

# Energy Matters

*The energy news you need to know.*

**June 24, 2019**

(Irregular publication schedule in July)

The official e-newsletter of ...



*Thank you for your Premium Membership in the American Energy Society.*

**Save the date:** [CyberCon](#), a cybersecurity conference for executives and decision makers in the power & utility industry.  
November 19-21, Anaheim Convention Center  
[Contact AES](#) for early-bird and Member discount tickets or with questions.

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## Headline News

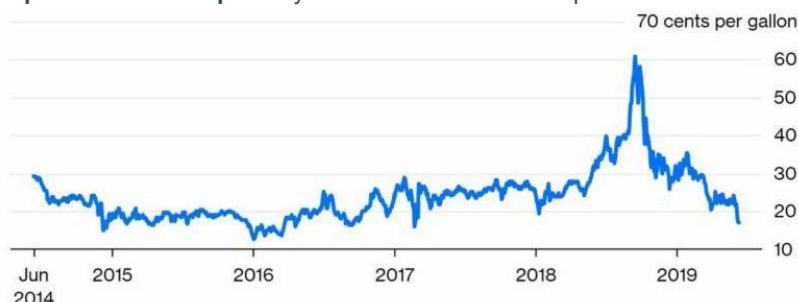
### Fossil Fuels

**Oil:** There are four ways in which [oil](#) is consumed:

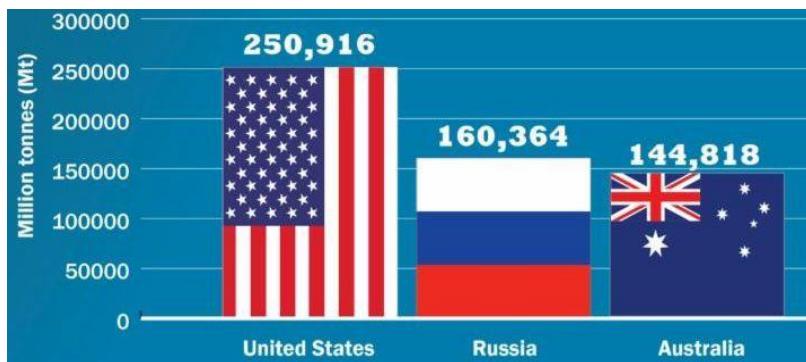
1. *Light distillates* - oil that is refined into fuels like gasoline.
2. *Middle distillates* - oil used to make jet fuel, heating kerosene, and diesel.
3. *Fuel oils* - used as fuel for ships as well as for home heating.
4. "*Other*" - consists of ethane, which is used by petrochemical companies to manufacture plastics; also, a variety of other solvents, waxes, and lubricants, as well as natural gas liquids (NGLs) like liquid petroleum gas (LPG).

**Summary:** Oil demand grew at a record pace last year, led by the middle distillates and "other" categories (+3.8% and +7.2%, respectively).

**Gas:** Natural gas prices have collapsed by more than 70% since September 2018.



**Coal:** Top 3 [coal](#) reserves, by country:



**Carbon Capture:** Featured resource. Since 1996, the Sleipner field in the North Sea has been used for carbon capture and storage. This is the longest ongoing CO<sub>2</sub> storage project in the world with about 1 million tons of CO<sub>2</sub> captured and stored each year. The scope and scale of CO<sub>2</sub> capture and storage in Sleipner provides unique insight into what happens when carbon is stored underground over a long period of time. The operators of the field have taken the unprecedented step of releasing the data. [Please contact AES if you are a Premium Member and would like exclusive access to this privileged data set](#) when it is released next month.



## Low-Carbon Energy

**Solar:** The US Trade Representative [granted an exemption](#) of all taxes and duties for solar-bifacial panels (solar panels that generate power on both sides). The [carve-out tax exemption probably "path-determines"](#) that [bifacial solar panels will gain momentum and become the dominate type of panel](#).

