

# Energy Matters

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AMERICAN  
ENERGY  
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*Sound-bite summaries of the energy news you need to know.*

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## *Fossil Fuels*

### - **Oil: Is OPEC+ [regaining control](#) of oil markets from US shale producers?**

- Saudi Arabia, Iraq and the United Arab Emirates have reduced production.
- Saudi Arabia, OPEC's biggest member, has cut more than twice the amount pledged under last year's deal.

However, the performance of other nations has been less remarkable:

- Iraq has cut 60,000 barrels a day, but it needs to slash a further 180,000 barrels to meet its target.
- Nigeria has trimmed 30,000 barrels but that's still higher than its baseline target.
- Russia has offered a number of excuses why it can't implement its cuts.

- **Natural Gas:** "[Fuel switching](#)." The most common form of fuel switching for electricity-generation: natural gas and oil (13% of the total US electricity generating capacity can fuel-switch between natural gas and oil). Most common in 10 states, it is the highest by far in Florida (28% of total electricity can fuel-switch between NG and oil.)

- **Coal:** The least competitive and most inefficient coal-fired power plants were the first to close; **going forward, there will be [fewer](#) coal-plant closures because those that remain are financially and productively strong.**

- **Carbon Capture:** The USDA Natural Resources Conservation Service (NRCS) is offering **grants that will allow farmers and ranchers in certain states to access EQIP funding to support the integration of soil-carbon best-practices** into their operations. AES Members have access to the [USDA announcement](#) (as a PDF).

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## Low-Carbon Energy

- *Spotlight: **Renewable Energy and SF<sub>6</sub>**.*

- SF<sub>6</sub>, a man-made, colorless, odorless gas, is the strongest greenhouse gas in the atmosphere. On a per molecule basis, SF<sub>6</sub> is approximately 23,500 times more effective at trapping heat than CO<sub>2</sub> and lasts in the atmosphere about 1,300 years.
- Renewable energy sources require more switchgear (which uses SF<sub>6</sub>) in the electricity grid than fossil fuels because it takes more solar panels and wind turbines to produce the same electrical output as a single coal power station. So, as renewable power generation grows, emissions of SF<sub>6</sub> grow too.
- However, the global concentration of atmospheric CO<sub>2</sub> is about 410 parts per million, whereas the concentration of SF<sub>6</sub> is only about 10 parts per trillion. **In other words, there is 41 million times more CO<sub>2</sub> in the atmosphere than SF<sub>6</sub>.**
- [Visit the AES newsfeed](#) for more on SF<sub>6</sub>.

- *Spotlight: **Solar**.*

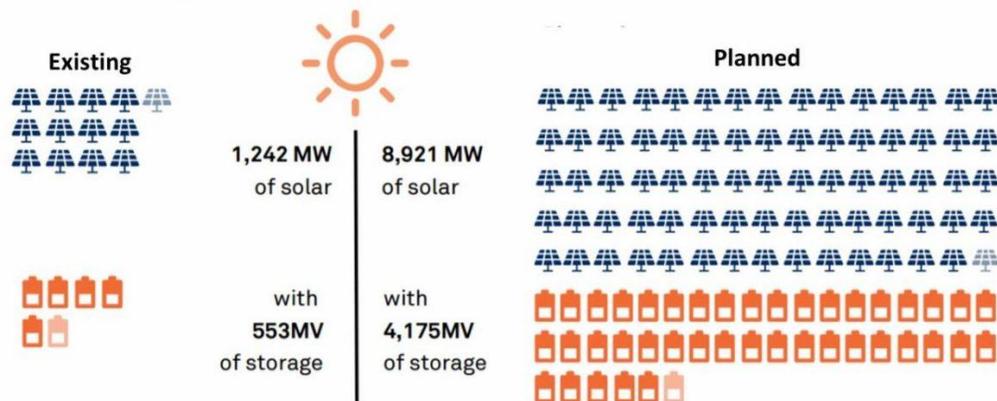
- The US has 22,500 MW of total solar capacity, or about 0.07 kW per capita.
- The variation across states is large – from almost 0.50 kW per capita in Hawaii to less than 0.01 kW throughout most of the Southeast.
- Visit the [AES website](#) for a list of the top-10 states per capita solar capacity.

