

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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AMERICAN ENERGY SOCIETY

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- News from the Society -

Empowering Impact

On March 29, AES will release ***EMPOWERING IMPACT: A Report on Incubators and Accelerators of Energy in the US***. Members receive the report for free; if you are not a member, [contact us](#) to preorder the report, or [join](#) the Society. The comprehensive dataset - an Excel spreadsheet that lists 385 incubators and accelerators with sub-sector focus and other information - and "Hot E-Tech Tip Sheet" is available to organization members. (Note: The release date was pushed back two weeks for editors to finish interviewing "Influencer" programs.)



- Become a Member - [join AES for \\$129/year](#); or, [Friends are free](#).
- [Contact us](#) about organization membership and discounts.
- If you missed the previous issue of [Energy Today](#)

- In this issue of *Energy Matters* -

- **Mining and Coal:** All eyes on Greenland
- **Electricity:** America's energy report card
- **Other:** \$42+ billion in funds available (DoE, ERC, CHM...)



Fossil Fuels

- Oil -

- **The global oil market - not for the faint (or "feint"!)** of heart. **Demand** for oil will set a new record, while oil prices (crude, gasoline, distillates, etc.) rise and fall by the week.

- *Stable*: In the 2nd week of February, oil markets continue to recover, pushing closer to pre-pandemic prices.
- *Up*: In the 3rd week of February, Saudi Arabia cuts production and then the Texas Freeze slows refining operations, pushing oil past pre-pandemic prices.
- *Down*: In week 4, a global increase in inventories pushes prices down to pandemic levels. Many members of OPEC+ **increased** production and US commercial crude oil inventories **increased** by 21.6 million barrels and will continue to rise.
- *Up and down*: In the 1st week of March, the market tightens as Canada takes production offline; but Iran increases production, with India always a willing buyer. OPEC+ leaves production quotas **the same** (but Russia is allowed to increase.)

- Natural Gas -

2019 top LNG export markets

1. Qatar (77 mn tons)
2. Australia (44 mn tons)
3. Malaysia (25 mn tons)

2020 top LNG export markets

1. Qatar
2. Australia
3. US

Fastest growing export markets

1. US
2. Russia
3. Australia

- Mining, Minerals and Coal -

Spotlight: Greenland

- *Featured story*: The US Geological Survey (USGS) says **Greenland has "the world's biggest undeveloped deposits of rare earth metals,"** that can be used to create compact, super-strong magnets which help power equipment such as wind turbines, electric vehicles, combat aircraft and weapons systems. [Two Australia-based mining companies](#), one seeking funding in the United States, the other part-owned by a Chinese state-backed firm, are racing for approval to mine the region. The company with US interests has promised it will not mine for nuclear material and has won preliminary environmental approval from Greenland's government; the Chinese-backed company said it will export nuclear fuels like uranium and was recently opposed by local residents. (*Note*: last year China produced about 90% of all REMs; the only rare earth mine operating in the US – Mountain Pass in California – is partly owned by a Chinese state-backed company that currently sends material mined in the US to China for processing.)

- Carbon Capture -

- Somewhat unexpectedly, one of the more popular topics discussed during CERAWeek was "**carbon pricing**" and the support of a **global carbon price** or **carbon tariffs** by European oil players like Repsol SA.

Note: AES Members can request "trend-spotting" data. [Contact us](#) for more information.

Trend-spotting: According to AES data, the top-5 most popular topics in energy right now:



1. Hydrogen
2. Microgrids
3. Impact-investing
4. Electric vehicles
5. Off-shore wind

Low-Carbon Energy

- The Pentagon's **US Naval Research Lab** successfully tested a [solar panel](#) in low-earth orbit as a [prototype](#) of potential future power-generating systems capturing light from the sun and beaming it back to earth as energy.

- The US FERC approved PacWave South (an Oregon State University proposal), a landmark **wave energy testing facility** located about 6 nautical miles off the coast of Newport, Oregon, which will test up to 20 megawatts of power from wave energy converters moored to the outer continental shelf.

