

# ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

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**March 22, 2021**

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## - News from the Society -

### *Empowering Impact 2021*

#### ***A Report on Incubators and Accelerators of Energy in the US***

- March 29 release date.
- Members receive the report for free.
- If you are not a member, [join](#) the Society (and receive the report for free).
- The comprehensive dataset — an Excel spreadsheet of 387 incubators and accelerators with sub-sector focus, assessments, and other information — is available to organization members. [Contact us](#) for information about organization membership and discounts.



## - In this issue of *Energy Matters* -

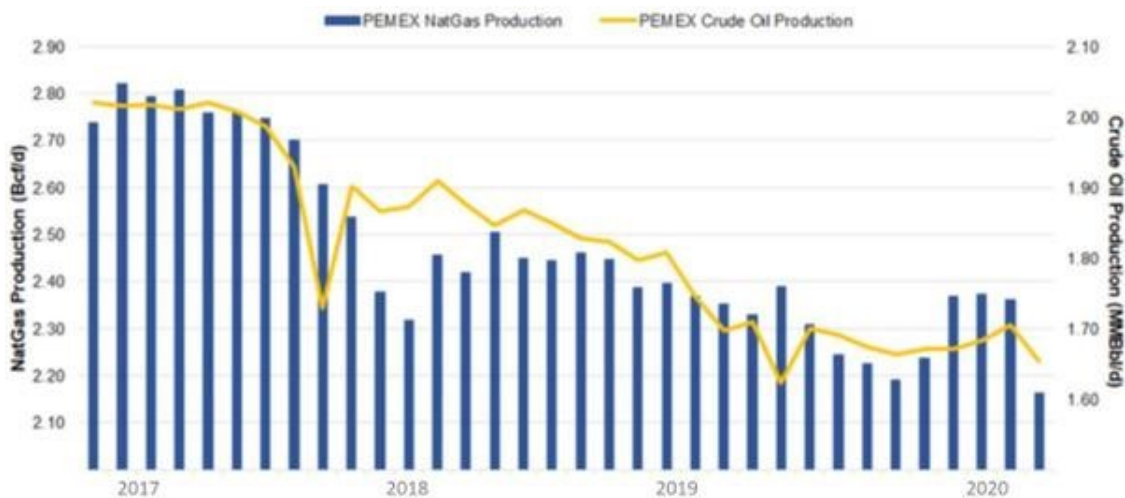
- **Mining:** DeepGreen underwater bulldozer/vacuum (*insert*).
- **Electricity:** Three national grid concept designs.
- **Oil:** Poor Pemex ... again.
- **Policy:** The SCOTUS 2021 energy calendar.



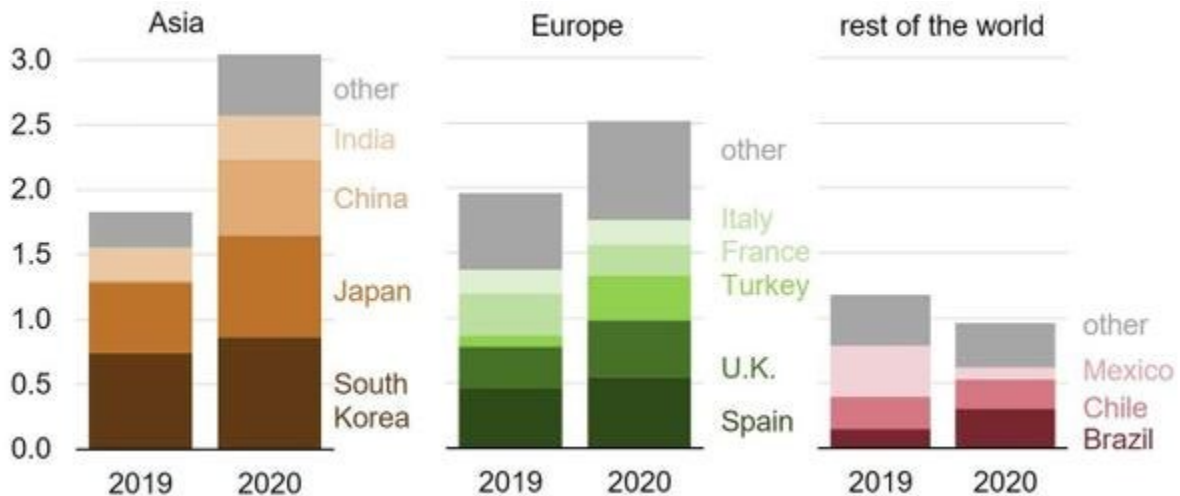
## Fossil Fuels

- **Oil:** Pemex, Mexico's state-owned oil company, is worse off than at any time in its 83-year history — output has fallen sharply (*insert below*), its debt (\$113 billion) is the highest of any major oil company, and its bonds have been downgraded to "junk". And yet, on March 18 (the anniversary of Mexico's 1930s expropriation of oil companies), **Pemex announced the discovery and exploration of three massive Gulf onshore fields:**

- Tabasco: ~ 1,000,000,000 barrels of oil equivalent
- [Quesqui](#): 900,000,000 boe; worth ~ \$32.5 billion (at \$65/barrel)
- Ixachi: 1,900,000,000 boe



- **Natural Gas:** US exports of liquefied natural gas (LNG) continued to [grow](#) in 2020, especially to **Asia** (*note: US LNG was exported to 38 countries, a record number*).