**Nuclear:** [Japan is recommitting to nuclear energy](#), despite the 2011 Fukushima reactors meltdowns. The Cabinet and its Energy Minister recognize the “urgent task” of increasing energy production and reducing carbon emissions in spite of lingering anti-nuclear sentiments.

**Wind:** [Four states account for more than half of US wind-electricity generation](#) (in order): Texas, Iowa, Kansas, Oklahoma. Five other states — California, Illinois, Minnesota, North Dakota and Colorado — provided another 20% of total wind generation.

**Storage:** The [first quarter of 2019 saw 150 megawatts of new storage deployments](#), a 6% rise from the prior 3 months and a 232% increase from the same period last year.

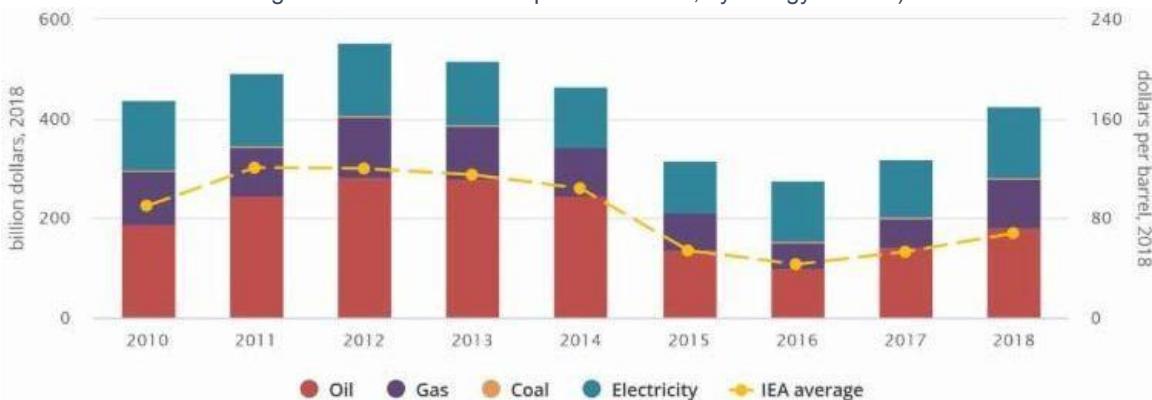
**Hydropower:** [About 29% of all hydropower comes from naturally occurring "run-of-rivers."](#) which require no reservoirs or dams (running water spins a turbine). Last year, hydropower produced about 7% of all electricity in the US (about 40% of the nation's renewable energy).

**Hydrogen:** Hydrogen had been on an upward trend. There are about 11,200 hydrogen-powered cars on the road worldwide. This may change since the recent [explosion of a hydrogen filling station in Norway](#).

## Policy

- **Featured story:** Despite escalating turmoil with Iran and in the Middle East, which has seriously disrupted international oil trade routes, global oil and gas markets remain essentially stable. This is geopolitically unprecedented in the hydrocarbon era. Saudi Arabia's energy minister Khalid al-Falih says the conflict between the US and Iran has damaged global confidence in oil security, which might seem reasonable considering that 18.5 million barrels of oil pass through the Strait of Hormuz each day. Hyperbole aside, however, oil markets are only skittish. For instance, the US will not tap into its Strategic Petroleum Reserve (currently holding 644 million barrels of crude oil), which would have been the typical response in the past. **The abundant production of hydrocarbons (oil and natural gas) in the US has minimized the harm that geopolitical conflict in the Middle East has on oil markets.** Indeed, in an attempt to put upward pressure on oil prices, OPEC is considering a production cut amid escalating Middle East tensions.

- **Featured story:** Global fossil fuel consumption subsidies increased by one-third (to more than \$400 billion) - the highest subsidized level in the last five years. The prevalence of these subsidies around the world – more than double the amount offered to renewables – re-establishes oil as the most heavily subsidized energy carrier. In 2016, electricity briefly became the sector with the largest subsidy bill. (Below insert: Economic value of global fossil-fuel consumption subsidies, by energy source.)

