

Energy Matters

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AMERICAN
ENERGY
SOCIETY

News from the Society

- *From the desk of the AES President:* The American Energy Society is non-partisan, energy-agnostic, and we do not lobby. Our neutrality is resolute, yet it is still difficult to watch riots, protests, splintering communities, and a country at war with itself. We say this not as scientists or engineers, and not at all as a political statement. It is, quite simply, an observation inspired by the humanities. It is altogether fitting of the professional association for energy to say this because *energy is fundamental to everything and everyone*. And our support of energy professionals in pursuit of abundant, affordable, safe energy is inspired by the humanities, too. Our growing numbers validate our efforts and signal the shared concerns that unite the entire sector. In these terrible times we have never been more proud to serve everyone in this vital sector.

- **One month until [SISE](#) (July 13 - 17)**. Co-hosted by AES with the University of Illinois, Chicago, this summer's featured event on sustainable infrastructure offers:

- Keynote address by former US Secretary of Energy (and Nobel Prize winner) Steven Chu.
- United Nations SDSN discussion of its report on and data from the Midwest.
- C-suite insights from Exelon, Clean Energy Trust, Energy Futures Initiative, and others...
- Release of new [energy ecosystem maps](#) covering the Midwest.

[Contact us](#) if you are interested in an all-access Zoom-room pass or simply want more information about SISE.

AES recommends:

- The new AES "beta" website. Give it a try - break it if you can - then [let us know](#)! Sneak-peek our [Quadrant of Benefits](#). Even though the site is in "beta," encourage colleagues to join as a [Friend](#) ... it's still *free*!
- **Attention 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: spotlight on the "streams"

- **Upstream:** There are 680 oil rig platforms in the Gulf of Mexico; each rig has about 200 people on it at any given time; overall, there are about 15,000 people who come and go.
- **Midstream:** There are about 2 million km of pipelines for oil and gas. Of this total, crude oil and petroleum products require about 650,000 km of pipeline; meanwhile, natural gas and LNG pipelines require about 1.4 million km (about 3X more than oil). Globally, North America has more gas pipelines (in length) than any other region in the world.
- **Downstream:** Older refineries in the US aren't designed to process the higher quality lighter grade crude oil coming from US shale patches - they also need medium and heavy grade crudes that Saudi Arabia produces, particularly for products like diesel.



Natural gas: For liquid natural gas (LNG) exporters in the US, the gas break-even price for delivering to Asia is around \$5.56/MMBtu (after liquefaction and transportation costs). However, **prices for LNG in Asia are trading around \$2/MMBtu**. The contracts of about 20 individual cargoes of U.S. liquefied natural gas (LNG) have been cancelled by buyers in Asia.

Coal: Allianz, the largest insurance group for the coal sector, has updated its coal insurance policies. It had already excluded new insurance policies for new coal-fired power plants; now, **Allianz will now no longer offer property and casualty insurance for any company whose business model is largely based on coal**, and there will be no new policies for any company that does not have a clear coal exit path after 2023.

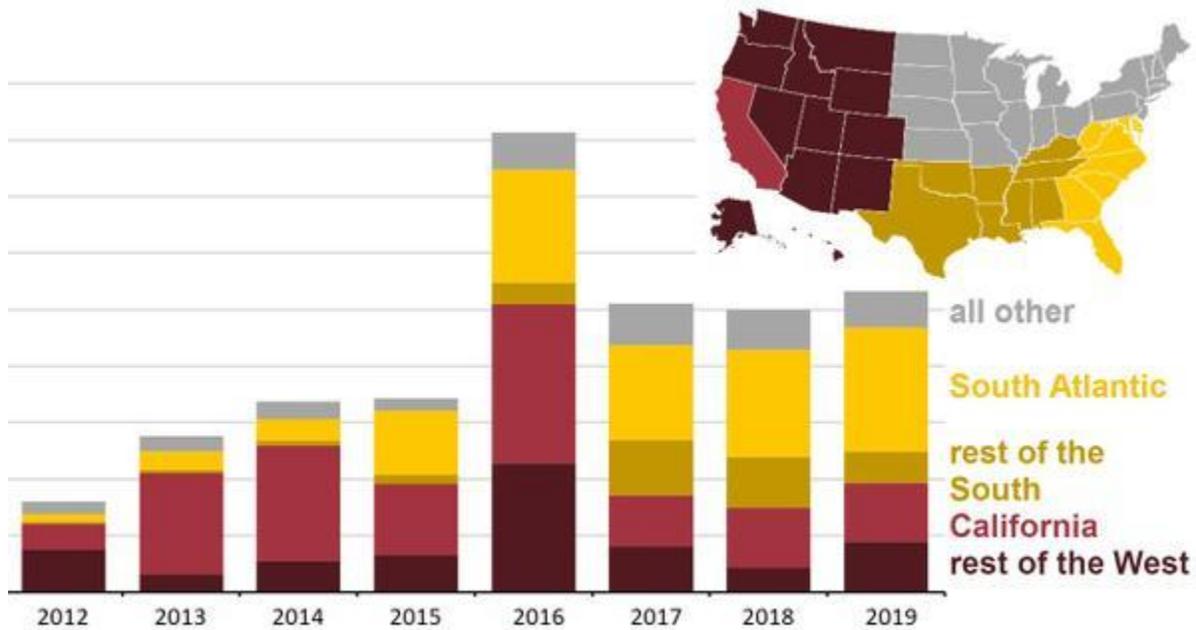
Carbon Capture: *Special report* - Summary evaluations of three ways to subtract carbon from the atmosphere:

- **Natural solutions:** The cost is about \$11 per ton removed. However, natural systems, including forests, are prone to environmental stress and disasters (such as fire), and the permanence of a portion of the stored carbon may be uncertain.
- **Bioenergy Carbon Capture and Storage (BECCS):** The cradle-to-grave cost is about \$60 per ton. However, there is massive opportunity - for instance, California discards 56 million tons of biomass waste each year - half of that weight is carbon.
- **Direct Air Capture:** Costs start at more than \$250 per ton. However, of all the options, it is the most direct method of removing carbon.



Low-Carbon Energy

- The fastest growing utility-scale [solar region](#) in the US is the South Atlantic. The fastest growing state-markets in the region are: North Carolina, Florida, Georgia, and South Carolina. (North Carolina has the second-fastest growing market in the nation, after California.)



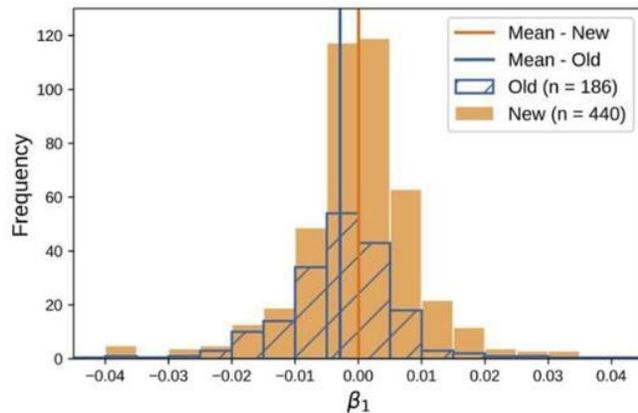
- In the US, annual energy consumption from renewable sources has [exceeded](#) coal consumption for the first time in the industrial era.

- *Recommended resource:* The [IEA has published a report](#) on the impact of COVID-19 on renewables (including the electricity sector and biofuels).

- Consumption of renewable natural gas (RNG) as a transportation fuel has increased 291% over the last five years (displacing about 7.5 million tons of CO₂ equivalent).

- The US DoE is beginning to procure uranium; the Trump administration has asked Congress for \$150 million to begin the procurement process.

- [Wind turbines](#) sited on flatter terrain have lower rates of performance decline as they age (*insert*).



Policy

- Congress is considering three energy-related stimulus packages that also support economic recovery and reduced emissions. **“Shovel-ready” projects** are getting more attention:

- A group of high-profile economists have identified [building energy efficiency retrofits](#) as the most promising stimulus investments.
- A [Green Stimulus Policy Menu](#) has been endorsed by Gina McCarthy and Bill McKibben, among others, and emphasizes the federal Weatherization Assistance Program.
- [The Green Jumpstart Plan](#) would provide funding for low-income tax brackets.

- President Trump issued an **Executive Order that prohibits certain transactions involving bulk-power system electric equipment that have been manufactured or supplied by a foreign adversary**. Given the breadth of the Executive Order and its lack of detail, it is difficult to determine how it might affect investors and developers of energy projects. AES [Friends](#) have access to a true and correct copy of the Executive Order. [Join the Society as a Friend](#) - *it's free*.

