



## ENERGY MATTERS

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

**Volume 23 (2); November 14, 2016**

**Editor's Note:** The most unexpected Presidential election in US history makes it clear that the work of the American Energy Society is more important than ever: providing balanced, neutral, and non-partisan content and services about energy for the benefit of all mankind. We are honored to play this role.

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### *Special Report*



**Summary:** Republican victories in the Presidential, Congressional, and gubernatorial elections open the door wide for broad push-back on federal and state regulatory oversight and increased support for domestic production of fossil fuels, but certain trends in renewable energy will remain.

During his campaign, Mr. Trump offered sweeping proposals for significant changes in US fiscal, trade, immigration, and tax policies, but he said very little about energy. However, his economic and social policies could have a potentially strong and disruptive impact on current trends in US and international investments in energy and the environment. The following are some of President-elect Trump's potential energy policy proposals:

- Achieve total American energy independence, including ending imports from OPEC countries.
- Use revenues from energy production to rebuild public infrastructure, which includes but is not limited to investment in nuclear power.
- Ask transCanada to renew its permit application for the Keystone XL pipeline.
- Lift moratoriums on energy production and mining from federal lands.
- Revoke policies that impose restrictions on hydraulic fracturing and other new drilling technologies.
- Cancel the Paris Climate Agreement and block US tax dollars for UN global warming program.;
- Scrap regulations on coal that are bad for workers or contrary to the national interest.

On the other hand, it is also reasonable to expect that certain current developments in the renewable energy sector will remain consistent:

- Many renewable energy sources are price competitive, established, and "bipartisan" (for example: wind in Iowa, solar in Arizona, carbon capture in Texas, nuclear in Georgia, etc.).
- Support for infrastructure – roads, bridges, etc. – may include energy-enabling technologies, such as long-distance transmission lines, large-scale electricity storage, and CO2 pipelines.
- From California to New England, many states programs in place that cut carbon emissions and encourage clean-energy deployment – from cap-and-trade policies to renewable energy standards. Many states will aggressively protect new renewable energy businesses, even if the federal government tries to pull back

on key policy mechanisms like the EPA's Clean Power Plan.

Of all the President-elect's proposals, perhaps the most difficult will be putting coal miners back to work - coal employment is nearly half what it was just five years ago. The demise of the coal industry had as much to do with the industry's inability to remain price-competitive as it had to do with regulatory policy. Though it is unlikely that Trump can help the workers, there are a few ways the new administration may try to help the coal industry:

- Modify the US EPA's "endangerment finding" on carbon dioxide.
- End all administration work on non-final environmental rules affecting coal.
- Roll back existing coal-impacting EPA regulations.
- Phase out federal subsidies for renewable energy.
- Refuse to ratify the recent international climate agreement.
- End the moratorium on federal coal leasing.
- Transfer environmental policy powers back to the states.
- End government review of self-bonding practices.

AES Members have access to other perspectives on the future of energy policy in the US, including [text of an interview](#) of Stanford faculty and an [audio recording](#) of a panel presentation hosted by the Bracewell law firm.

## — HEADLINE NEWS —

### *Conventional*

#### Petroleum

- The election of Donald Trump increases the likelihood that **the oil glut will persist through 2017**. Despite an agreement to limit supply, it appears that [OPEC is still adding](#) to the global stockpile: both Saudi Arabia and Iran are adding 1m b/d each, and have been over the last two years, more than offsetting the 1.4m b/d fall in other parts of the world. The glut will remain extremely painful for Nigeria, Algeria, Angola, Venezuela, and Iraq. Meanwhile, North America's frackers are becoming low-cost producers, [able to survive](#) and thrive at US\$40 to US\$50 a barrel.

#### Natural Gas

- **Featured story:** According to Stanford scientists, it might be easy to reduce methane emissions by targeting the super-emitters responsible for a vast majority of total methane emission leaks. [A 50/5 rule applies](#): more than 50 percent of all leaks come from the largest 5 percent of emitters. AES Members have access to an [abstract](#) of the peer-reviewed article.

#### Coal

- In spite of global pressure and policies designed to limit the use of coal, the industry is clearly experiencing [recovery and growth](#) in many parts of the world:

\* France is replacing nuclear power with [power produced by coal](#) and gas plants.

\* India is planning to [build over 300 GW of new coal capacity](#) to meet the electricity needs of approximately 300 million citizens who currently have no access to electricity.

\* China is planning to [increase its coal-fired power capacity](#) by up to 20%, to nearly 1,100 GW by 2020 ([from 900 GW](#) in 2015).

\* In the first half of 2016, six former Soviet countries produced 232 million tons of coal, the highest output in a six-month period since 1996.