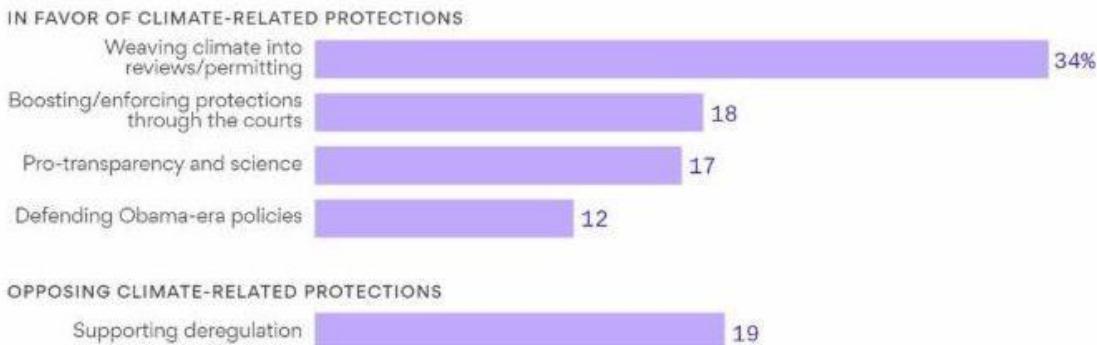


- **China's retaliatory tariffs have not harmed the LNG industry in the US.** Sales of LNG from the US to South Korea, Japan and Mexico have made up for the decline of LNG exports to China.

- **Beltway Buzz I:** President Trump's EPA unveiled The Affordable Clean Energy Plan, which will replace Obama's power plant rule. **ACE gives states three years to devise their own plans to reduce emissions from power plants.** AES-Member policy experts are calling the new Rule a "life-extension program" for coal-fired plants.

- **Beltway Buzz II:** The US House of Representatives was reviewing a five-bill spending package ([H.R. 2740: 116](#)), which includes Energy-Water, but the bill has been postponed thru the Congressional recess. When the Rules Committee returns on July 9, it has the opportunity to decide which of more than 170 proposed amendments will make the cut. AES Premium Members have access to the appropriation bill as well as all the amendments under consideration.

- In general, **federal courts have not supported attempts by the Trump administration to delay or reverse climate regulations.** (Below insert: climate-change litigation cases during the Trump Presidency, by court result.)



- **Featured resource:** Written testimony from the State Department's Bureau of Intelligence and Research says: "Absent extensive mitigating factors or events, we see few plausible future scenarios where significant — possibly catastrophic — harm does not arise from the compounded effects of climate change." **The written document was blocked by the White House.** AES Premium Members have access to the [blocked testimony](#).

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## Climate and Sustainability

- **Boaty McBoatface is back!** (*Energy Matters* has been a [fan of Boaty](#) since 2016.) On its first mission, Boaty noticed a relationship between Antarctic winds and rising sea temperatures. AES Premium Members have access to Boaty's peer-reviewed [research](#).



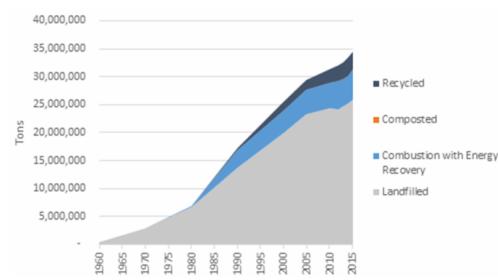
- **Fish, by the numbers:**

- Along the US West Coast, about **70 whales have been found dead** this year, the most since 2000.
- In the last three months, at least **279 dolphins have been stranded** on shore along the Gulf Coast; the number is triple the usual number of stranded dolphins.
- **Thousands of dead fish** (gizzard shad) have washed ashore along the Cuyahoga River and Lake Erie. (Local wildlife officials say this alarming sight shouldn't be a cause for concern.)

