

Energy Matters

July 6, 2020

Complimentary, courtesy of:



News from the Society

Next week, July 13 - 17, is the 10th annual [SISE](#) conference on *Sustainable Infrastructure and the Gigaton Challenge*, co-hosted with the University of Illinois, Chicago. [Contact us](#) if you are interested in an all-access Zoom-room pass or simply want more information about SISE.

Notice to all Members: If your membership is current, we will soon send out credentials that provide full access to the [restricted](#) sections of the website.



Fossil Fuels

Oil: Operating crude oil and natural gas rigs in the US are at the **lowest** point (338 total) since 1987. So far, 308 rigs have been taken offline, primarily in the Permian (western Texas), Eagle Ford (southern Texas), and Bakken (North Dakota). Meanwhile, **investment in upstream oil and gas is expected to drop \$156 billion this year (-29%)**. *Insert: a map of **operating** offshore oil exploration and production regions.*



Natural gas: Map insert below - **proved reserves** of natural gas in Africa (AES Friends have access to a **special report** on energy in Africa).



Coal: The US Department of Energy will provide **funding** for programs that manufacture "**carbon-based products from coal.**"

Carbon Capture: Natural processes on land and ocean have removed roughly 55% of emitted CO2, but it may be possible to enhance both the uptake and longer-term sequestration potential of both these processes. The National Academies is seeking members to join an ad-hoc committee that will explore ocean-based approaches to carbon dioxide removal (CDR). Please submit **nominations** for the ad hoc committee.

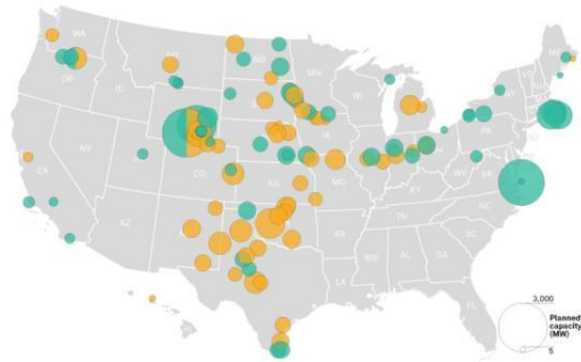


Low Carbon Energy

- Annual global investment in renewable energy (onshore wind, solar photovoltaics, batteries...) will soon surpass oil and gas for the first time. AES Friends have access to the special **report** on global renewable energy investments. (Insert: retiring vs. new/added capacity).

Onshore wind	-98	+24,269
Solar photovoltaic	0	+12,720
Natural gas technologies	-1,750	+6,271
Batteries	0	+489
Conventional hydroelectric	-2	+235
Wood, biomass, waste, landfill gas	-106	+63
Petroleum liquids	-257	+9.8
Conventional steam coal	-8,733	+17
Nuclear	-1,618	0

- **Wind.** In 2020 and before COVID-related restrictions, the US added 2,617 MW of wind power capacity (a record for any first quarter of any year). *Insert:* US planned wind projects in advanced development (green) or under construction (yellow).

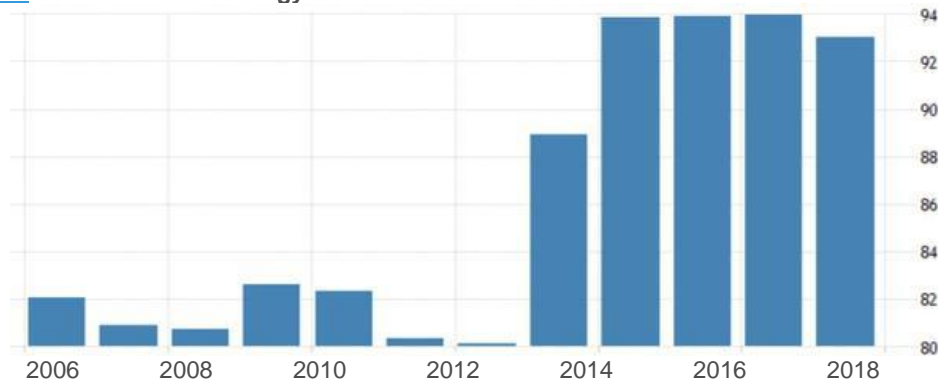


- Continuing, the top-3 states with the **largest wind** power projects under construction:

1. Oklahoma (2,391 MW of capacity)
2. Texas (2,318 MW of capacity)
3. Wyoming (1,535 MW)

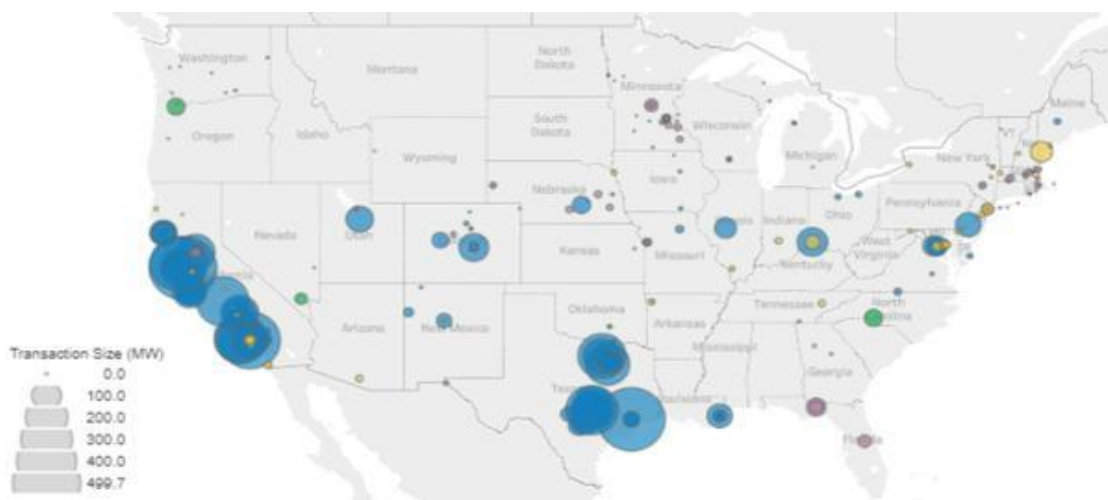
The developer with the largest wind project pipeline is Charlottesville, Virginia-based Apex Clean Energy Inc. (10,156 MW).

- Due to the Fukushima disaster and the subsequent decline of nuclear energy, Japan now **imports** about 93% of its energy.



Policy

- In the last five years, **local US governments** have signed 335 deals to procure 8.28 gigawatts of **renewable energy** - more than almost all other countries and more than the total energy generation capacity of Alaska, Hawaii, Rhode Island and Vermont, combined. (*Note:* most of the new volume can be attributed to California and Texas.)



- Both the US [House](#) and [Senate](#) are reviewing their own versions of the must-pass National Defense Authorization Act. Although the Armed Services are the primary focus of the legislation, energy is a central issue.

- Houthi rebels in Yemen claim they have sent a team to [repair](#) a ghost oil tanker that contains about 1 million barrels of oil. The "Safer" vessel, which has been moored off the Yemeni coast for five years, is decaying and about to sink and leak oil into the Red Sea. However, a Houthi faction has threatened to blow up the vessel unless they are paid a ransom.



Climate and Sustainability

- Earth's deep oceans contain about as much carbon as the planet's atmosphere contains carbon dioxide (CO₂). A new peer-reviewed [study](#) compares the amount of organic carbon stored in the deep ocean with the amount in the atmosphere.

- A new report assesses the flood risk for every address in the US. AES Friends have access to the interactive [map](#).

- Washington, D.C. has not had a day with unhealthy air quality this year.

- A fuel tank in Russia collapsed and spilled 20,000 tons of diesel. The cause? [Thawing permafrost](#). Infrastructure throughout the Arctic region is built on permafrost, the literal foundation for the entire ecosystem. The warming climate is causing much of the Arctic region to thaw; consequently, infrastructure built on top of the permafrost is now cracking and buckling. (Insert: Days after cracks appeared in a Russian apartment building, its corner collapsed from uneven permafrost thaw.)