## Nuclear

- Four new nuclear units are under construction in the US right now: two at Southern's Vogtle plant in Georgia and two at the Summer facility in South Carolina. All four are over-budget and behind schedule. "[At the current pace](#) of construction and retirements ... nuclear power's percentage of generation will fall from its current 19% to close to 0% in 50 years."

## Renewables

- **The US universities most committed to sustainability** (by the Sierra Club). **Note: AES Premium Members can see the Top 20 by logging into their [personal AES account](#).**

5. Stanford University
4. Colby College
3. University of California, Irvine
2. State University of New York, College of Environmental Science and Forestry
1. **College of the Atlantic**

- "[Zombie Renewables](#)" (noun; adj.) *def.*: the first US wind projects, built in the 1980s, are reaching the end of their productive lives. Output is dwindling, maintenance costs are climbing, and new technologies make the turbines obsolete. But these older wind sites already have transmission connections and proven high wind potential, which make them ideal candidates for what the industry calls "repowering"; or, a strategy to revamp older wind infrastructure. For instance, [NextEra](#) management is looking for "zombie renewables," like old wind farms, that can be 'repowered.'

- Itchu, a remote Himalayan village inaccessible by road and with no air or water transport system, [now has electricity powered by solar micro grids](#). (*It took only two days to install the entire system.*)

- **North America has its first offshore wind farm - [Deepwater One](#)**. There are five wind turbines off the coast of Block Island, generating enough electricity to power about 17,000 homes, or about 4 percent of all households in Rhode Island.

- **China is building [two wind turbines](#) every hour.**

## Policy

- Upon the conclusion of the US Presidential election, **the COP22 conference in Marrakesh came to a virtual halt**. "It is the big news," said Xie Zi, a climate official from China's National Development and Reform Commission. "People just don't know what will happen. We are just waiting, you know." (Note: Chancellor Angela Merkel has been [conspicuously absent](#) from the COP 22, which speaks volumes about Germany's intentions. Specifically, Germany is importing coal-fired power but not counting it against its pledges; nor are the nations that are exporting the coal.)

- **COP22 is facing a quiet revolt**. The Africa Group – a UN negotiating alliance – has 54 members, but only 15 have ratified their COP21 Paris pledges. It appears that the group was given at least \$26 million USD "[incentives](#)" to submit overly ambitious climate agendas. The support was gratefully accepted and consultants from developed nations "helped" write the pledges, but now it is clear that these pledges are impossible to fulfill.

- While COP22 may not deliver real change, there is a lot to celebrate: **the recent agreement to [reduce airline emissions](#) and the [HFC agreement](#) were major accomplishments**.

- A natural gas pipeline proposed by TransCanada Corp. is [pitting two US government agencies against](#)

[each other](#). The Environmental Protection Agency said that the Federal Energy Regulatory Commission failed to undertake a "proper" analysis of climate change in its final environmental impact statement for the 160-mile (257-kilometer) TransCanada Xpress pipeline. "We view FERC's response to our comments as very concerning in light of [the Obama administration's new guidelines on greenhouse gas impacts]." AES Premium Members have access to a true and correct [PDF copy](#) of the EPA letter regarding FERC's underperformance.

- **The Senate is considering a new bi-partisan bill, "[the Carbon Capture, Utilization and Storage Act](#)" (S. 3179)**, introduced by Sens. Heidi Heitkamp (D-ND), Sheldon Whitehouse (D-RI) and Shelley Moore Capito (R-WV). This act would remove the cap currently on the Section 45Q federal tax credit. In addition, it would increase the value for each ton of CO2 captured and stored from power plants and industrial facilities. Lawmakers from both parties have endorsed this major legislation but there is little time left in which to pass it.

## *Climate*

- Methane is shorter-lived greenhouse gas than CO2, but **has a much [more powerful warming effect](#)**.  
**Primary sources of methane are:**

- \* Fossil fuels: coal mines, power stations, oil rigs - 30 to 45%
- \* Natural biological activity: wetlands, landfill, agriculture - 55 to 70%

- **[Top 10 Sustainable Coffee Roasting Companies](#):**

10. Peet's (Berkeley, California)

...

4. Colectivo Coffee (Wisconsin)
3. Portland Roasting Coffee (Oregon)
2. Counter Culture Coffee (North Carolina)
1. Kickapoo Coffee Roasters (Wisconsin)

- The EPA has announced its 2016 EPA Green Power Award winners. "And the award for **Green Power Community of the Year is ... Maplewood, Missouri.**" **AES Premium Members can log into their [personal accounts](#) to see the winners of the other categories** (Excellence in Green Power Use, Green Corporate Power Partner, Sustained Excellence, and more).

- **[Large on-going departures from historic average temperatures](#)**, (by city, in Fahrenheit): Salt Lake City, Utah (5.1 degrees F); Charlotte, NC (4.2 degrees); Columbia, SC (4.1 degrees); Akron, OH (4.1 degrees); Harrisburg, PA (4 degrees); Cleveland, OH (4 degrees).