- Temperatures in Greenland are [40 degrees above normal](#).

- **Plastic, a comparison** (Insert - Plastic waste management, 1960 - present):

- *The good news* - plastic is being recycled, which was virtually unheard of just a generation ago.
- *The bad news* - more plastic is consumed and more plastic is disposed in landfill than ever in history.



- Related: Malaysian government officials raided the town of Telok Gong to **shut down unlicensed dumps holding plastic scrap** imported from economically developed countries in the West.

- **Fertilizer plants** produce methane emissions 100 times higher than industry estimates and three times higher than the US EPA estimate for all industry methane emissions. (Note: About 25% of all greenhouse gas is caused by methane emissions.)

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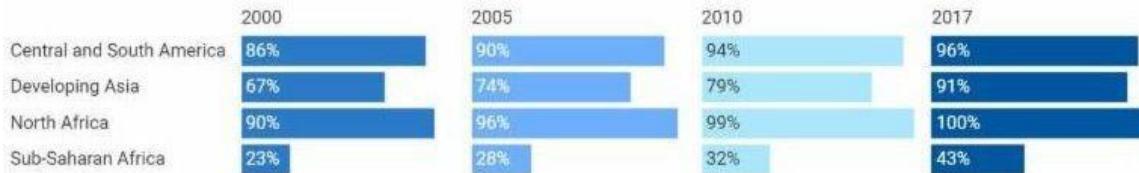
## Electricity, Power and Efficiency

- The EIA collects data about every power-plant in the US (including the total amount of cooling water used, emissions data, etc.). Now that [data is available to Premium Members of AES](#).

- When temperatures dropped below minus 20 degrees F during the polar vortex (on January 30 and 31) in Chicago, Minneapolis and throughout the Midwest, wind-generated power dropped from about half of the total electricity generated to just 2.5% because **most wind turbines automatically shut down** at minus 20 degrees F.

- *Breaking news:* A US bankruptcy court issued a declaratory judgment that **its own court has exclusive jurisdiction over any decision by PG&E** to assume or reject any of its existing power purchase agreements (PPAs).

- *Below insert:* **Access to electricity in developing countries.** (Note: most people in developing countries now have access to electricity, but not in Africa, where 600 million people do not have access to a power grid.)



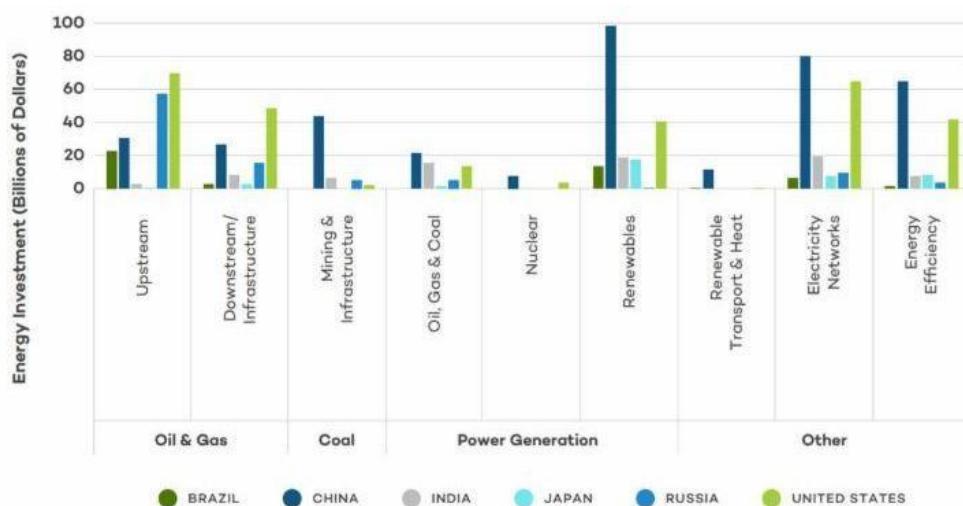
- Q. If renewable energy generation costs are [falling](#), why are electricity prices rising?  
 A. Wholesale prices are paid to the generators; **retail prices paid by customers reflect the full cost of delivering electricity** no matter its source: transmission, distribution, reliability and maintenance costs, depreciation and taxes. (Note: Generation only accounts for [44%](#) of the total cost of electricity.)

