



ENERGY MATTERS

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

Volume 15(2); July 25, 2016

Table of Contents:

[Headline News](#)

Conventional, Renewables, Policy, Climate, Electricity and Power, Research and Technology

[Features](#)

David Mackay (posthumously)

— HEADLINE NEWS —

Conventional

Petroleum

- It's been a while, but it appears as if **the global oil market is almost balanced**. Production is slowing while demand is rising. AES Premium Members have access to the IEA [report](#).
- On the [supply](#) side, some Saudi Arabian and other Middle Eastern producers are now **pumping oil for less than \$10 a barrel**. On the [demand side](#), **India is the "world's growth leader of oil consumption"** - up 8.3 percent from the same period last year. (Note: China's demand is rising at the second fastest rate, 3.3 percent.)

Natural Gas

- Natural gas generates about 34% of all electricity in the US; coal has a 30% share; nuclear and renewables come in at 19% and 15%, respectively. After 2016, renewables will have an increasingly larger role in the energy mix, while natural gas generation will shrink due in part to rising prices of NG. AES Premium Members have access to the early release of the [EIA Energy Outlook 2016](#).

Coal

- **There are about 13,000 coal mines in operation in the US**. The US Mine Safety and Health Administration did not identify any mines for a "pattern of violations" in 2015 ... the first time there were [no citations issued](#) in a very long time.
- **Korea is building a series of [new coal-fired power plants](#)**.

Nuclear

- South Carolina Electric & Gas Co. is asking state regulators for [\\$852 million more](#) to complete the VC Summer 2 and 3 nuclear units (making it a \$14 billion project). The primary reason for the request is that management decided to replace the contractor of the project.

Renewables

- **Investments in renewable energy are [declining](#) in 2016:**

- * China's investments fell 34 percent, down to \$33.7 billion.
- * In Africa and the Middle East, investment fell 46 percent, to \$4.2 billion.
- * The United States saw a drop of 5 percent, to \$23.1 billion.

Note: Brazil and Europe were the only regions to see an increase, led by Europe's 4 percent gain.

- The prevailing theory about renewable energy is that "variability" or "intermittency" caps the amount of electricity that wind and solar can contribute to the grid at 15 to 20 percent of the total (the sun and wind are not constant sources of energy). However, there is **new evidence that renewables are beginning to break through that barrier**. AES Premium Members have access to the [report](#) by the White House Council of Economic Advisors.

- **The total number of [electric vehicles](#) worldwide has tripled since 2013.**

- Without question, battery [storage](#) is a hot topic, with some calling it the "Next Big Thing." However, consider the future promise of the technology in the current context: in 2015, a record 221 megawatts (MW) of storage capacity was installed in the US, more than three times as much as in 2014 (65 MW). But more than 160 MW of the 2015 total was deployed by a single regional transmission organization (the PJM Interconnection market). And 221 MW is not much in the context of a total US generation capacity of more than a million megawatts. **Storage might be the "Next Big Thing," but there is a lot of work to be done.**

- **The top 3 largest rooftop photovoltaic installation projects in the world:**

- * 11.5MW rooftop solar plant at Beas Dera, India (spread over 42 acres on the Dera Baba, the plant has the capacity to produce 11.5MW electricity).
 - * 8.1MW in Pfenning Logistics distribution centre in Germany.
 - * 6.4MW solar array on the rooftop of the Mandalay Bay Resort & Casino campus in Las Vegas.
- (Note: for the rest of this list and similar stories, visit your [AES website account](#)).

Policy

- **Featured story:** The Interior Department is preparing to finalize a five-year [offshore drilling plan](#) later this year, likely the last major battle of the Obama administration. It will be the first time that the federal government will put forth specific safety rules for the Arctic and vastly different from more developed offshore drilling areas such as the Gulf of Mexico. [Preparation](#) of a plan comes despite the fact that no company is using offshore rigs to drill in Arctic federal waters, none has any imminent plans to drill, and numerous companies have abandoned their drilling rights leases. Nevertheless, the oil and gas industry is *not happy*. AES Premium Members have access to the [proposed DOI 5-year regulatory plan](#).

- **The most important talks that no one heard.** Delegates from around the world recently met in Vienna to discuss ways to limit the super-warming chemicals called hydrofluorocarbons (HFCs). The [talks ended favorably](#), with no real opposition to the agreements on key "challenges and solutions." The stakes are high: HFC emissions are rising fast and have a warming power equal to nearly three times the world's current annual output of carbon dioxide. This would be the biggest climate protection achievement of 2016.

- For the next session of Congress, lawmakers are preparing legislation that would instruct the National Laboratories to explore [replacing critical computer-connected components](#) that regulate power plants and electric grids with analogue ones. Further, Congress will consider in the next session a Securing Energy Infrastructure Act, bipartisan supported legislation that would **require replacement of automated systems with manual procedures controlled by humans**. AES Premium Members have access to the [proposed bill](#).