- *Spotlight: **Nuclear power**.*

- By far the largest nuclear electricity producers are: the US (808,028 GWh of electricity) and France (395,908 GWh).
- There is about 250,000 tons of highly radioactive waste stored around the world.
- For a list of the 19 countries that store nuclear waste, visit the [AES website](#).

- *Spotlight: **Solar + Storage**.* Utilities are planning to accelerate implementation of solar + storage. *Insert: Solar + Storage, a comparison of existing and planned capacity (Note: not all planned projects will be developed).*

 = 100 MW     = 100 MW



## Policy

- *Beltway Buzz*: The President's trade deal with China will be difficult to fulfill. According to Phase 1 of the deal, **China will purchase an additional \$52.4 billion in LNG, crude oil, and refined products over the next two years**. To do that, China will have to import:

- An additional 1 million of barrels of oil per day
- An additional 500,000 barrels of refined products per day
- 100 tankers full of LNG

The US **does NOT have** existing infrastructure to support these totals. In terms of trade negotiations, the deal establishes a "binding constraint."

- *Beltway Buzz II: The President has submitted his [budget](#) to Congress*. Remember, almost all Presidential budgets, both Republican and Democrat, arrive in Congress DOA. However, there are two important items related to energy:

1. The President's proposal asks for \$1 trillion for infrastructure over 10 years.
2. Since this is an election year and Nevada is still in play, the President did NOT include a proposal to fund the Yucca Mountain nuclear waste repository.

Note: AAAS, a partner organization of AES, offers an [assessment](#) of the proposed budget.

- Four states (Connecticut, Delaware, Maryland, and New York) have **sued the EPA for failure to uphold "Good Neighbor" provisions that curb cross-state ozone pollution** from 20 "upwind" states (all 20 source-states are between Texas and New York).

- Though most Congressional bills never become law, **the Democrats have authored [five energy-related bills](#) that highlight, among other issues: storage, cleantech, geothermal, and grid modernization. Republicans have countered with a bill that highlights three topics: carbon sequestration, clean energy and conservation**, the centerpiece "[Trillion Trees](#)" would create a National Reforestation Task Force to promote wood growth in domestic forests.

- *Featured story: The GHG Protocol Corporate Standard divides GHG emissions into [three 'scopes'](#), of which **Scope 3 emissions are most significant**:*

- Scope 1 emissions are direct emissions from owned or controlled sources.
- Scope 2 emissions are indirect emissions from the generation of purchased energy.
- **Scope 3** emissions are all indirect emissions, including both upstream and downstream emissions.

- *Related, the 4 oil companies [most aggressively](#) cutting Scope 3 emissions:*

1. Equinor (Norway)
2. Repsol (Spain)
3. BP (England)
4. Eni (Italy)

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## Climate and Sustainability

- BP's Deepwater Horizon spill in 2010 may have been **30% larger than previously estimated**. AES Members have access to the peer-reviewed [research](#).

- *Recommended resource : the BCSE/BNEF "[2020 Sustainable Energy In America](#)" report offers evidence of declining emissions. Highlights: Total US greenhouse gas emissions (GHG) have fallen 4.1% over the past decade and are about 12% below 2005 levels. Meanwhile, energy productivity has increased 17.6% since 2009 and 3.3% in 2019. (Note: to see the report will require sharing name and email address.)*

- **The number of Earths that would be needed if the world's population lived like the following countries** ( for the full list, visit the [AES website](#)):