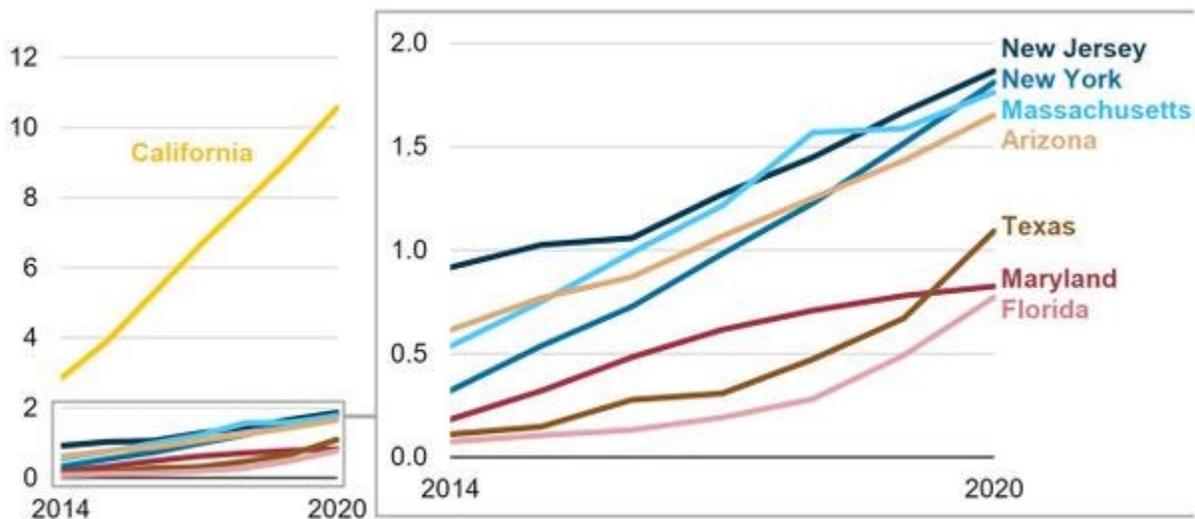


- **Bulgaria, Romania and Ukraine** are investing in [offshore wind projects](#). All three are preparing to submit Maritime Spatial Plans (MSPs) to the EU; EU Commissioner for Energy Kadri Simson said the proposals will be approved if they work collaboratively (and include Georgia) rather than independently.



- Electric companies in the US southeast and midwest have formed a [coalition to boost electric vehicle charging stations](#); the members of the coalition include: Tennessee Valley Authority, Southern Co., Dominion Energy, Duke Energy, and Entergy.

- **Top-8 small-scale solar capacity states**, in gigawatts (*insert: California has the most, Florida is the fastest growing*):



Policy

- The US Senate confirmed Jennifer Granholm to lead the Energy Department.

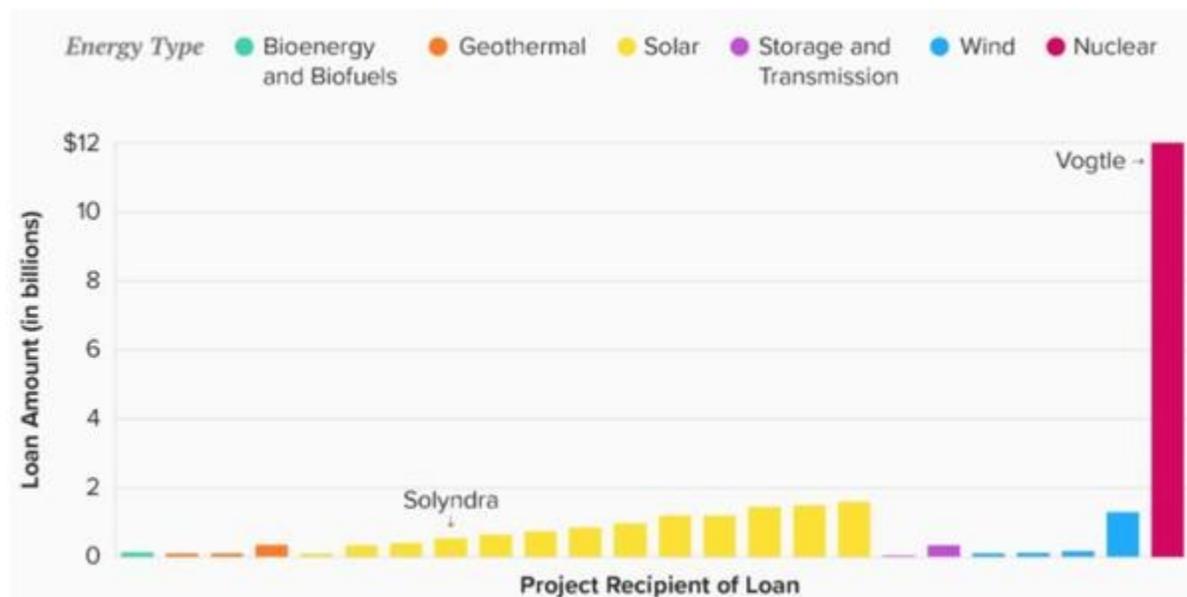
- *Beltway Buzz*: The new presidential administration and Democratic party has attracted a wave of **first-time lobbyists in the clean energy sector**. More than three dozen companies have disclosed new lobbying arrangements since election day compared with fewer than ten in the similar period in 2016. Many are first-time or international lobbying groups.