- **Mining, Minerals and Coal:** Recommended resources about the "21st century shovel wars" (the race for rare earth metals and elements):

- CSIS: [The Geopolitics of Critical Minerals Supply Chains](#).
- SAFE: [The Commanding Heights of Global Transportation](#).
- [DeepGreen](#), a new SPAC-funded startup that collects critical minerals for the EV supply chain from the deep sea (*insert: a DeepGreen underwater bulldozer/vacuum*).



- **Carbon Capture:** Shopify is the [first customer](#) of a new service from Carbon Engineering that allows buyers to reserve capacity at a direct air capture (DAC) facility. Shopify's purchase of 10,000 tons of future offset carbon makes them the single largest purchaser to date. (*Note: Carbon Engineering hopes to have its first commercial-scale plant in operation in 2024.*)



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## Low-Carbon Energy

- **Storage:** The next great leap in batteries may not come from a material (like lithium), but from machine learning.

- **Hydrogen-to-Wind:** German steel producer Salzgitter launched a [hydrogen](#) production facility powered by wind turbines.

- **Geoengineering techniques (seeding clouds with silver iodide to induce rain and snowfall) are being used in all eight states of the Mountain West** (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming). According to AES expert Members, the science of geoengineering is [unproven](#).

- **Wind set a record in 2020:** 96.7 gigawatts (GW) of installations, up 59% compared to the 60.7 GW installed in 2019.

- **Solar industry spotlight:**

- 2020 was also a record-setting year for installed solar capacity in the US
- 19.2 GW new capacity in 2020, 43% higher than in 2019
- Utility-scale solar was up 65% y/y
- Residential market the slowest growing, +11% (vs +18% in 2019)

- **Floating solar:** The wastewater treatment plant in Healdsburg, CA (wine country), has a [working floating solar farm](#), perhaps the largest in the US, providing electricity for roughly 1,120 households, or 8% of the total. (Its neighboring city, Windsor, deployed a smaller floating solar farm two years ago.)



## Policy

- **The US Senate confirmed Deb Haaland (51 - 40) as the new secretary of the Interior Department.** (The first Native American to hold a cabinet position, Haaland says her name comes from her father's side of the family, which immigrated to the US from Norway.)



- *Beltway Buzz*: **The Biden Administration is planning to extend sanctions against companies involved in the construction of the Nord Stream 2 pipeline**, many of which came from the Trump Administration. Nord Stream 2 would bring Russian natural gas to Central Europe via the Baltic Sea. The President and both parties in Congress oppose the expansion of Russian infrastructure into the NATO-sphere and its effect on Ukraine, a key ally in the region. Germany, on the other hand, strongly supports the pipeline.

- Looking ahead to [COP26](#), **delegates from Australia, Japan, India and the US (the working group calls themselves "The Quad") are drafting a treaty that "keeps the Paris agreement within reach,"** including more aggressive climate finance, support of resilience innovation, and more aggressive emissions-cutting pledges.

- The US government provides a multibillion-dollar subsidy to encourage power companies to use coal treated with the chemical NOx to reduce smokestack pollution; however, **at 22 of the 56 plants, NOx emissions were *higher* than they were when using raw coal.** The US Government Accountability Office is examining the refined coal tax credit program.

- **The SCOTUS calendar** (AES Members might also be interested in an archived issue of [Energy Today, The Three Most Important Cases in SCOTUS History](#)):

- [April 26](#): whether Guam or the US Navy is responsible for a Superfund cleanup site.
- [April 27](#): can the EPA exempt small refiners from biofuels blending requirements? (Currently, 46 pending requests are waiting until the Supreme Court rules in this case).
- [April 28](#): does federal or state government have authority in eminent domain cases (*note*: the Biden administration supports the Trump administration's position).

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## Climate and Sustainability

- **Areas with high levels of [air pollution](#) also have high rates of severe COVID outbreaks.**

- **The most energy [unjust](#) region in the US: the Great Lakes Basin**, especially for communities of color along the lower Lake Michigan basin and from Toledo, Ohio, to Rochester, NY, as well as Chicago, Cleveland, Detroit and Milwaukee. AES editors also recommend: [The Death and Life of the Great Lakes](#), by Dan Egan.