## Cyber-Security Threat Post

- On July 24-26, 2018, the city of Houston hosted the Jack Voltaic 2.0 war-game exercise to test resiliency/survival responses of 44 organizations to a successful cyber-attack. AES Premium Members have access to the Jack Voltaic 2.0 [Executive Summary](#). The primary lesson learned from the exercise: Current emergency response plans are inadequate for a successful cyber-attack that disrupts the electricity grid because most systems rely on electricity to access, share, and/or transmit information.
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## Research and Markets

- [Energy investments](#), by resource and country (2017):



- In 2006, the United Nations instituted its Principles for Responsible Investment. "**Impact investing**" has gained considerable momentum ever since. The idea behind "conscious" capitalism certainly isn't new. The three main categories for an investment to be considered responsible:

1. [The Triple Bottom Line](#)
2. [First Evidence of Materiality](#) (material vs. immaterial sustainability benefits)
3. [Profits with Purpose](#)

- Researchers from Fraunhofer Institute have devised a new production process for **electric vehicle batteries** in which battery electrodes are coated with a dry film of chemicals rather than liquids. The process is less energy-intensive, which means it's cheaper and it does not involve toxic solvents.
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## Features

Spotlight: "The Age of Plastic" in political cartoons.



### Quotes: Certain Ambiguities

"There is now a clear and present supply threat."

- Saudi Arabia's energy minister Khalid al-Falih, on attacks of oil tankers near the Strait of Hormuz; however, oil markets appear relatively stable.

"We will do the things necessary as the climate changes."

- Secretary of State, Mike Pompeo (without details, it's hard to know what this means).

"There is no doubt."

- US President Donald Trump, on Iran conducting the attacks of the oil tankers (despite Japan and Germany calling for more concrete proof).

"Several citations, some from sources cited in other parts of the plan, were inadvertently left out of the final version."

- Joe Biden, on plagiarizing passages for his Green New Deal proposals from previously published documents.

### In case you missed it

- Start-up CleanTech Pitch-fest at [ConFusion](#), Skelleftea, Sweden. For a personal introduction to any of the below companies, please [contact AES](#).

- [Hepta Airborne](#) - provides drone-based airborne inspection and technical analysis.
- [Smart Climate](#) - environmentally friendly heating and cooling units for parked commercial aircraft  
... WINNER!
- [Sol-ionics](#) - patented technology enhances lubrication for industrial applications.
- [SCMTgroup](#) - SMEs develop monitoring systems for railroad tracks and wheels.
- [Oazer](#) - infrastructure connects vehicle fleets to hydrogen refueling stations.
- [Umeå Wheels](#) - buys, repairs and sells shared bike fleets.
- [Eco-Oil](#) - CO2-neutral renewable fuel for petrol-, diesel- and aircraft engines.
- [Jukolux](#) - SMEs provide product-design solutions.
- [Fluid Intelligence](#) - platform monitors use and performance of industrial fluids.

## Contacts

- [The American Energy Society](#)
- American Energy Society [LinkedIn Group](#)
- American Energy Society introductory [video](#)
- [Contact us](#) with comments about the Society or this issue of *Energy Matters*.

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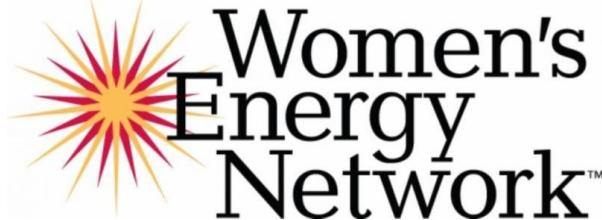
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