

# ENERGY MATTERS

*Soundbite summaries of the energy news you need to know*

AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

**March 21, 2022**

## - The Power Read -

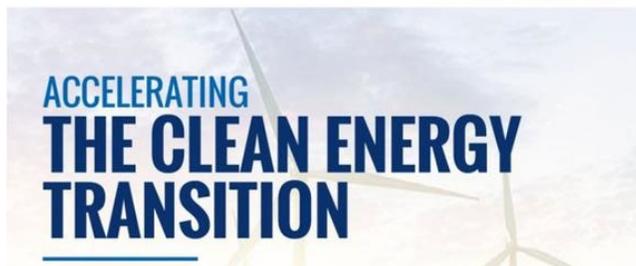
- **Gas:** Most LNG exported to Europe comes from the Permian Basin.
- **Mining:** The market for the "devil's mineral" (nickel) gets shut off.
- **Low-carbon:** Utility-scale solar probably performs better after the first year.
- **Policy:** The changing climate is intensifying geopolitical conflict.
- **Climate:** The Amazon is close to its tipping point.
- **Electricity:** Most transmission lines in the US are well beyond life expectancy.

## - News from the Society -

- **Spread the Energy, Win Prizes:** Check out our new [AES referral program](#) with awards you don't want to miss!

- July 7–8, **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. [Contact us](#) if you are a student or early-career energy professional and would like to apply for a SISE Fellowship.

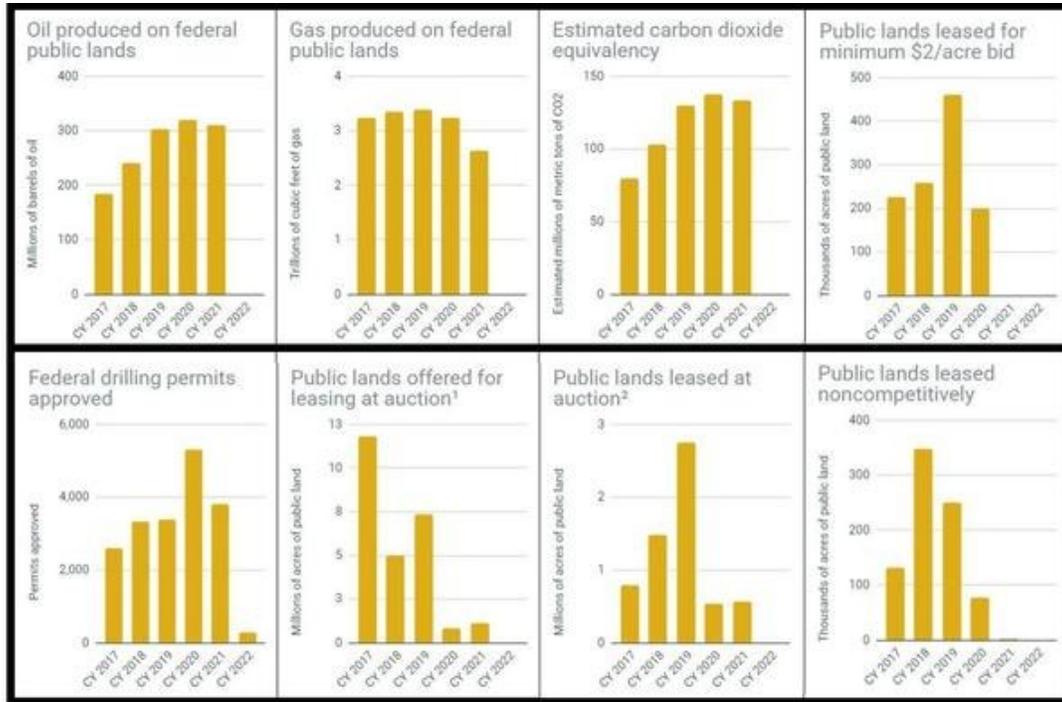
- AES applauds the [MIT Energy Conference](#), March 31 and April 1, in Boston.



## - Fossil Fuels -

### - Oil -

- A comparison of oil and gas [production](#) on federal public land, by permitting and leasing totals over the last five years:



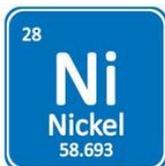
### - Gas -

- A comparison of US [natural gas production](#) regions, export vs. domestic:

- **Most active production region for export to Europe:** Permian Basin (Wolfcamp and Haynesville formations).
- **Most active production region for domestic markets:** Appalachia Basin.

Note: The Wolfcamp and Haynesville formations are very close to LNG export terminals on the US Gulf Coast in Texas and Louisiana. Access from Appalachia to export terminals is constrained by pipeline infrastructure, and the region has relatively lower production costs.

