



## ENERGY MATTERS

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

Volume 3(3); February 6, 2017

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## — HEADLINE NEWS —

### Conventional

#### Petroleum

- Three months ago, OPEC agreed to make "[necessary](#)" cuts in oil production, but now **the agreement is in danger of unraveling**. The Cartel has lowered output by about 900,000 bpd; publicly, Saudi Energy minister Khalid Al-Falih proclaimed, "[compliance](#) has been great so far." Privately, however, there is tension. All the cuts have been made by Saudi Arabia, Iran has announced that it will *increase* its [crude oil and gas exports](#) by about 100,000 bpd, and the overall compliance rate is about 80 percent of promised total cuts. Meanwhile, the US continues to outpace everyone, and the rate of Russian production has not slowed either.

- It appears that **the Kremlin is funding a "[propaganda effort](#)" to support anti-hydraulic fracturing protest-groups in the US**. (Editor's note: that the Kremlin has a material interest in undermining fracturing in the US is a logical interpretation; however, there are some doubts as to the actual - or factual - "Russian threat." Further, anti-fracturing sentiment in the US has a lot to do with growing environmental concerns not necessarily related to Russian propaganda.)

#### Gas

- **The capacity of [natural gas-fired power plants will increase](#) over the next two years**, while the cost of natural gas is expected to rise over the same time period. There are three primary reasons for these trends: 1) most of the nation's new natural gas-fired power plants are in Texas and the Mid-Atlantic, where the country's biggest natural gas shale plays are; 2) even if natural gas prices go up, it will still be a cheaper power source than coal; and, 3) natural gas-fired power plants are cheaper to build than nuclear power plants. AES Members have access to the [EIA natural gas drilling report](#).

#### Coal

- **China's** coal production [increased](#) 1% in December 2016 to 311 million tonnes, representing its highest annual coal production total level ever. **Japan** is building [45 new coal plants](#). And, **India** will allow private mining companies to mine and [sell coal](#); in 2017, 23 state-owned mines will be auctioned for sale. On the other hand, **Europe's** coal consumption continues its [long-term decline](#).

- Of the ten largest public company bankruptcies in 2016, **9 were energy companies**. Of those, a [majority](#) were coal producers.

## Nuclear

- **Toshiba will [not book any new orders to build nuclear power plants](#)** and is in the process of permanently exiting the business.
- The [Indian Point Nuclear Power Plant](#) in New York is the **10th in the US to announce its intention to shut down**.

## Renewables

- **Super Bowl LI at Houston's [NRG Stadium](#) was powered primarily by [renewable energy](#)**. In order to avoid another embarrassing power-outage (Super Bowl XLVII), NFL officials reached out to Houston's NRG Stadium. Its power comes from 600 solar panels, it uses LEDs to light the playing field (LED stadium lighting uses 60 percent less energy), and it provides renewable energy credits for all hosted events associated with the stadium.
- **China and renewable energy**: State-owned China Three Gorges Group and China's State Grid Corp. are [spending](#) heavily to [buy or build](#) hydro, wind and solar projects at a time when Western utility investors are pulling back from renewables and President Trump's pledge to revive coal has raised doubt about US support for them. For instance, in the past five years, CTG has spent more than \$10 billion on hydro and wind assets in Brazil, Germany, Italy, Poland and Portugal; the Asian Development Bank has arranged a debt financing deal to build more than 700 megawatts of renewable energy capacity for [ReNew Power Ventures in India](#); and, SunEdison has sold its solar materials business for \$150 million to [China-based GCL-Poly Energy Holdings](#) ... two days before it was set to file for Chapter 11 bankruptcy. This is just the beginning - **China plans to invest \$361 billion in renewables by 2020**.
- **All Dutch electric trains are powered by [wind energy](#)**.
- **The US solar industry employs more workers than any other energy industry**, including coal, oil or natural gas. AES Members have access to the DoE [US Energy and Employment Report](#).
- In early 2011, the DoE launched the "SunShot" initiative. At the time, the market for utility solar was stuck at \$4.00 per watt and **the goal of the initiative was to achieve \$1.00-per-watt by 2020. [That goal has been reached... three years early](#)**.
- **Tesla Motors and Panasonic have started [mass production of lithium-ion battery cells](#)** at the Tesla Gigafactory in Nevada.
- Production intermittency is one of the biggest challenges facing the renewable energy industry, but a new report covers techniques used by wind farms that solve reliability issues. AES Members have access to the DoE report, "[Wind Vision](#); A New Era for Wind Power in the US".