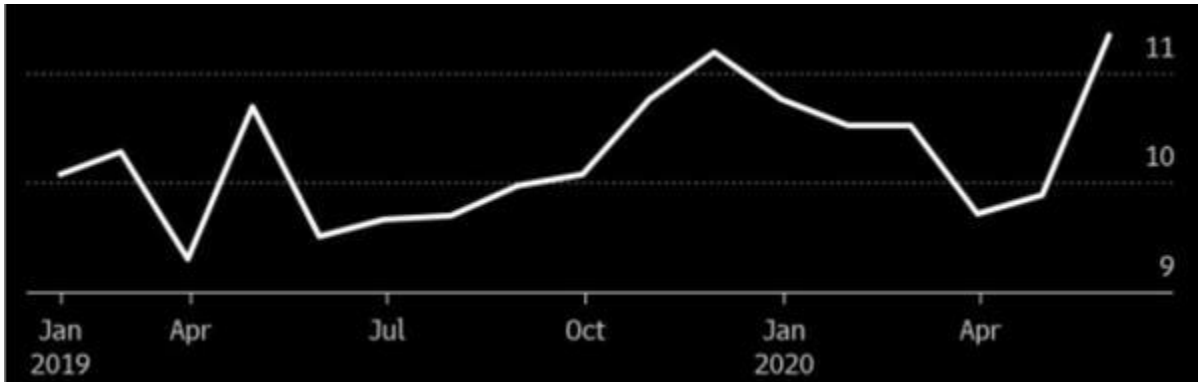


- Special report: [Satellite images identify plumes of methane leaking](#) from the 2,607-mile-long Yamal pipeline that transports natural gas from Siberia to Europe. There is one particular leak in the pipeline that is spewing out 93 tons of methane every hour, equal to the amount of CO₂ emitted by 15,000 cars in a full year. (Insert: methane emission hotspots.)



Research to Markets

- When oil prices crashed due to the COVID crisis, **China began importing 11 million barrels a day** - a 15% **increase** from April and 160,000 barrels a day more than the previous record set in November. (Note: rush-hour traffic in major Chinese cities has surged, often at or above year-ago levels.)



- *Special report:* The Federal Reserve bought \$36 billion worth of utility and energy company bonds through a taxpayer-backed program to help power companies weather the coronavirus-induced economic slump. AES Friends have access to the [Federal Reserve's Board of Governors actions](#). (Note: **The Fed has up to \$750 billion and several more rounds of bond-buying remaining.**) Of the 800 companies targeted by the Fed, 238 are in the energy and utility sectors, including:

Exxon Mobil
Duke Energy
Williams Co.
Phillips 66
Sabine Pass Liquefaction
FirstEnergy Corp.
Schlumberger
Sempra Energy

DTE Electric
Florida Power & Light
Marathon Petroleum
Chevron
Apache Corp.
Cimarex Energy
Anadarko
Valero

ConocoPhillips
Dominion Energy
Exelon Corp.
Halliburton
Hess Corp.
KinderMorgan
Marathon Oil Corp
Pioneer Natural Resources



Electricity, Power and Efficiency

- *Featured:* **The 6 most effective building efficiency policies in the world:**

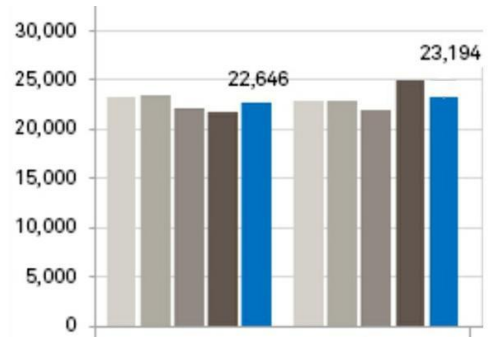
1. Tokyo, Japan - [Cap-and-Trade](#)
2. Boulder, Colorado - [HERS program](#)
3. United Kingdom - [Energy Performance Certificates](#) ("E" is the highest rating)
4. The Netherlands - [Energy Performance Certificates](#) ("C" is the highest)
5. Reno, Nevada - [Energy Star](#)
6. France - [Energy Performance Certificates](#) ("E" is the highest)

- *Spotlight, the grid in Japan:*

- Japan has two separate grids that operate on different frequencies across 6,852 islands.
- Japan has ended its residential feed-in tariffs, restarted its nuclear power plants, and passed a series of self-sufficiency policies.
- Japan has built 4 new "virtual" power plants.

- [Distribution automation](#) (DA) and "fault location isolation and service restoration" (FLISR) are two new methods used by some utilities to restore power during an outage, about 80% faster than conventional methods.

- During peak COVID shutdown in May, of the nine regional power markets in the US and Canada, only one, **the California ISO**, saw an overall **increase in electricity consumption**. In other words, the electricity-based economy expanded. The PJM Interconnection on the East Coast, meanwhile, saw the steepest declines.



Quote

“The world has never seen an increase of this magnitude in such a short period of time.”

– Jim Burkhard, vice president IHS Markit, on the amount of oil imported by China when prices crashed in May.