## - Mining, Minerals and Coal -



- Special report: The global [nickel market](#) – the "devil's mineral" – got caught in a pricing blackout. The London Metal Exchange suspended all nickel trade and froze the price at \$48,048/ton, and the Shanghai Futures Exchange in China also suspended trading. In other words, for an extended period there was no global nickel market or price, and things aren't that much better now. The unusual market condition is not entirely due to demand, though core markets that use nickel include electric vehicle

battery manufacturing and stainless steel mills. Indeed, "the devil's mineral" refers to a history of volatile markets in 1979, 1988, 1992; a high degree of impurities; horrific mining conditions; and, a price range that shifts between \$150 to \$101,365/ton.

## - Carbon Capture -

- **Direct air capture systems (DAC) use a lot of energy in heat and electricity.** [AES Members](#) have access to peer reviewed research on the energy use of DAC systems.

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## - Low-Carbon Energy -

- **It appears that utility scale solar plants may perform [better](#) after the first year in operation** (-1.3% in first year vs. -1.2% in years 2 thru 5).

- **The distribution of [hydrogen](#) production facilities in the US, by region:**

Midwest (34)	West (42)
Northeast (10)	Canada/Mexico (31)
South (111)	<b>Total 228</b>

- From 2010 to 2020, renewable power generation costs [declined](#) 60%.

- Related, renewable power generation costs have continued to [fall](#) since 2020:



- **Renewables are the [second most](#) prevalent electricity source**, by percentage of the total (renewables, in order: wind, hydroelectric, solar, biomass, and geothermal):

- Natural gas (40%)
- Renewables (21%)
- Nuclear (20%)
- Coal (19%)

- Bridgewater Associates, the world's largest hedge fund, says that **renewable energy sources are ultimately [deflationary](#) (almost no cost once installed), while fossil fuels are essentially inflationary (harder to extract over time).**

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## - Energy Policy & Energy Geopolitics -

- The Russian military is targeting civilian populations *and* energy infrastructure (red dots), a strong signal that Moscow intends to destroy as well as occupy Ukraine.



- The Ukraine war will turn Russia into a “[reduced energy power](#)”.

- A sample of recent geopolitical water-related conflicts made worse by the changing climate (AES recommends interactive water conflict chronology [timeline and map](#)):

- Russian warplanes attack water station in Idlib, Syria (2022)
- Militants destroy water infrastructure in Mali (2022)
- Water tanker attacked by Al Shabaab militants in Somalia (2022)
- Airstrike hits water tanks in Saada, Yemen (2022)
- Russian troops destroy Ukraine dam that blocks water to Crimea (2022)

- Top 5 companies holding permits to [drill](#) on public land, out of 3,824 total permits:

1. EOG (898)
2. Devon (229)
3. Continental (179)
4. Mewbourne (153)
5. XTO (141)

- Top 5 companies with active [leases](#) to drill on public land, out of 49,260 total leases:

1. EOG (1,668)
2. Exxon (1,498)
3. Occidental (1,441)
4. Hillcorp (1,437)
5. ConocoPhillips (1,104)

- California once again can set its own [car emission standards](#) under a waiver approved by the US EPA.

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## - Climate and Sustainability -

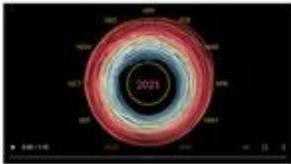


- **The [Amazon](#) is close to its tipping point**; the world's largest rainforest will soon be replaced with grasslands, adding tens of billions of tons of carbon into the atmosphere. AES Members have access to peer reviewed research on [tipping points](#) and another on the [Amazon](#).

- **Energy-related [CO2 emissions](#) rose to their highest level in history** last year (+6%, or 36.3 billion metric tons), primarily because global economies rebounded from the coronavirus pandemic with greater reliance on coal. The increase of global CO2 emissions was led by China, which contributed 11.9 billion tons. AES Members have access to the [IEA report](#).



- **Sunflowers have [phytoremediation](#) properties** that can be used to clear toxins from the environment, like after a nuclear leak, spill or disaster. After Chernobyl and "3/11" (the earthquake and nuclear disaster in Fukushima), hundreds of thousands of sunflowers were planted in nearby fields.



- **AES recommends: a scientific visualization [video](#) of global temperature anomalies between the years 1880-2021.**

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## - Research and Markets -

- **Spotlight: oil and gasoline prices:**

- With higher gas prices, **SUV owners pay about \$110 more per month for gas**; the average non-EV or hybrid compact car owner pays \$60 more.
- On average, every 10% increase in fuel costs leads to a 4% [increase](#) in bus ridership and 8% increase for rail (pandemics excluded).
- A comparison of prices, oil/barrel vs. gas/gallon, 2008 vs. 2022:

Oil & Avg Gas \$ June 2008:

Oil: \$140/barrel (record)

Gas: \$4.10/gallon

Oil & Avg Gas \$ Mar 2022:

Oil: \$110/barrel

Gas: \$4.32/gallon

- Due to Russia's invasion of Ukraine and historic low [fuel shortages](#), it is highly likely that **there will be a gasoline shortage during summer driving season**, much like in 1973.