- *Beltway Buzz*: Alternative refueling infrastructure (i.e. EV charging stations, hydrogen refueling stations, etc.) has a 30% investment tax credit, however, "30C" will expire December 31. The Senate is considering a new bill - [Securing America's Clean Fuels Infrastructure Act](#) - which would extend the credit until 2028, applies to all infrastructure, and increases the limit on investments from \$30,000 to \$200,000 for each item.

- Congress is considering a stimulus bill that will provide financial support for oil and gas companies to [plug their abandoned orphan wells](#), which emit methane and carbon dioxide.



Climate and Sustainability

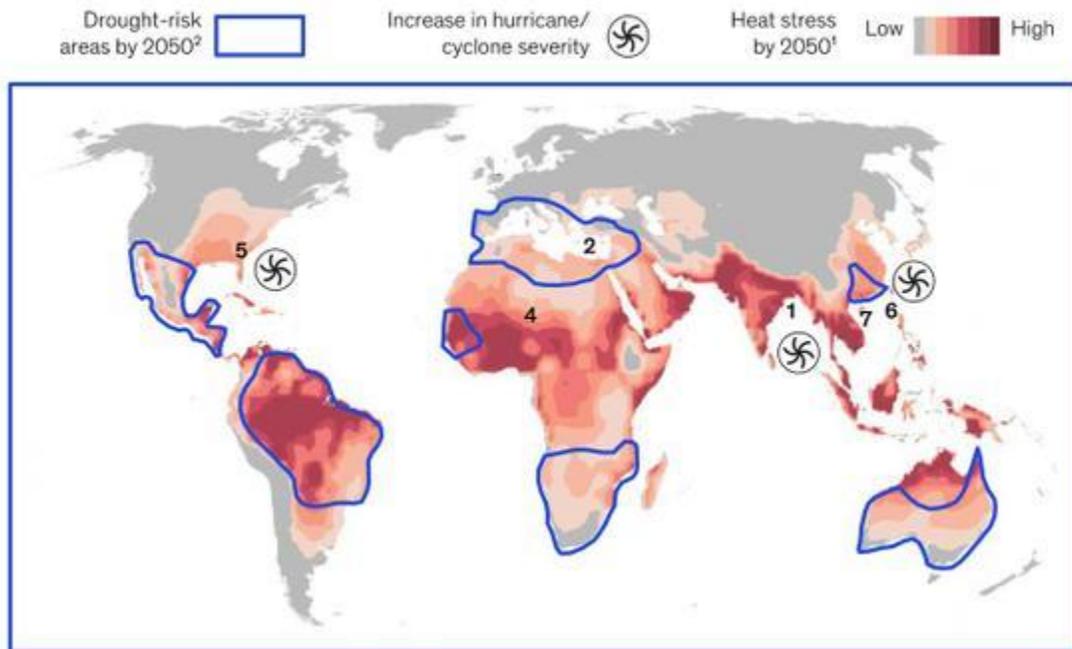
- Global carbon emissions [are lower](#) on average about 17% every day during the coronavirus lockdown.

- There are about 29,400 terrestrial vertebrate species on Earth; of that total, 515 are on the brink of extinction (with populations below 1,000) and more than half of those species have populations of 250 or fewer. AES Friends have access to [peer reviewed research on the sixth mass species extinction](#).

- In 1979, the Army Corps of Engineers used rain-fall trends to predict that the panhandle of Oklahoma would face devastating seasonal flooding, and offered a solution to build Optima Lake to control it. After \$45 million was spent on construction, the lake [never filled up](#), and it has never reached more than 5% of its capacity. Yet, **the Army Corps of Engineers still have not updated their models to accommodate changes to the climate.**



-The 7 most likely unlivable regions in the world (by 2050), circled in blue.



Research to Markets

- The EPA is sponsoring an SBIR to support the development of energy efficient [water technologies](#). A webinar about this generous award takes place on June 17 at 11:00 EDT.

- [Carbon Capture](#). Stripe, a tech company that provides an online payment platform, has invested in 4 new carbon capture projects.

- Crude oil refiner HollyFrontier in Cheyenne, Wyoming, will **convert its refinery to produce renewable diesel**. The refinery has a production capacity of about 90 million gallons per year.

- Volkswagen is [increasing](#) its manufacturing of EVs; most of its market will be in China.

In case you missed it, the previous issue of [Energy Today](#) featured the US DoE National Laboratories:

- Argonne National Laboratory: The Battery Recycling Challenge
- LBL: New nanoscale sensing and photochemical technologies
- NETL: Coal-to-REE Extraction Project Exceeds Expectations
- NREL: Hydrogen as a fuel for long-haul trucking

**ENERGY
TODAY**



Electricity, Power and Efficiency

- Texas grid operator **ERCOT** expects a **12% reserve margin this year and 2% lower peak-load, due to reduced demand during the COVID-19 pandemic**. However, both figures still represent all-time highs for the state as the population keeps growing.