- Kern County, in south Central Valley, California, produces 80% of the state's oil and gas — and has some of the country's worst air pollution. Meanwhile, the Kern County Board of Supervisors [unanimously agreed](#) to fast-track the permitting of 43,000 new wells, from 78,000 to 121,000.

- *Featured*: **Microplastics (MPs) — tiny plastic fragments smaller than 5 millimeters — are [everywhere](#)**, including accumulations in fish and in human blood and feces. MPs have reached Earth's least populated areas, including the High Alps, the Arctic, and Antarctica.

- **Highest CO2 emissions/capita, by country/region:**

1. Palau: 59.9 metric tons CO2 emissions/capita, primarily due to its tourism industry.
2. Qatar: 38.8 metric tons.
3. Trinidad and Tobago (23.8 metric tons), O&G is 80% of total exports
4. Kuwait: 23.4 metric tons.
5. United Arab Emirates: CO2 emissions per capita (23 metric tons)

- Last year, 80 nations [amended](#) the Basel Agreement and placed strict limits on exports of plastic garbage, but **the US did not ratify the treaty**. Consequently, in January 2021, the first month that the agreement took effect, America increased its export of plastic waste.



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## Research and Markets

- *Featured:* **The Chinese government's new economic strategic plan will support innovation in preferred industries ... especially energy.** China's [Innovation Guidance Fund](#) will distribute about \$800 billion. (Next week, AES releases *EMPOWERING IMPACT: A Report on Incubators and Accelerators of Energy in the US*. [Members](#) have access to the report for free; organization members have access to the dataset. [Contact us](#) for more information.)

- **Valero, BlackRock Global Energy & Power Infrastructure Fund, and Navigator Energy Services are developing an industrial scale carbon capture pipeline system ("CCS").** The initial phase is expected to span more than 1,200 miles of new carbon dioxide gathering and [transportation pipelines](#) across five Midwest states with the capability of permanently storing up to 5 million metric tons of carbon dioxide per year.

- **The US National Transportation Safety Board (NTSB) accused Tesla of using its customers as guinea pigs to test its automated self-driving system on public roads.** AES Members have access to the [letter](#) written by the NTSB (download as a PDF).

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## Electricity, Power, Efficiency and the Grid

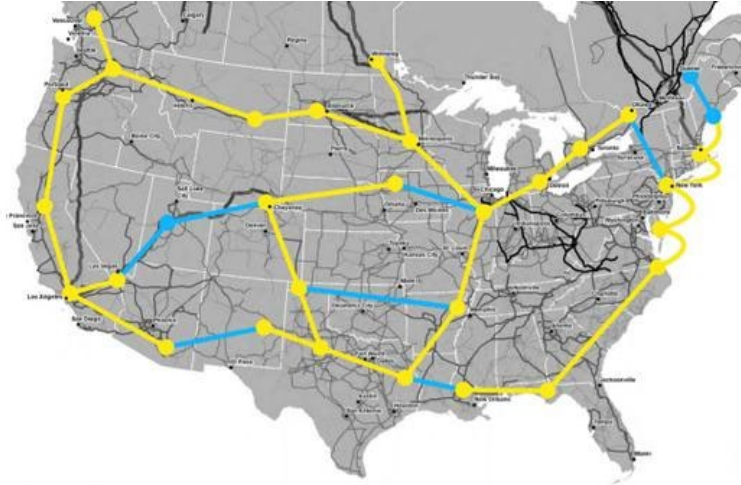
- **The [shortfall](#) in Texas' ERCOT power grid resulted in about 25% less energy than customers would have liked to consume,** and the shortage lasted about four days. For comparison, that's about 10 times larger and 20 times longer than the shortage in California last August.

- **Hybrid solar+storage is now sufficiently competitive to alter power markets, especially in the West.** The five fastest growing [hybrid](#) power markets:

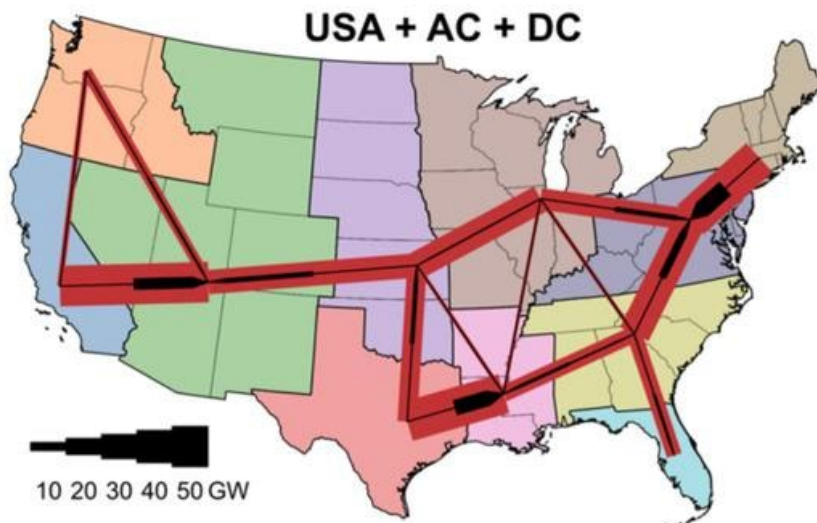
1. CAISO
2. (tie) ERCOT and PJM
3. New York/New England
4. Southwest Reserve Sharing Group

