

Energy Matters

All the energy news you need to know right now.

January 22, 2019

(Every two weeks)

The official e-newsletter of ...



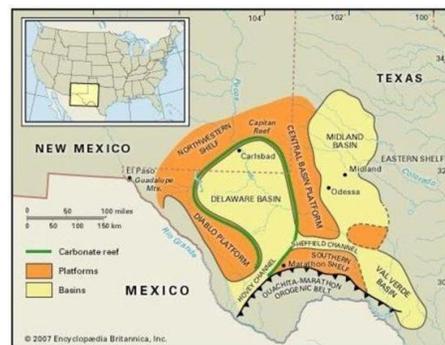
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Headline News

The Fossil Fuel Sector

Petroleum: The Permian Basin in West Texas and eastern New Mexico is the epicenter of the years-long oil production boom. The basin is so large that it is divided into subsections; the most productive of these is the "Midland." However, **it appears that the "Delaware," in the western part of the Permian, holds more oil than Midland** - more than twice the amount of crude as its more popular neighbor (an estimated 46.3 billion barrels). In addition, it holds about 281 trillion cubic feet of natural gas, about 18 times the amount in the Midland Basin.



Map: a comparison of Permian, Delaware and Midland.

Natural gas: Something strange is happening in the natural gas sector. In a two-year period, from the start of 2016 to the end of 2017, US export capacity surged from just 0.8 Bcf/d (billion cubic feet / day) to about 9.5 Bcf/d ... an unprecedented growth rate. However, the supply [isn't keeping up](#) with demand growth: planned capacity expansion falls to virtually zero in 2020 and beyond. **The market is desperate for more natural gas, and yet the US isn't building infrastructure to meet increasing demand.**

Coal: Every day, more coal is consumed within 400 miles of [Beijing](#) than in the entire US.

More US coal-fired power plants have been [deactivated](#) in the last two years than during [any other](#) two year period, while natural gas and renewables continue to grow.

The Low-Carbon Energy Sector

Wind: The [fastest](#) growing global wind markets, 2018:

1. Argentina (+180% installed capacity)
2. Peru (approx. +50% growth)
3. Egypt (+47%)
4. Vietnam (+46%)
5. Tie: Norway, Thailand, Belgium (+20%)



Solar: "[Floatovoltaics](#)" *noun*, def: **A floating solar PV system.**

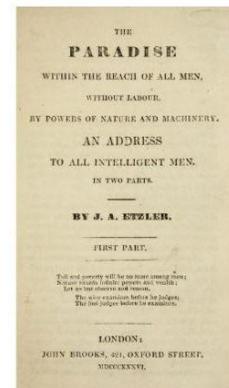
- There are about 100 floating PV systems worldwide.
- Japan is the leading country in system technologies.
- There are seven floatovoltaic systems in the US.
- The largest system in the US is run by the Orlando Utilities Commission, Florida.
- In 2008, Far Niente Winery in Napa Valley installed the first floatovoltaic system.



Tidal: The world's most powerful tidal generating turbine [successfully passed](#) its demonstration phase off the coast of Wales.



History: In 1836, John Etzler wrote a pamphlet titled: *The Paradise Within the Reach of All Men*. In this pamphlet Mr. Etzler proposes a "massive solar power plant that uses mirrors to concentrate sunlight on boilers and mile-long wind farms." AES is pleased to provide Premium Members with access to a [digital copy](#) of the pamphlet.



Policy

- The nation's longest-running federal government shutdown continues, and it seems to be affecting all sectors of energy and the environment:

- Permitting for drilling in the North Slope and ANWR has [slowed](#) (but not stopped).
- On- and off-shore wind project development has [slowed](#) considerably.
- The EPA has [postponed](#) hearings on Superfund site clean-up efforts.
- National Parks remain open but deeply [under-staffed](#).

