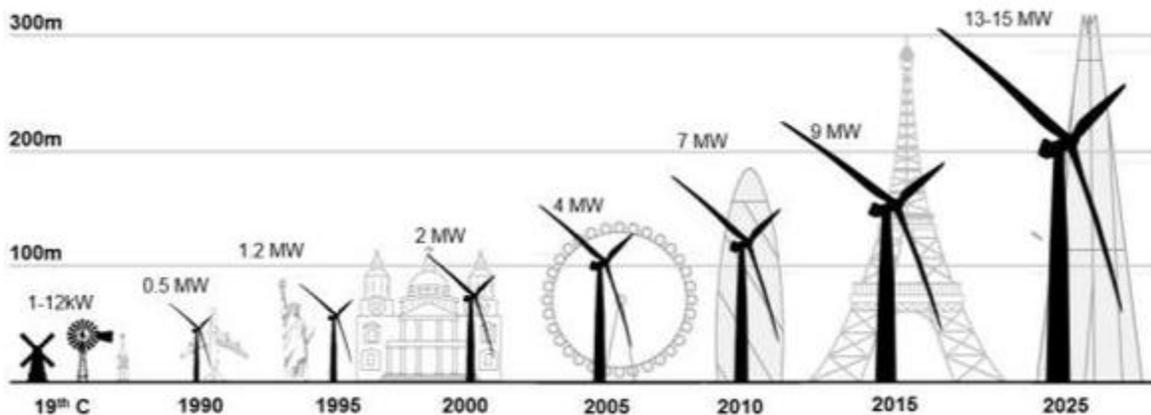
No- / Low-Carbon and Renewable Energy

- Between June and August 2022, utility-scale wind and solar will set [all-time generation records](#) that will probably be broken every summer going forward.

- Every morning, each nuclear electricity generator in the US reports its operating status to the Nuclear Regulatory Commission (NRC) to be compiled in an "Outage Report." In general, nuclear generators typically operate at or near maximum capacity; nearly **all outages are for refueling and happen during the fall and spring months**. These are often referred to as "shoulder months," when demand for electricity is usually lowest because demand for heating and cooling is lower.

- In the EU, buildings are [responsible for](#) about 40% of total energy consumption and 36% of greenhouse gas emissions. Only 1% of buildings in Europe undergo energy efficiency renovations each year, and about 75% are not energy efficient. Yet, the EU has invested [more](#) in energy efficiency for buildings than any other region in the world.

- *Insert below:* The [evolution](#) of wind turbine size and output (in meters and MWs). See also the report on [wind plants of the future](#).



- AES applauds the article on hydropower, [Watershed Moment](#). Also, AES Members have access to the white paper [Water Works](#).

- Energy Policy & Geopolitics -

- The \$1.2 trillion from the Bipartisan Infrastructure Law (BIL) contains substantial funding for innovators, businesses, community organizations, and local governments for new infrastructure supporting decarbonization, including:

- \$18.6B for a new [Joint Office of Energy and Transportation](#) to support collaboration between the departments of Energy (DOE) and Transportation (DOT).
- \$7.5B to build out a national electric vehicle (EV) charging network.
- \$3.16B to support manufacturing batteries and bolstering domestic supply chains.
- \$6.4B for the DOT's Federal Highway Administration in support of a new Carbon Reduction Program (CRP), such as modernizing bus fleets and facilities.

- US Senator Joe Manchin (D-WV) is still the primary opponent of President Joe Biden's proposed \$1.7 trillion "Build Back Better Act." **Sen. Manchin has responded with a [reconciliation package](#)** that highlights three major priorities: inflation and deficit reduction, lowering drug prices, and energy and climate (which proposes a balance between fossil fuels and clean technologies).

- **Global agriculture receives about \$540B every year in [subsidies](#).**

- To support the development of a lower-carbon economy, the Government of Gujarat, India, has proposed a new [cap-and-trade market for carbon emissions](#). Researchers at University of Chicago, Yale, and [J-PAL](#) are designing the program.

- Spotlight: Russia's invasion of Ukraine -

- **5 new ideas**, by AES Member Dan Yergin at [Davos](#):

1. Russia was more integrated into the world economy than assumed.
2. Russia is going to end up much more connected to, and dependent upon, China.
3. Russia *was* an energy superpower; now it is a major producer but not a superpower.
4. Putin miscalculated Europe's willingness to end its dependence on Russian energy, especially Germany.
5. Natural gas from Russia is the most challenging energy product to replace; oil is the easiest.

- **Insights Part II, by AES Member [Steve Cicala](#)** of Tufts University and University of Chicago: Putin has methodically developed gas supplies as a strategic weapon, first buying up storage assets in Europe over the last decades, then leaving them empty this past winter. At the start of the invasion, Russian-backed hackers attacked US-based LNG facilities that might provide alternative supplies. Taken together, Russia engineered a position of maximum leverage to deter European support for Ukraine. Only a mild winter and a late invasion prevented Russia from pressing its advantage. But Europe's next winter will arrive in just a few months.

