



## ENERGY MATTERS

The trusted source for objective sound-bite summaries of the energy news you need to know

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### — HEADLINE NEWS —

#### Conventional

##### Petroleum

- "[The Elephant](#)" - the enormous El-Feel oil field in western Libya - has been closed off since 2015 but will resume pumping oil as soon as a power outage is fixed and guards who are blocking access to the field are paid-off. The Elephant will add 90,000 bpd to Libya's total oil output. It is a proverbial drop in the bucket, but another example that oil [struggles](#) with an [oversupply](#) of reserves and inventory.

##### Gas

- The LNG market is over-supplied, so **producers are reducing market risks and costs by exporting smaller units of LNG**. Not long ago, traditional buyers would place huge orders of 2 million tons of LNG or more. Today, a new wave of buyers wants smaller volumes, often less than 1 million tons at a time. This is evidence of a [maturing market](#).

##### Coal

- **US coal-based power plants that produce the lowest levels of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>2</sub>) emissions** and operate at highest efficiencies (AES Premium Members have access to the [award's report](#)):

- \* Dynegy's Coffeen Plant - Central Illinois (recognized for best SO<sub>2</sub> emissions rate)
- \* Southwestern Electric's John W. Turk Power Plant - Fulton, Arkansas (best NO<sub>2</sub> emissions rate)
- \* Longview Power Plant - Madsville, West Virginia (best efficiencies)
- \* Mississippi Power's Kemper County Energy Facility - Kemper County, Mississippi (general)
- \* NRG Energy and JX Nippon Oil & Gas Exploration's Petra Nova Carbon Capture Project (Recognized for its pioneering work with carbon capture of 90% of its CO<sub>2</sub>)

##### Nuclear

- **States with the most electricity generated by nuclear power** (% of total electricity, 2015):

1. South Carolina - 55%
2. Illinois - 50%
3. New Hampshire - 47%

AES Members have access to the rest of the [Top 15 list](#).

#### Renewables

- The biggest challenge to the growth of the solar industry might be the **cost of customer acquisition**. To put this "pain point" in perspective, [compare customer acquisition costs](#) in solar to a mature industry, like auto sales. In solar, 17 percent of the system purchase price is used to cover the installer's sales and marketing expenses, while only 4 percent of the purchase price of a car is used to cover sales and marketing.

- What will happen to the Electric Vehicle market in the US if/when the \$7,500 federal tax incentive (subsidy) is revoked? Consider Georgia, a state that became an unlikely leader in electric cars thanks to an extra \$5,000 state incentive. At one point, almost four percent of new cars sold in Georgia were electric. Then they pulled the incentive, and **the percentage of EV's sold plummeted to .5%**. However, whatever happens to the tax incentive in the US, the global EV market won't be affected. Total SA, one of the world's biggest oil producers, says that EVs may constitute about one-third of [new-car sales](#) by the end of the next decade; Bloomberg New Energy Finance projects that EVs will make up 15 percent to 30 percent of global new vehicles by 2030.

- **Sales of electric-luxury Teslas are barely affected by the US tax credits.** For instance, in Georgia, more people are buying Teslas today than during the subsidy years. Tesla is going to need [a lot more](#) batteries and charging stations - the company is preparing to launch its \$35,000 Model 3 electric car this year.

- Ongoing low oil prices along with rising geopolitical and demographic instability are motivating **MENA countries (Middle East/North Africa) to invest in and diversify their energy portfolios** - and include solar energy. For instance, Saudi Arabia will develop 30 solar and wind projects over the next 10 years as part of the kingdom's \$50 billion program to [boost power generation](#) and cut its oil consumption. It also plans to generate an unspecified amount of electricity from nuclear plants.

- On March 11, 2017, for the first time, more than half the power needs of the entire state of California came from solar power for a few hours that day... then it happened again on March 12... and then again on March 13. The large and growing amount of solar generation in California has occasionally **driven power prices on the CAISO power exchange to very low, and sometimes negative, prices.** However, consumers in California continue to pay average retail electricity prices that are among the [highest](#) in the nation.

- **Four of the top five states that produce the most electricity from wind (at least 20 percent) are Republican strongholds:** *Texas* (20,321 MW); *Iowa* (6,917 MW); *Oklahoma* (6,645 MW); *California* (5,662 MW); *Kansas* (4,451 MW)

## Policy

- Regardless of what President Trump did or did not accomplish in his first 100 days (up thru April 29th), most of the administration's activity during this period has been through Executive Order - in the first 100 days President Trump signed 32 EOs, the most ever by a President (except during World War II). Most of these EOs were related to energy and/or the environment, the last of which expanded oil and gas drilling in waters off the US western coast. President Trump and Congress also used the Congressional Review Act to overturn 11 Obama-era regulations related to energy and the environment, among them: an Environmental Protection Agency rule that established a maximum allowable amount of coal debris in streams; a rule that required oil companies to disclose foreign payments; and a Bureau of Land Management rule on federal land management guidance. (Note: use of the CRA is time-limited to 60 congressional working days, so the opportunity to use the CRA to repeal rules from the Obama administration ends on May 19.) AES Members have access to an internal Congressional [Memo](#) on CRA internal rule making.