## Policy

- **"Climate change" is now considered [the most partisan issue](#) in US politics**.
- President Donald Trump signed an executive order to withdraw the US from the Trans-Pacific Partnership. Among other consequences, a number of proposed LNG export projects in the US have [lost their permits](#) to export to countries like Japan, a key outlet for the fuel in a glutted global market. (Note: The countries involved in the TPP are the US, Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.) The TPP would have made LNG export approvals to several Pacific Rim countries nearly automatic by classifying those markets as free-trade-agreement

countries.

- **Energy Matters original content:** Just before President Obama left office, federal regulators [increased the amount of renewable biofuels](#) that oil refiners are required to blend into the gasoline and diesel supply next year (renewable volume obligations, or "RVOs"). Overall, refiners will be forced to blend a record total of 19.28 billion gallons of ethanol, biomass-based diesel, and other biofuels into the gasoline and diesel supply in 2017. AES Members have access to the [Final RFS](#). This aggressive RFS has two of Trump's support bases [opposing each other](#): Big Oil and Big Corn. Trump has ordered a [temporary freeze](#) on the program to allow time for review.

- The US Senate voted to **kill the Interior Department's [Stream Protection Rule](#)**, a key coal mining regulation of the Obama administration; Democrat Senators Joe Manchin of West Virginia, Claire McCaskill of Missouri, Joe Donnelly of Indiana, and Heidi Heitkamp of North Dakota joined every Republican except Susan Collins of Maine in voting to end the Stream Protection Rule. The Senate also voted along party lines to **repeal a regulation requiring [disclosure of payments that energy companies make to foreign governments](#)**. The foreign payments rule was mandated by the 2010 Dodd-Frank financial reform bill to reduce corruption by requiring detailed accounting of royalties and other payments that oil, natural gas, coal and mineral companies make to governments. **President Trump will sign both resolutions into law.**

- When the US EPA began drafting the proposed Clean Power Plan in early 2014, it envisioned a future in which coal was still king among generation fuels. But when the final version of the CPP was published in 2015, the actual generation mix had [flipped upside down](#): natural gas stole coal's crown ... five years before the CCP rule was expected to go into effect. **The CPP is dead, which means that states will pursue their own climate strategies.** To understand the climate strategy of each state, AES recommends the [Power Plan HUB](#), a useful tool published by E&E.

- While Attorney General of Oklahoma, Scott Pruitt (often) sued the EPA, arguing that his state had the right to set its own environmental rules. That logic implies that as head of the EPA, Director Pruitt will grant individual states the right to set their own individual agendas. California set up a potential [showdown](#) with Director Pruitt when the state's clean-air regulators increased mandates for more electric and fuel-cell cars. The program, called "Spare the Air, Cool the Climate," has 85 measures to support the EV market, including rules, grants, partnerships, and education programs. AES members have access to the [final draft of the Plan](#) (264 total pages).

- The US Bureau of Land Management just approved the construction of 500 wind turbines in southern Wyoming. At the same time, the Wyoming Legislature is [fast-tracking a bill](#) that would make it illegal to buy renewable energy generated in state. AES Members have access to the [BLM announcement](#) to build the turbines.

## *Climate*

- An updated US military strategy report for the Arctic says "diminishing ice levels" due to **warming temperatures pose a series of security risks**. AES Members have access to the DoD Report to Congress, "[Strategy to Protect United States National Security Interests in the Arctic Region.](#)"

- **When will the [Larsen C ice shelf break off](#) from the Antarctica peninsula?**

- **Methane emissions in the San Francisco Bay Area are about 1.8 times higher than suspected**, but natural gas is not the only — or even the primary — contributor. Research from the Lawrence Berkeley National Laboratory determined that about 82% of the region's methane emissions come from biological sources, such as landfills, while only 17% of the escaped methane originates in fossil fuel sources. (Note: The study by the Bay Area Quality Management District focused on San Francisco because the region

does not have significant oil and gas production, making it easier to determine how much of the fossil fuel-associated methane was coming from urban infrastructure specifically.) AES Members have access to the LBL peer-reviewed [abstract](#).