- To help fight wildfires, President Trump quietly issued an **executive order that would allow the Secretaries of Agriculture and Interior to harvest up to 4.4 billion board feet of timber** from forest land managed by their agencies - a 31% increase in forest service logging since 2017. AES Premium Members have access to the [Executive Order](#).

Beltway Buzz

- The Trump administration is looking into shutting down Energy Star, a 25-year-old voluntary regulatory program run by the EPA. Launched in 1992, Energy Star sets efficiency standards in more than 70 product categories, including appliances, heating and cooling, and lighting equipment. However, the "Energy Star" program has enormous bipartisan support: the George W. Bush administration set up the standard; it is entirely voluntary; the program costs less than \$60 million a year to operate; and, it has reduced the sum total of all energy bills by about \$31 billion. AES Premium Members have access to the leaked [EPA Memo](#).



- There are seven states considering [carbon pricing initiatives](#): California, New York, Massachusetts, Connecticut, Vermont, New Hampshire, Maine, and Rhode Island; five additional states have mandated piggy-back rules that require following the policy lead of California and/or New York: New Jersey, Virginia, Washington, Oregon, and Hawaii.

- The Kigali Amendment, a new effort to phase out HFCs and find substitutes that are safer for the atmosphere, has been "pocket-vetoed" by the Trump White House. Supporters of the Kigali Amendment include:

- The US Senate (AES provides access to the bipartisan [letter](#) of support)
- The US Chamber of Commerce
- The Air-Conditioning, Heating and Refrigeration [Institute](#)
- More than 60+ countries

Energy Policy Around the World

- *Special feature:* China has increased its investment and presence in Africa over the last several years. General Secretary Xi Jinping just committed another \$60 billion to African investment only three years after a similar pledge. African countries have welcomed Chinese money (landlocked Ethiopia got a 470-mile electric railway from its capital, Addis Ababa, to the port in neighboring Djibouti, and Kenya got a 290-mile railway from the capital, Nairobi, to the port city of Mombasa). Meanwhile, China needs arable land to feed its population and raw materials — cobalt from the Democratic Republic of the Congo, copper from Zambia, bauxite from Ghana — to feed its industry. But the process is anything but smooth. For example: Zambia's loans are severely mismanaged; Rwanda and Ghana are trying to renegotiate established agreements; and, [each country in Africa is sovereign](#).



- Drivers in Mexico are facing around-the-block queues [to buy gasoline](#) - the whole scene is reminiscent of the US gasoline crises in the 1970s.



Meanwhile in central Mexico, a huge fire exploded at a [pipeline that was leaking fuel](#) , killing 23 people and badly burning 70 others as they were collecting the spilling gasoline in buckets and garbage cans.

Climate and Environment

- The top 6 countries that emit [most](#) of the world's greenhouse gases (more than 60% of the total), a comparison between 2014 and 2018. (Note: the lowest 100 emitters contribute less than 3%.)

2014

1. China
2. United States
3. **European Union**
4. **India**
5. **Russia**
6. **Indonesia**

2018

1. China
2. United States
3. **India**
4. **European Union**
5. **Indonesia**
6. **Russia**

- Bangladesh has [given about 22 acres of land](#) to 45 families who lost their homes when rising sea-levels swallowed up **Hatiya Island**, a 143 square mile estuary just off the coast of Bangladesh and India in the Bay of Bengal.



- There are about 16,000 desalination plants worldwide. These plants yield 95 million cubic meters of freshwater, **but in the process also produces 142 million cubic meters of [salty brine and other toxic chemicals](#)** - 50% more than previous estimates.

- *Recommended resource:* [The Argo Project](#) by UCSD Scripps - a global array of 3,800 free-drifting floats that measure the temperature and salinity of the ocean. All data is publicly available within hours after collection.

- **The Chesapeake Bay Foundation issued a [D+ grade](#) for the state of its Bay**, the first time in a decade that the health of this region has diminished.

- The SDG Academy is offering a free online course, [Climate Action: Solution for a Changing Planet](#) - Class starts January 28.