- Supreme Court Justice **Amy Coney Barrett** issued her **first decision, siding with the government** in [US Fish and Wildlife Service v. Sierra Club](#), in a battle over whether the EPA (or any federal agency) must release draft documents under the Freedom of Information Act. "The deliberative process privilege protects the draft opinions from disclosure because they are both predecisional and deliberative" wrote Justice Barrett. AES Members may like to see *Energy Today*: [The Three Most Important Energy and Environment Cases in SCOTUS History](#).

- The Senate Energy and Natural Resources Committee advanced Rep. Deb Haaland's nomination as Interior secretary on an 11-9 vote, moving the New Mexico Democrat closer to becoming the first Native American to head the department. **Public support from Senator Lisa Murkowski (R, Alaska) and Sen. Susan Collins (R, Maine) means the full Senate will probably approve Haaland's nomination.**

- The US Department of Energy's [Loan Program Office](#) has **\$40 billion in loan guarantees to help deploy large-scale energy infrastructure projects** in the US. Three categories of funding will support: Advanced Fossil Energy, Advanced Nuclear Energy, Renewable Energy & Efficient Energy. Expect job creation to be tied to funding. Jigar Shah will run the LPO.

- Related, there is growing opposition in Congress to the DoE loan guarantee program, and opponents continue to point to public funding of Solyndra in 2010 as the primary example of wasteful spending. (*Insert: a comparison of funds dispersed through the LPO, by energy type.* Note the comparison between Solyndra and the Vogtle nuclear power plant.)



Climate and Sustainability

- **April is always the highest month for PPM.** Each year, the atmosphere goes through cycles of carbon dioxide levels. The amount of particulate matter rises in early spring, then falls in May when plants bloom, pulling the CO₂ from the atmosphere to help fuel photosynthesis. (Note: the measurement of PPM at the Mauna Loa Observatory in Hawaii on March 1 was 417.98 ppm; one year ago it was 413.71, an increase of 1.08%.)
- **The Gulf Stream system has weakened to its slowest pace** (the warmer Atlantic Ocean water causes the current to slow down).
- **The decline of global CO₂ emissions in 2020 is both the largest in history and suprisingly small** when compared to the decrease in human and economic activity due to the pandemic. Indeed, global emissions fell 5.8%, or nearly 2 gigatons, while three major economies - China, India and Brazil - had emission increases.
- **About 17% (~ 1 billion tons) of food produced globally is wasted.** (Note: peer-reviewed research has determined that food waste is a global phenomenon and *not* limited to higher-income countries.)
- **The volume of clothes Americans throw away has doubled over the past 20 years; Americans buy a piece of clothing every five days, on average.**

- **Historically, the US exported 70% of all plastic waste to southeast Asia; now, exports are a tiny fraction.** Consequently, plastic waste is piling up in the US, especially in California ports. AES Members have access to Energy Today articles [We Made Plastic, Now We're Drowning In It](#); and, [Plastic Do-Over](#).