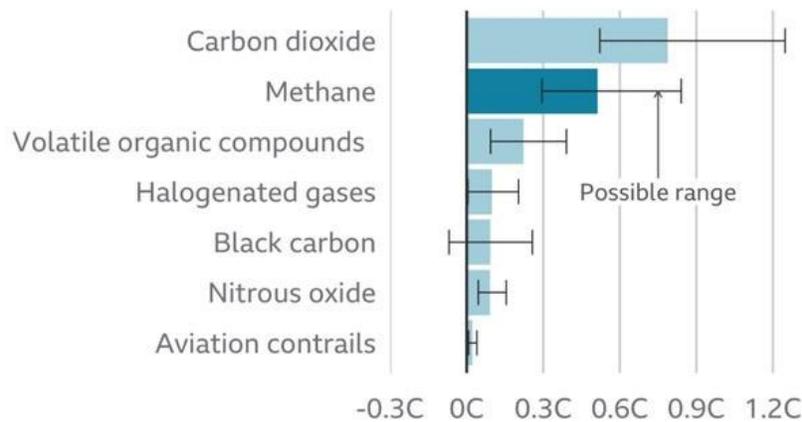
- **Insights Part II, by [David Ignatius](#), *Washington Post***: In 2021, the Biden administration warned western Europe that Russia would invade Ukraine and that the proposed Nord Stream 2 pipeline would strengthen Russia's control of the energy market. In October 2021, the Biden administration warned Ukraine that the threat was imminent, but President Zelensky was skeptical.

- Related, many European energy companies have [accepted](#) Russian President Vladimir Putin's demand that they purchase natural gas using an elaborate new payment system, a concession that avoids more gas shut-offs, gives Putin a public relations victory, and continues to fund his war effort in Ukraine.

- Climate and Sustainability -

- 2007 is the historical [peak](#) of energy-related global emissions (6 billion metric tons).

- *Insert below: Gases [contributing](#) to global warming (relative to 1850), in degrees Celsius; uncertainties accounted for as a "possible range."*



- In 2021, US energy-related carbon dioxide (CO₂) emissions [increased](#) by 296 million metric tons, or 6%, compared with 2020 levels, but 274 MMmt (5%) lower than pre-pandemic levels in 2019. The recent increase is due to a rise in economic activity and consumption.

- The US Navy released its climate action plan. The topics that received the most attention: 1) cyber-secure microgrids; 2) increasing its supply of lithium batteries; 3) reducing greenhouse gas emissions from operations. AES Members have access to the [Plan](#).

- Research and Markets -

- In the [Bakken](#) region of North Dakota, natural gas production is increasing but crude oil production is falling.

- Manufacturing electric vehicles uses 50% [more water](#) than the manufacture of ICE automobiles. (*Note: mining lithium requires large amounts of groundwater to pump out the brines.*)

- Researchers at the University of California San Diego and Boise State University were able to create a new lithium-ion battery material by [transforming](#) a non-crystalline material into a crystalline one by cycling it with lithium.

- A team at the University of New South Wales (UNSW) has demonstrated measurable power generation from "the inverse of a conventional solar cell" — [at night](#).



- The Army SBIR|STTR Program releases [rolling](#) contract opportunities to respond to critical needs as they arise.

- Electricity, Power, Efficiency, and the Grid -

- "**Curtailement**" / cur-tail-ment / kər'tālmənt / noun / *def*: the involuntary but deliberate reduction in the output of generated electricity as compared to what could otherwise be produced given available resources. Curtailement of generation has been a normal occurrence since the beginning of the electric power industry, though the practice is more common today. For instance, in 2020, there was curtailement of about 3.6 terawatts of [wind](#) generated electricity in England.

- Recently, Russia cut off electricity exports to Finland; however, **Sweden and other neighboring countries [made up](#) the shortfall.** (Notice the token amount of electricity flowing from Finland to Russia, a not-so-subtle signal to the aggressor.)



- Universities in the Spotlight -

- The Center for Midstream Management and Science at **Lamar University** has enhanced its Midstream Information Pathfinder [portal](#), which now accesses approximately 20,000 research papers about the midstream (up from 12,900 papers).

- **Duke University** is [looking for](#) a policy associate and postdoc researcher to work on energy poverty/access & sustainable energy transitions (Policy Associate, James E. Rogers Energy Access Project; and, Postdoc Researcher, Sanford School of Public Policy).

- **West Virginia Wesleyan College** connected a new [solar array](#) that will provide about 11% of the campus' power.

- **GaTech** has made a number of contributions to [hydrogen](#) RD&D, including but not limited to: H2 production, storage, and utilization.

- **Miami University of Ohio** will [replace](#) the current Environmental Earth Science Bachelor of Arts degree with a new Environmental Earth Science Bachelor of Science degree.



- AES applauds the **NCSU** FREEDM System Center 2021 [Report](#).

- Quotes -

Russia's invasion of Ukraine in retrospect

"Russia had no Plan B."

—Marek Menkiszak, Polish intelligence analyst with the Centre for Eastern Studies in Warsaw

"We [the Russians] are trapped.... It was not meant to be a full-scale war but a special operation."

—Anonymous Russian military advisor, on the plan to support a coup that would topple Zelensky's government with the Ukraine opposition and pro-Moscow political party

"US diplomacy gets high marks."

—Emily Haber, German Ambassador to Washington

- Bulletin Board -

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- **Unearth** 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.

- [Free eBook](#), *Ground Robots for Autonomous Operations in Oil & Gas*.

- Gratitude -

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