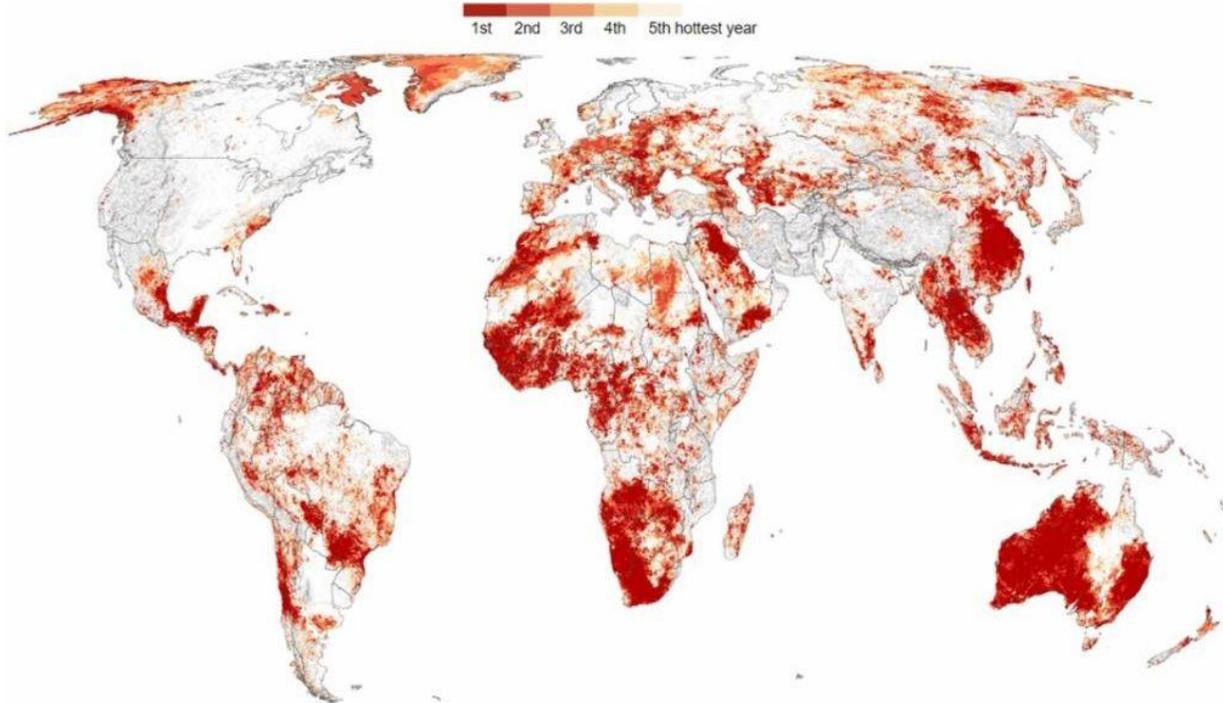
1. The US (5.0)
2. Australia (4.1)
3. Russia (3.2)
4. Germany (3.0)
5. Switzerland (2.8)

- **Bumblebee populations are declining around the world** (e.g. 46% in North America, 17% in Europe, since 1901). The biggest declines were in areas marked by pesticide use, habitat loss, and where temperatures spiked well beyond the historical range.



- **Temperatures in Antarctica reached 64.9 F, which is 1.4 degrees hotter than the region's hottest recorded temperature.**

- **Temperature records set in 2019 (insert, in red):**



- Question: What US metropolitan areas had the most consecutive days of elevated air pollution in 2019 (PM 2.5)?

**Answer: Riverside-San Bernardino-Ontario, California (227 consecutive days)**

*Note:* About 108 million people in America live in areas with "little to no risk" of air pollution (or about 1/3rd of the total population). Visit the [AES website](#) for the top-10 list of US cities with 100+ days of consecutive air pollution, and access to the pollution report.