*allbirds*

- **Allbirds was accused of "[greenwashing](#)"** by the Securities and Exchange Commission and was forced to stop using the phrase "sustainable (initial) public offering" as part of its messaging (including the phrase "world's first Sustainable Public Offering.") *Note: a case could be made that Allbirds is actually far [more](#) sustainable than other public companies.*

- The stance of major energy companies doing business in Russia, [a sample](#):

A clean break:

BP  
Eni  
Equinor  
Exxon  
Monroe Energy  
Shell

"Digging in" or no position:

Baker Hughes  
Halliburton  
Koch Industries  
Schlumberger

- ComEd has issued a Request for Proposal ([RFP](#)) from contractors who can manage their various energy efficiency programs.

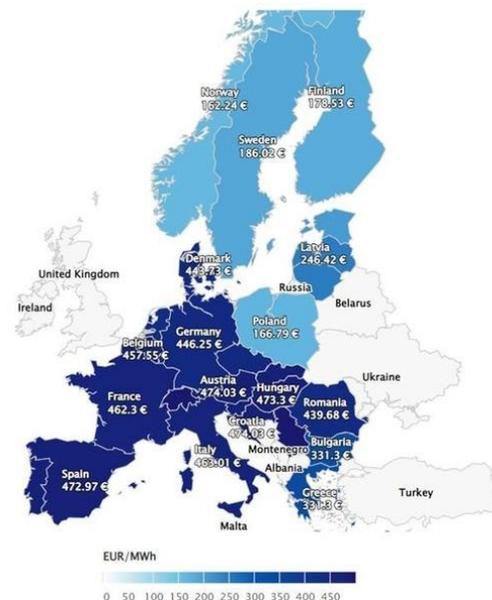
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## - Electricity, Power, Efficiency, and the Grid -

- Average day-ahead electricity prices in Europe, by Euro/MWh:

- 2019: 36 €
- 2020: 40 €
- 2021: 110 €
- 2022: 175 - 465 € (see map, insert)

Summary: Day-ahead electricity prices in Europe tripled in 2021 compared with 2020, and prices continues to [surge in 2022](#).



- A summary of the [Infrastructure Investment and Jobs Act \(IIJA\)](#) passed in November 2021 and now in effect:

- Section 40101: grant program to reduce power outages due to extreme weather/wildfire.
- Section 40103: provides Federal financial assistance for projects that demonstrate new transmission, storage and distribution infrastructure.
- Section 40105: authorizes study of capacity constraints on electricity grids.
- Section 40106: establishes a \$2.5 billion loan fund to upgrade transmission lines.
- Section 40107: \$3 billion in funding available to support grid modernization efforts, in the form of matching grants.

- About 70% of [transmission and distribution lines](#) are well into the second half of their 50-year life expectancy, and some are more than 100 years old.

## - Cybersecurity Spotlight -

- It is now law that ransomware payments are [reported](#) to the Cybersecurity and Infrastructure Security Agency (CISA).

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## - Universities in the spotlight -

- Chemists at **Washington University, St. Louis**, can modify "[smart bricks](#)" to store energy.
- Researchers in the CCEI at the **University of Delaware** have found a new way to boost [catalyst activity](#).
- AES recommends [Carbon Free Boston](#), by the **Institute for Sustainable Energy at BU**.
- **Cornell** researchers are [engineering bacteria](#) that can be used to extract rare earth elements from ore.
- Pierre Conner, Executive Director of the **Tulane Energy Institute**, has published the article, "[Oil & Gas Industry Can Thrive in Clean Energy Transition](#)."
- **Stanford Precourt** is, once again, hosting the [Explore Energy Community](#) social on April 7.

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## - Quotes -

"A full transition of the economy as it grapples with the effects of climate change is critical to the future of American prosperity."

- Sarah Bloom Raskin, after withdrawing from consideration as the Vice Chair for the Federal Reserve; Republicans and one Democrat opposed her nomination in part because of her views prioritizing climate change.

"We need a full embargo, a full boycott."

- Ukrainian President Volodymyr Zelensky, asking the US Congress to block Russian ports

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## - Bulletin Board -

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[Members](#) of AES can post an announcement for free! [Contact us](#) for more information.

- March 22: American Energy Society supports the upcoming webinar [Innovation Hubs: A New Horizon for Cleantech Investing](#), by SEP.
  - **March 23-24**: 8th Annual West Texas Oil & Gas Convention at the Midland County Horseshoe Pavilion. All [AES Members](#) can register for free.
  - Unearth Labs makes a case that utilities need a [digital transformation](#).
  - Many companies are implementing drone programs; here's what a successful drone program looks like, from AES expert member [DroneDeploy](#).
  - Clearpath has published a new report on [clean hydrogen](#).
  - mHUB has launched its [Climate and EnergyTech](#) accelerator program (in support of prototype hardware solutions. Applications are open through March 28.
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- Gratitude -

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