Electricity and Efficiency

- *AES special report:* **Five utilities in some trouble right now:**

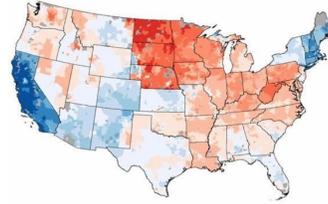
1. [PG&E](#) (planned bankruptcy).
2. [Duke Energy](#) (coal ash poison was neglected).
3. [AEP](#), which manages Indiana Michigan Power (Indiana leads the nation in number of toxic coal ash ponds).
4. [Dominion Power](#) (critical pipeline permit lacks public support).
5. [Southern Company](#) (construction of Vogtle nuclear reactors 3 & 4 are over-budget and behind schedule).

- **Nationwide, fewer than 10% of energy efficiency programs specifically target [industrial users](#)** , even though industry accounts for about a third of energy consumed.

- “ [Grid defection](#) ” isn't actually a "thing" - in 99.9%+ of cases, solar homes continue to be connected to the grid.

- *Recommended resource:* SCOUT, by the DoE, estimates **the potential impact of emerging energy-efficient technologies on the energy use of buildings.** [SCOUT](#) is now available as a web-based application.

- If the [price of electricity](#) equaled the normal residential price plus the social marginal cost (society's total cost), then **the upper Midwest pays too little for electricity** (meaning, the price of electricity doesn't cover all associated costs) and **California and the Northeast pay too much** (a different kind of problem).



Red = high social marginal cost. Blue = high residential cost

Research to Market

- Nanoparticles derived from [green mango peel extract](#) can remediate oil sludge in contaminated soil. They work by breaking down toxins in oil sludge through chemical oxidation, leaving behind only the decontaminated materials and dissolved iron. For the petroleum industry, remediating oil sludge is a costly and ongoing challenge - about 5% of oil processing activities are irreversibly lost as oily or sludge waste.



- NYSERDA in New York state has announced a **new FOA that will provide generous funding to support the launch and operation of one or more accelerators** that facilitate commercial validation of clean energy technologies and brings them to market.

- A collaborative research project between Honda, Caltech, and NASA has announced a battery breakthrough that focuses on the negative. Rather than using lithium, the most electro-positive element on the periodic table, they use [fluoride](#), the most electro-negative. Fluoride-ion batteries essentially work in the opposite direction of lithium-ion cells, attracting electrons instead of shedding them, and can function at room temperature, making them commercially viable.

- **US and East Asian intelligence officials are tracking oil-smuggling by North Korea.** The agencies have counted 148 secret maritime transfers, for a total of between 800,000 and 1.4 million barrels of oil, gasoline and diesel.

Features

Quotes - The Permian Oil Basin, Texas

"The oil reserves in the Permian Basin - this is very literally buried treasure."

- Ariel Cohen, [Energy Correspondent](#) for Forbes.

"The Permian deserves every ounce of investor love."

- Mike Kelly, AES expert Member and Senior Analyst at Seaport Global Securities

"Every worldwide oil company should be invested in the Permian, if they aren't already."

- Overview materials for upcoming [CERAWeek](#).

What You May Have Missed: Energy Year in Review, 2018

- [The Energy Year in Review](#), including the prestigious **Energy Writer of the Year - Nathaniel Rich**, "[Losing Earth](#) : The Decade We Almost Stopped Climate Change" (New York Times Magazine, August 1, 2018).

Contacts

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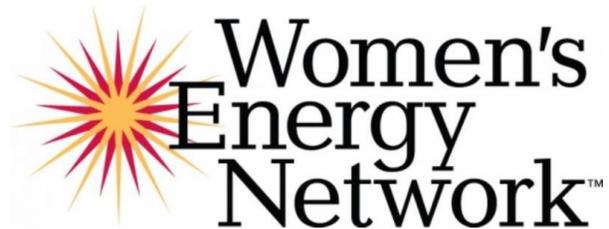
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