Research and Markets

- **Applications for the European Research Council's Starting Grants is open.** The ERC will provide €1.9 billion to support 1,000 top researchers; energy-related topics are a high-priority. The ERC-2021-StG deadline has been extended to April 8th.
- **CHM is accepting proposal applications for the Patrick J. McGovern Tech for Humanity prize.** Two recipients will each be awarded a \$50,000 honorarium to advance "[tech-for-good](#)" projects. Deadline: March 28.
- **Spotlight: Rare Earth Elements and Metals.** There may [not be enough](#) technical metals to make the batteries needed for electric vehicles to displace gasoline/diesel powered vehicles:
 - For the new administration to reach its EV objectives, the sector will need three times more REEs, five times more tellurium, 12 times more cobalt and 16 times more lithium.
 - At the current rate, the market will need to double the production of rare metals about every 15 years, primarily for non-ferrous magnets and lithium-ion batteries.
 - To meet 2050 objectives, more mineral ores will have to be mined than the sum total extracted in human history.

- [Rare earth elements and minerals](#) (like Dysprosium, Praseodymium, and Ytterbium) are used in a wide range of consumer and military products, from iPhones to DVD players to rechargeable batteries. They are also critical for many “green” products, such as LED lights. Many key products, such as motors in electric cars and the generators in wind turbines, contain specialized magnets that require REEs. (Note: China controls about 90% of the REE market and is clearly ahead in the "3 m's": 1) Mining and Mineral Engineering, 2) Metallurgical Engineering, and 3) Materials Science and Engineering.

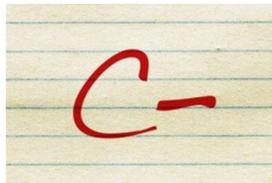
Electricity, Power, Efficiency and the Grid

- The Electric Reliability Council of Texas (ERCOT) **voted to remove Bill Magness as the president and chief executive officer** of the state's electric grid operator.

- In the early 2000s, China built the Three Gorges Dam to provide 22.5GW, or 10% of the nation's electricity. **The [Baihetan Dam](#) currently being built and will provide 16GW of electricity for the country, or about 0.7% of total demand.**

- Much is made of the amount of electricity and carbon footprint used to create [bitcoin](#) - equivalent to Argentina (*measured in real-time*). **But [quantum computing](#) is here (along with a massive amount of energy required and its carbon emissions).**

- American Society of Civil Engineers' report card for America's energy infrastructure:



Other grades
Transportation: C+
Water: D+
Roads: D
Overall: C-

- Cybersecurity Spotlight -

- [RedEcho](#), a China-linked threat activity group, targeted the Indian power sector with a combination of large-scale automated network traffic intrusions. (Note: Relations between India and China have deteriorated significantly following border clashes in May 2020 that resulted in the first combat deaths in 45 years between the world's two most populous nations.)

- Member Bulletin Board -



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- Congrats to [Catherine Wolfram](#) (UC Berkeley EI faculty affiliate and AES expert friend), who has joined the US Treasury Department to lead energy and climate change policys.
- [2021 ACORE Policy Forum](#), March 10-11.
- The MIT Enegy Conference - [Charging Ahead to a Cleaner Future](#), March 12.
- Lamar University Midstream Center is hosting a one-hour [webinar](#) on "Trends in Midstream," March 16 at 10 am CT.
- UC Berkeley Energy Institute, [POWER](#) Conference on Energy Research and Policy; Virtual Event - March 16-19, 9:00-11:00 am PDT.
- ARPA-e [energy innovation summit](#), May 24-26, Gaylord National, National Harbor, MD.

- Quotes -

"They said, 'My God, only five people live up in this holler. There's only 10 people over yonder.'"

- West Virginia Senator Joe Manchin, comparing current opposition to building [infrastructure in West Virginia](#) with opposition to FDR's New Deal Rural Electrification Act, which expanded the electrical power grid in the region.

"We can make sure we require those who get the benefit of the help to be able to offer positions that allow people to have a middle-class life."

- US Department of Energy Secretary Jennifer Granholm, on strings attached to the \$40 billion in available funds.

"As I see it, these sorts of programs (the DoE's LPO) are well-suited to this marriage between big government and big business.... I think this program is as much about paying off your friends as it is about making changes to the environment."

- Senator Marsha Blackburn (R, Tennessee)

- Gratitude -

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