- In New Delhi and surrounding regions, [pollution](#) has reached crisis level - thousands of schools have been closed, residents have been warned to stay inside, and all cricket matches have been cancelled. [Desperate to reduce the pollution](#), New Delhi has banned driving private cars for two weeks and cut fireworks shows for the upcoming holiday. But one thing India has not tried could make the biggest difference: hundreds of thousands of farmers in the nearby states of Punjab and Haryan **continue to set annual fires in rice fields**.

- If you drive an electric vehicle in China, [your car is just 15 percent cleaner](#) than a fossil-fuel car.

- Africa's air pollution is now causing more premature deaths than unsafe water or childhood malnutrition. AES Members have access to the [peer reviewed article](#).

## *Electricity, Utilities and Power*

- [The US consumes about 230 kwh/person/day](#). To put that in perspective, the US produces about 6 kwh/person/day through renewables + hydro. The top renewable producing states are Washington (37 kwh/person/day), followed by North Dakota (35), Montana (34), Oregon (34). Ten states produce 2 or fewer kwh/person/day via renewables + hydro: Connecticut, New Jersey, Pennsylvania, Ohio, Missouri, Delaware, Florida, Maryland, Virginia, and Mississippi.
- The Eastern Interconnection (EI), the world's biggest power system, which delivers electricity to 270 million customers, has concluded its assessment of the Eastern US grid and has found it can theoretically handle [30% renewables within ten years](#) - more than ten times the current amount of wind and solar on the system today.
- Are Supergrids, the movement of large amounts of electrical capacity over a long distance, the next big thing? AES Members have access to a [report on "Supergrids"](#) by Navigant.
- **Featured story: [Utilities are betting big on natural gas](#)**. For instance, [Duke Energy's](#) \$4.9 billion purchase of Piedmont Natural Gas Co., set to close by the end of the year, will accelerate the utility's transition from coal to gas-fired generation.
- European electric utilities, hurt by plunging commodity prices and anti-pollution programs, have lost about half their value since 2007. To recover lost revenues, many European power companies are adopting new digital [smart-grid](#) distributed-energy technologies.
- If they paid the same electricity prices as Europeans, [Americans would spend](#) about \$4,800 more per year on electricity.

### *Basic Research and Tech-to-Markets*

- The Oil and Gas Climate Initiative (OGCI) -- ten of the largest oil and gas producing companies in the world: Saudi Arabian Oil Co., Royal Dutch Shell Plc, Total SA, BP Plc, Eni SpA, Statoil ASA, Repsol SA, the China National Petroleum Corp., Petroleos Mexicanos and India's Reliance Industries Ltd. -- have **contributed collectively \$1 billion USD to [fund climate research](#)**, carbon capture and storage, and the reduction of methane emissions from the oil and gas industry.
- The Bureau of Land Management (BLM) is [offering 40,000 acres](#) of Wayne National Forest — Ohio's only national forest — for oil and gas development, with pre-approval for hydraulic fracturing. The BLM is planning an online auction on Dec. 13 to lease the first 1,600 acres of the forest near Monroe, Noble, and Washington counties. The minimum accepted bid is \$2 per acre.
- **Germany has the world's first [hydrogen-powered, zero-emission passenger train](#)**. The "Hydrail" train is powered by a hydrogen fuel cell and emits only steam and condensed water.
- **The amount of carbon needed to power the global economy [fell to record lows in 2015](#)**. In related news, global carbon intensity (emissions per unit of GDP), fell by 2.8%.
- **The United Nations is fast-tracking preliminary investigations of controversial methods to [re-engineer the Earth's oceans and atmosphere](#)** to offset the effects of climate change.
- Engineers at Toyota Motor Corp say they have **tamed volatile [lithium-ion battery technology](#)** and can now safely store more power at no extra cost or risk.

## — FEATURES —

### *Quotes - a sample of corporate and government climate strategies*

*"Climate change has become a pillar of the U.S.-China bilateral relationship."* - U.S. Ambassador to China Max Baucus

*"Where ever megabits meet megawatts - we are trying to figure out how to use technology to improve the transmission and distribution of electricity."* - Dennis McGinn, assistant secretary of the Navy for energy.

*"Where are we placing our big bets? In natural gas ... and around renewables."* - Southern Co. President, Chairman and CEO Thomas Fanning

*"Storage is going to be, in the next decade, a very big business and one that we're going to be very focused on."* - NextEra Energy Inc. Chairman, President and CEO James Robo

*"We have no choice. A 2°C world might be insurable, but a 4°C certainly is not."* - Former Axa CEO Henri De Castries, on why his former company is not taking into account climate change.

*"The [entire] power industry needs to reinvent itself... I don't really think at this point in history that they have a choice."* - Jim Rogers, former CEO of Duke Energy

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