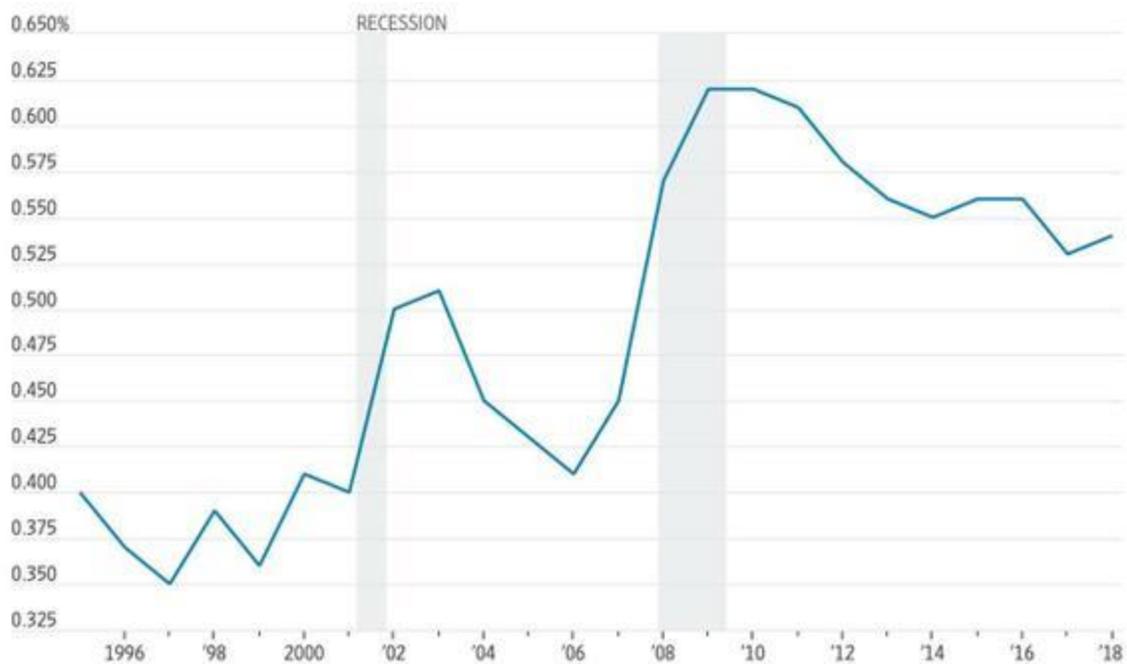
- Recent PPA prices for solar+battery hybrid power plants in the US are about \$10/MWh higher than for solar-only plants. But **prices vary by location**: it is \$13 to \$31 per MWh [higher](#) in California, and only \$1 to \$9 per MWh higher in Texas.

- **'Despacito'** music video has set two Internet records:

1. The first music video to have five billion views on YouTube.
2. The energy required to support its total views is equivalent to the total amount of energy used by 40,000 typical US homes in one year.



- **Unpaid electricity bills as a percentage of utility operating revenue**, a historical comparison.



- *Spotlight*. **The electricity sector in Korea**. The country plans to [increase](#) the amount of power generated with renewable energy to 40% of the total energy mix in 2034, up from 15% currently. (Electricity generated with LNG should decline from 32 to 31%, half of all coal plants will be retired by 2034, and the share of nuclear energy will be reduced substantially. [Biomass](#) — which the Korean legislature subsidizes as carbon neutral - will make up a vast majority of the 40% renewable energy mix.



Quotes: *Dangerous obstacles may be closer than they appear.*

"Price wars and coronavirus have disrupted the entire sector, possibly moving peak demand even closer for everyone."

- Editorial by *Financial Times*, "A Glimpse into the Future of Energy."

"The petrochemicals world has been hit by a triple whammy."

- [Utpal Sheth](#), Executive Director at IHS Markit, on the rapid expansion of the industry followed by declining sales due to the coronavirus and global regulations on single-use plastics.

- "All 105 countries in the world will experience an increase in at least one major type of impact on their stock of human, physical, and natural capital."

- Conclusion of [McKinsey report](#) on Climate Risk and Response, to be featured at the upcoming [SISE conference on infrastructure](#).