- The Trump administration, through the DoE, has started **withholding money for grants already approved by the agency.** EDITORIAL: The American Energy Society is non-partisan and energy-neutral - we play no favorites. However, it must be said that withholding a financial pledge is never appropriate. If the current administration wishes to shift energy policy in a different direction or implement stronger fiscal policy, it has the political capital, the means, and the time to do it; however, it is never appropriate to revise existing financial commitments. Many of the labs that were awarded money will be significantly and unfairly affected by this unprecedented reversal. This is not about fiscal responsibility - the amount that

the government saves is miniscule.

- **Secretary Perry of the DoE ordered [a study of the US electrical grid](#)** to determine whether policies to boost renewable energy are hastening the retirement of coal and nuclear plants and threatening power reliability. The Federal Energy Regulatory Commission will also hold a technical conference on the state power subsidies at the beginning of next month. AES Members have access to a true and correct copy of Secretary Perry's original [memo](#).

- Beltway Buzz: [Division](#) persists among the president's supporters and within his own cabinet. Issues under reconsideration [include](#): the involvement of the US in the Paris climate accord; subsidies for wind and solar power; the enactment of a carbon tax, etc. **A special [meeting](#) has been called among several cabinet officials and staffers**, including: Special Assistant to the President for International Energy and Environment Dave Banks, National Economic Council Director Gary Cohn, Secretary of State Rex Tillerson, National Security Adviser H.R. McMaster, EPA Administrator Scott Pruitt, Energy Secretary Rick Perry, senior adviser Jared Kushner and chief strategist Steve Bannon.

## Climate

- The Global Carbon Budget has two different methods to measure global carbon emissions: "production emissions" (that is, the CO2 produced within a country's borders), and "consumption emissions" (the CO2 emitted around the world in the course of manufacturing goods for that country). **The two totals (produced and consumed emissions) should be equal, but they are not.** There is a 2-gigaton difference - the CO2 production total is about 13% less than the consumption. The discrepancy can be explained by the fact that countries do not count the amount of CO2 that they outsource, which often is sent to the developing world. Not long ago, the world sent most of its outsourced emissions to China, but since the global recession, [most outsourced emissions](#) are sent by Germany to Poland and by China to its hinterlands.

- **AES Premium Members have access to [The Greatest Story Seldom Told; Profiles and Success Stories in Air Pollution Control in the US](#).** A few statistics from The Greatest Story:

- As of 2015, combined emissions of the six main air pollutants were down 71% since 1970.
- Between 2005 and 2015, toxic air releases were down 56%, or more than 851 million pounds.
- Nitrogen oxide emissions are falling rapidly.
- As of 2014, sulfur dioxide emissions in the power sector have been reduced by more than 8 million tons compared to 1990.
- From 2000 to 2014, per capita energy-related carbon dioxide emissions were down 18.1%.
- The US exceeds international trends in air quality, including the largest reduction in carbon dioxide emissions in the world over the last decade.

- The following are considered **the cleanest metropolitan areas in the US** (in alphabetical order):

- \* Burlington-South Burlington, Vermont (pop. 217,042)
- \* Cape Coral-Fort Myers-Naples, Florida (1,059,287)
- \* Elmira-Corning, New York (184,702)
- \* Honolulu, Hawaii (998,714)
- \* Palm Bay-Melbourne-Titusville, Florida (588,088)
- \* Wilmington, North Carolina (277,969)

AES Members have access to a [list of the cleanest cities](#) in the US.

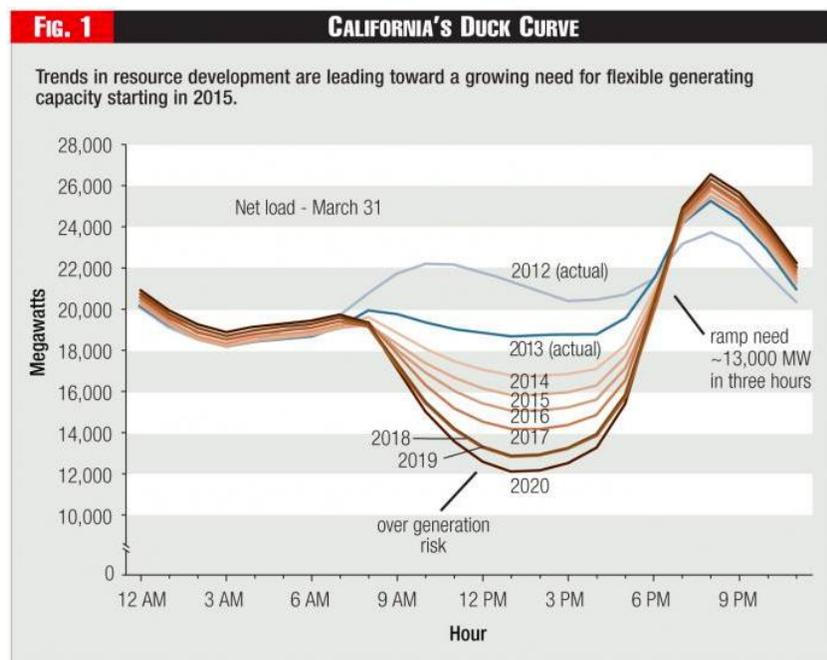
- **The most [endangered](#) rivers in the US** (Note: these rivers aren't the "worst" or most polluted):