- The National Park Service report on climate change, "Cultural Resources Climate Change Strategy" - was **the most downloaded document from any government website**. AES Members have access to the NPS [report](#).

- The Dynamic Integrated model of Climate & the Economy (DICE), the leading computer model for studying the effects of warming on the global economy, has released **a new beta version of the model that AES Members can [test](#)**.

- Domoic acid is a potent neurotoxin produced by certain marine microalgae that can accumulate in the food web, posing a health threat to human seafood consumers and wildlife in coastal regions worldwide. A new study has found **a link between warming ocean conditions and dangerous neurotoxins** - like domoic acid. AES Members have access to the peer-reviewed [abstract](#).

- There is a new 15-second video produced by NOAA that shows the [global annual temperature each year from 1880 to 2016](#) and compares it to the 20th-century average.

- NASA, NOAA, the UK Met Office, and the Japan Meteorological Agency have all declared that, as scientists predicted at the beginning of the year, **2016 was the hottest year on record**. AES Members have access to the [Global Temperature Spiral](#).

- A new study has "discovered" that climate change is causing **birds to evolve to be less attractive**. AES Members have access to the peer-reviewed [article](#).

- Despite intense opposition from many academic scientists, national governments, and the UN, the [Carnegie Climate Geoengineering Governance initiative \(C2G2\)](#) was formed to promote the **study of geoengineering**, otherwise known as "climate manipulation."

## *Electricity, Utilities and Power*

- **Featured story:** The resignation of FERC Chairman Norman Bay leaves the agency with just two remaining commissioners - Cheryl LaFleur (chair) and Commissioner Colette Honorable, both Democrats. (AES has access to Bay's [resignation letter](#).) Nominating and confirming a third commissioner - the minimum needed for a quorum) could take two to three months. This delay is significant. By statute, filings submitted to FERC go into effect as a matter of law if the Commission does not act on the filing within 60 days. For more information, please [visit the AES newsfeed](#).

- **Breaking news:** On February 1, 2017, FERC found that the Midcontinent Independent System Operator (MISO, one of the largest energy markets in the US) was unnecessarily restricting competition by preventing electric storage resources from providing all the services that they are technically capable of providing. To comply with FERC's mandate, MISO must now promote energy storage participation within its markets. [Please contact AES](#) to receive [more information](#) from WSGR about this new development.

- **The Trump Administration has identified its [Top 50 Infrastructure projects](#)**. Of these, numbers 9, 11, 12, 16, 17, 20, 21, and 49 are specifically related to energy. It is interesting to note that even though President Trump has a close relationship with a number of nuclear executives, there is not a single nuclear project on the list. AES Members have access to the [Top-50 list](#).

- **[The DoD's annual energy bill is \\$4 billion](#)** across its 523 installations, which span more than 280,000

buildings and 2 billion square feet, nearly three times the combined area of all Wal-Mart stores in the US. In one of their final public events, assistant secretaries for the Army, Navy and Air Force made the case for continuing investments in military energy security and efficiency by switching bases from diesel backup generators to more efficient microgrids. AES Members have access to the PEW sponsored [webinar](#), [Power Begins at Home](#).

- "[Grizzly Steppe](#)" is the name used by the US Department of Homeland Security and the FBI when referring to the unknown Russian association that is leading cyberattacks on electricity grids around the world. **Recent attacks blamed on Grizzly Steppe include:**

- \* the IP address at Ontario's Hydro One.
- \* a power outage at a [Ukrainian power plant](#).
- \* an unnamed Vermont utility's computer system.

However, according to Brian Harrell, former director of critical infrastructure protection programs at the North American Electric Reliability Corp., and currently at [Navigant](#), the source of the "cyber-attacks" might actually be "malware [that] is actually available for purchase online, meaning anyone could have used it and its mere presence is not a guarantee of Russian government involvement.... The infection could have come from something as simple as an employee visiting an infected website on a work computer."