- *Featured*: It is quite likely that ambitious energy and emissions goals cannot be achieved without a new national transmission/grid (Members may also like to see *Energy Today*, [Infrastructure Redux](#)). *Insert*: **three conceptual designs of a projected national grid**. AES Members have access to a Transmission Planning [white paper](#).

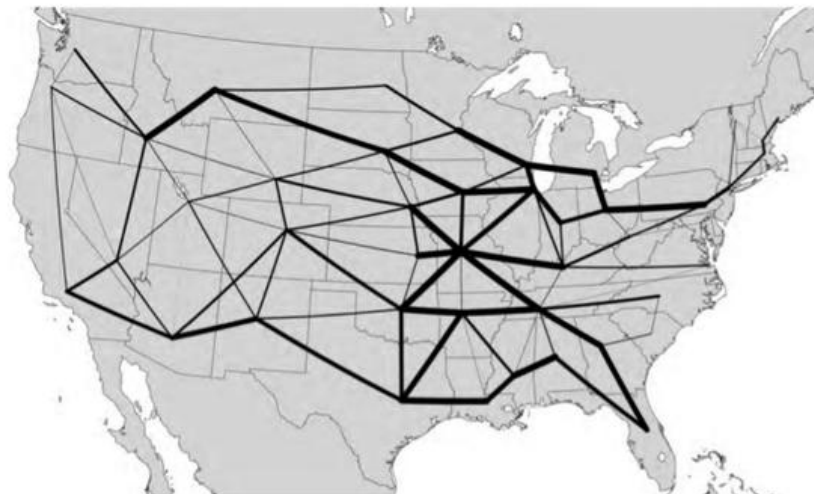
1. *Conceptual design of a national grid, by ESIG*



2. *Conceptual design of a national grid, by MIT*



3. *Conceptual design of a national grid, by ZeroByFifty*



## - Cybersecurity Spotlight -

- The FBI's Internet Crime Complaint Center (IC3) is the lead federal agency for investigating cyber attacks by criminals, overseas adversaries, and terrorists. To report a cyber/Internet crime, [contact IC3](#).

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## - Member Bulletin Board -



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- [March 22 - 23](#): Royce Institute Conference, Advanced Materials for a Sustainable Society.
  - [March 24](#): Nordic Innovation House, UC Berkeley, Swedish Embassy, Swedish consulate in San Francisco (co-hosts) - Business Leadership for Sustainability Transformation.
  - April 13 - 16: [Island Finance Forum 2021](#); Investment for Sustainable Development.
  - [April 14](#), 8:00 AM – 12:30 PM, a virtual climate conference hosted by Argonne NL.
  - May 24 - 26: ARPA-e virtual [energy innovation summit](#).
  - Retrospective Replay: [Renewable Energy in the Americas: Charging Ahead](#), hosted by the Wilson Center.
  - *Organization spotlight*: **The Children's Environmental Literacy Foundation (CELF)** is hosting an [Annual Summer Institute](#) for educators and the development of instructional resources about sustainability that can be integrated into a broader curriculum. (See also AES [energy proficiency quizzes](#) - pass the test and earn a LinkedIn badge.)
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## - Quotes -

- *From the forthcoming AES Report, [Empowering Impact](#) - Members receive the report for free - [contact us](#) for an advanced copy.*

"Everyone wins when new innovation is introduced."

- Trish Cozart, NREL and the [Wells Fargo Innovation Incubator \(IN<sup>2</sup>\)](#)

"Get to market and make an impact."

- Bill Davis of [Stance Capital](#) on the advice he shares with all energy-tech startups.

"Our support of energy-tech innovation also forced manufacturers to innovate as well — the manufacturing sector had to adapt to new energy-tech in order to catalyze tech-to-market."

- Holly Barrett, Marketing Director, [NextCorps](#)

"We knew if we wanted to expand our impact and accelerate climate action, we had to open an office in the energy *transition* capital of the world."

- Julia Travaglini, [Greentown Labs](#), on opening the first climatetech incubator in Houston while maintaining headquarters in Somerville, Massachusetts.

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## - Gratitude -

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