## Research and Markets

- *Featured story:* The Mystery Gasoline Surcharge (MGS) is the premium of California gas prices above the rest of the US, *after* accounting for higher taxes, environmental fees, and a cleaner gas formulation. Those cost factors currently justify a \$0.72 differential between California and the average in the other states. **Now the differential is \$1.18.** (Note: prior to 2015, there was no Mystery Gasoline Surcharge.)

- **Senegal's utility, [Senelec](#), is seeking training** about national load flow, dynamic modeling, power system analyses, and simulations. Training must be in French.

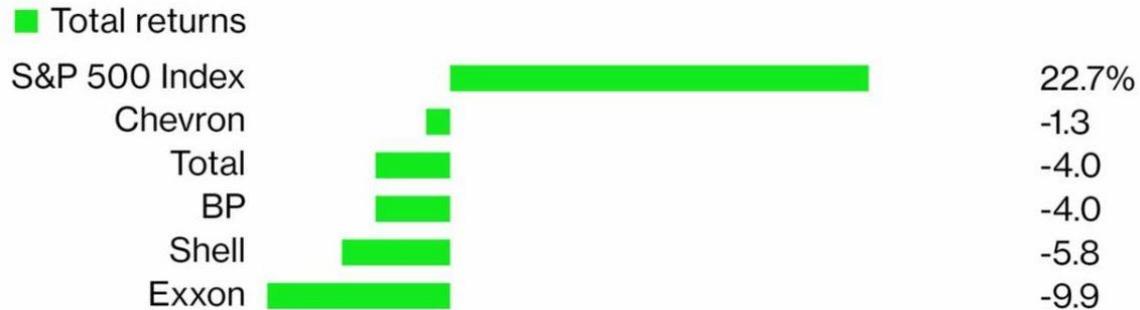
- **Try to assess the strength of the electric vehicle market.** On the one hand...

- "EV sales didn't budge much. That's troubling." - [LA Times](#)
- "Electric car sales hit the brakes." - [WSJ](#)

On the other hand, ...

- "Electric cars outsold manual transmissions for the first time in 2019." - [Autoblog](#)

- "Big oil" stocks have lagged the rest of the market for the past year:



- After 15 years of carbon pricing in 40 countries and 20 state/local governments, market research reveals that nearly all **carbon prices currently in place are [too low](#) to drive decarbonization** .

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## *Electricity, Power and Efficiency*

- **World [power rankings](#), by first-place:**

- Primary energy production: China (110 quadrillion Btu)
- Low-carbon energy production: US (20 quadrillion Btu)
- Natural gas production: US (28 quadrillion Btu)
- Petroleum production: Saudi Arabia (25 quadrillion Btu)
- Coal production: China (79 quadrillion Btu)

- Hydropower, solar energy, and wind power provide about 15% of all US electricity in the US. **However, [other renewable energy sources](#) generate about 73 billion kWh of electricity (enough energy to power about 6.5 million US homes):**

- [Biomass](#) (58 billion kWh, or 1.6% of total electricity)
- [Geothermal](#) (16 billion kWh, or 0.4% of the total)
- [Hydrogen fuel cells](#)
- Other water-source, which include [tidal and wave](#).

- **Fossil fuels provided 62% of Japan's electricity production before the Fukushima disaster, and now about 80%.**

- *Cybersecurity spotlight:* Established under President Obama and continued by President Trump, the Department of Homeland Security designates 16 infrastructure sectors as critical to defend against cyberattack. Three "most significant" infrastructure: **energy, nuclear and transportation**. AES provides Premium Members with access to the [Presidential Policy Directive 21](#).

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## *Quotes - When government works together...*

"The fact that a West Virginia Republican and an Oregon Democrat have teamed up reflects a potentially significant shift here in Washington."

- The NRDC, on a number of bipartisan climate bills submitted in Congress.

"This is a victory for anyone who cares about the rule of law and clean air."

- California Governor Gavin Newsom on the Justice Department ending an antitrust investigation into whether Ford, Volkswagen, Honda and BMW illegally coordinated when they agreed to follow California's stringent vehicle fuel-economy targets.