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

- A paper by geoscientist Rob DeConto in *Nature* has drawn a lot of attention. Though it outlines a new paradigm for how Antarctic ice sheets are impacted by climate change, it has become the go-to paper for [policy-makers trying to prepare for rising seas and coastline erosion](#). AES Members have access to the peer-reviewed [abstract](#).

- **France issued a record 7 billion euros (\$7.5 billion) in [green treasury bonds](#). Demand for the bonds was higher than expected.**

- **The battery/storage market is in its crucial [proof-of-concept stage](#) right now.** As per the regulatory requirements following the Aliso Canyon gas leak, [three California public utilities](#) are replacing gas units with three energy storage arrays: San Diego Gas & Electric in Escondido and El Cajon, both built by AES (unrelated); and Southern California Edison near Chino (built by Tesla).

- Toyota, Royal Dutch Shell, and Total are the **lead investors on a large "[hydrogen fuel](#)" project**. (Editor's note: the goal of this investment council is to test whether hydrogen can compete with batteries as an alternative power/transport solution.)

- While many industrialized countries are turning away from "sustainability," the Bank of England holds to its same long-term outlook: **investors will see sharp long-term "[repricing](#)" (aka, declining investment value) of oil and gas companies** as demand for fossil fuels continues to fall and investment in clean energy continues to grow. For instance, about 60 percent of publicly held debt issued by oil and gas companies matures after 2020 and so could be impacted by the transition toward sustainable energy from hydrocarbons and the impact of climate change on financial markets. (Note: oil and gas companies owe more than \$636 billion of debt maturing after 2021.)

- **Breaking (IRS tax) news:** The IRS released an advanced version of their interpretation of a new "Safe Harbor": a federal agency may purchase energy generated by a renewable energy project, such as a wind or solar project, without jeopardizing a company's right to claim an investment tax credit (ITC). See your [AES Newsfeed](#) for information from WSGR about this IRS interpretation.

## — FEATURES —

### Feature

*Energy Matters* has frequently highlighted the impact of new innovations on the oil and gas industry ([Shale 2.0 and 3.0](#), [The End of the Year in Review](#), the selection of [Mark Mills as Energy Writer of the Year...](#)) The extra attention is justified -- innovation has been a primary cause of turmoil in the oil and gas markets, shifting consumer spending, and geopolitical unrest. In light of this new era of innovation, **the American Energy Society would like to recognize Station Houston**, a Silicon Valley-like "incubator" for oil and gas that recently launched in Houston, Texas.

Launched in March 2016, [Station Houston](#) bridges the gap between digital software start-ups seeking markets for their products and oil and gas companies with Houston offices (such as Chevron, Kinder Morgan, and Royal Dutch Shell) looking for new innovative tools to solve exploration, production, or processing challenges. Given the impact that emerging technologies have had on the oil and gas industry, the American Energy Society applauds the efforts of Station Houston for bringing together major oil and gas firms with technology entrepreneurs.

### Quotes - "The future of ...", from the perspective of the Trump Administration:

**Infrastructure:** "We intend to fix our country, our bridges, our roadways. We can't be in an environmental process for 15 years if a bridge is going to be falling down or if a highway is crumbling. So we are expediting environmental reviews and approvals." --President Donald Trump, while signing executive orders to streamline environmental reviews for infrastructure projects.

**Oil:** "The two big uncertainties for oil in the next 20 years: electric cars and low-cost (oil) producers who continue to overproduce in spite of an abundance of oil." --BP Chief Economist, Spencer Dale

**Coal:** "We should have a full coal recovery in three months, and that should be about the longest. I'm not a patient man. I'm going to be watching that things happen as fast as they can." --Robert E. Murray, founder of Murray Energy [Coal] Corp and President Trump confidant

**Nuclear:** "Why does this happen when you have a resource that has extremely valuable environmental benefits?" --Entergy Wholesale Commodities President Bill Mohl, on the closure of Indian Point Nuclear Power Plant and President Trump confidant

**Climate:** "I do not believe that climate change is a hoax." --Oklahoma Attorney General Scott Pruitt, during a hearing on his nomination to be administrator of the US EPA