- *Lower Colorado River (#1)*

- Bear River in California
- Mobile Bay rivers of Alabama, Georgia and Mississippi
- Rappahannock River in Virginia
- Green-Toutle River and the South Fork Skykomish River in Washington
- Neuse and Cape Fear Rivers in North Carolina
- Middle Fork Flathead River in Montana
- Buffalo National River in Arkansas
- Menominee River in Michigan and Wisconsin

## Electricity, Utilities and Power

- An abundance of solar and hydropower in California has led to negative wholesale electricity prices in the state. Might this also mean **the end of California's "Duck Curve"** (fig. 1)? This aptly named graph depicts energy demand over the course of a day and the rapid increase in electricity demand as the sun sets on solar plants and people turn on lights. As of last spring, the projections in the duck curve were on schedule. But this year, record amounts of solar and hydropower have led to a new phenomenon – negative prices in the middle of the day. **To see the new duck-curve graph, visit your [personal AES account](#).**



Energy Matters would like to acknowledge the work of the [Energy Institute at Haas, UC Berkeley](#).

- Hawaii and California have the [highest electricity rates](#) in the nation, Connecticut has the third highest, while Massachusetts ranks fourth, Rhode Island is fifth, New Hampshire ranks sixth ... New York is eighth, Vermont is ninth, New Jersey is 10th, Maine comes in at 11<sup>th</sup> ...

- The advent of flexible, modular, low-cost energy storage systems has [accelerated the pace](#) of market penetration of storage into the utility/electricity sector.

- "[Curtailment](#)" *noun* DEFINITION: When there is **insufficient transmission infrastructure to absorb power produced by renewable projects**. *Example:* China has a problem with "curtailment" because it wastes an enormous amount of renewable energy not adopted into its grid.

## *From Basic Research to Tech-to-Market*

- Scientists at the University of Virginia are **using thousands of Cold War-era spy photographs** of the Western Siberian tundra to document [changes in the climate](#) of that region.

- **The past year has seen four major national solar brands surrender:** Sungevity and SunEdison declared bankruptcy, NRG scaled back to focus on commercial and utility-scale solar, and SolarCity was brought under the Tesla umbrella. *And yet, consumer demand for [solar is growing rapidly](#).* (Note: the 30 percent solar tax credit is currently scheduled to drop to 26% in 2020, to 22% in 2021 and to remain at 10% from 2022 and beyond for commercial and utility-scale projects.)

- **Gov. Mary Fallin of Oklahoma signed a measure to [eliminate](#) tax credits for wind on July 1**, rather than allowing it to continue until 2021 as mandated. The measure prevents facilities that start producing after July 1 from claiming the credit.

- **Goldman Sachs has arranged \$1 billion of renewable energy [bonds](#) in Japan.**

- European governments have spent large sums of money in recent years subsidizing giant renewable energy projects in hopes of creating a clean source of energy that could eventually pay for itself. That moment may be here - Danish company Dong Energy, the largest offshore wind developer, won the right to **build two large wind projects in the German North Sea ... with [no government subsidies](#)** - a highly symbolic first for the industry.

- Wal-Mart is pressuring companies like Unilever and Colgate-Palmolive to help **the world's biggest retailer [remove a billion metric tons of greenhouse gas emissions](#) from its supply chain**. "Project Gigaton" will have the equivalent effect of taking 211 million passenger vehicles off the road for an entire year. Wal-Mart will also reduce emissions in its own operations by 18 percent.

## — FEATURES —

### *What we are reading:*

[Energy 2050: Insights from the ground up](#), by McKinsey

[U.S. coal giant plots cautious comeback plan](#), by Bloomberg New Energy Finance

[Who Holds The Power In Today's Oil Market?](#), by the Energy Collective

### *Quotes - Some thoughts on tomorrow's energy innovations today*

"It is only in keeping an open mind about coal that we can tap its potential."

- DoE Secretary Perry, on developing carbon-capture technologies

"I use the smartphone analogy - a lot of people will be very surprised at how the cost curve of storage will come down much faster than solar did."

- NextEra Senior Vice President of Deployment Michael O'Sullivan

"Today's grid operators are doing things that were fairy tales only a few years ago."

- American Wind Energy Association (AWEA) Research Director Michael Goggin

"The windiest places in the United States are all red states."

- Garvin Jabusch, Manager, Shelton Green Alpha mutual fund

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