- **The auto industry is preparing to fight current fuel-economy standards.** The industry says US regulators have underestimated the [cost and difficulty](#) of preparing their vehicle fleets to meet new fuel-economy and greenhouse-gas targets, and they blame California for having too much power in shaping the country's policies.

- **China has [threatened provincial governments with punishment](#) if they fail to reduce their coal output** within the year. The country plans to narrow its coal output by "more than 250 million tons" in 2016 as part of supply-side reforms.

Climate

- **Three billion people around the world [use wood and dung to cook their food](#)**, a solution that is dirty, dangerous and deadly. In India, for instance, about 600 million people rely on wood or dung as their primary source of energy. But, consider this dilemma: on the one hand, coal might be a cleaner solution; on the other hand, India is already the world's third largest greenhouse-gas emitter. It is home to six of the 10 most polluted cities, and conditions in the Indian coal industry are dire.

- Researchers have re-examined all 195 individual country pledges at the Paris climate conference (also known as Intended Nationally Determined Contributions, or INDCs), and have come to the conclusion that **reaching the pledges still won't be enough to prevent global warming**, as was originally believed. AES Premium Members have access to the [peer-reviewed study](#).

- **Energy is the [second largest consumer of water](#) in a drought-threatened world.** Worldwide, annual water consumption for energy is about 100 billion cubic meters. A nuclear power plant, for example, uses up to 17 million gallons of water per day for cooling. A single fracking well may use on average 1 million gallons of water. Biofuels – when produced from irrigated crops – require water both to grow the crops and again for cooling when they are burned. In the US, energy production uses about 11% of all [freshwater water consumption](#).

- As global warming opens up [new shipping lanes](#) and access to valuable resources, **some countries are increasing their military presence in the Arctic.**

- **There are 5 trillion pieces of [plastic](#) floating in our oceans.** The location of the plastic debris is not centralized, but rather is universally prevalent in tiny, confetti-like pieces ... everywhere.

- **[Cars and trucks](#) contribute about 22 percent of US climate pollution and 17 percent of the global total.** The US portion is holding steady, but the global percentage is growing rapidly.

Electricity, Utilities and Power

- **[Smart-grid](#) depend on computers and the Internet to be "smart."** Solar and wind energy require Internet-centric mechanisms to smooth the rough edges of episodic supply and grid-distribution. For hackers, this new industry has vastly expanded what the military refers to as "the attack surface." It is not a surprise, therefore, that bad actors are redirecting their cyber-hacking skills toward critical smart-grid and utilities' infrastructures.

- **Featured story:** Chinese companies have built 7GW of all [new generation capacity](#) in Sub-Saharan Africa, 30% of all new installations. Not wanting to be left behind, private equity company Denham Capital, renewable energy company GreenWish Partners, and others are now [signing agreements](#) to develop energy projects in Africa.

- **Utilities that have a large amount of renewable energy in their [production mix](#)**: Sempra Energy, PG&E, Edison International, and Xcel Energy. **Utilities that have a smaller percentage of renewable energy in their mix**: Duke, Southern Company, and American Electric Power. AES Premium Members have access to the production mix [report](#).

- **[Home electronic devices that are “off,” or in standby or sleep mode](#) use the equivalent of about 50 large power plants’ worth of electricity every year.**

- **For the first time since 1979, [carbon dioxide emissions](#) from cars and trucks surpassed the carbon pollution from electric power plants.**

From Basic Research to Technologies and Markets

- **One thing preventing renewable energy from capturing a larger market share is the lack of [transmission lines](#)**--there aren't enough to transport power from the windy sections of Texas or Iowa, or from the sunny corners of Nevada and California, to population centers. The companies that could benefit are transmission line builders like Quanta Services (NYSE:PWR) and MYR Group (NASDAQ:MYRG). On the ownership side, National Grid is a major infrastructure company with transmission lines all over the world.

- **Featured story**: There is concern that the market for smart meters has "[plateaued](#)." The US DoE grant program, which caused an explosion in the number of smart meter installations across the US, expired in 2013. Since then, the smart-meter market has not grown.

- **Engineers are testing “[floatovoltaics](#)”** (floating solar photovoltaic arrays) on portions of the Colorado River's two reservoirs, Lake Mead and Lake Powell, to see if they can produce clean, renewable energy while limiting vast amounts of water evaporation from the hot desert sun.

- **The price of lithium-ion batteries is [declining](#) significantly.** LG Chem, Panasonic and Samsung are driving down market prices; prices will continue to drop once the Tesla gigafactory is fully operational.

- **There appears to be a direct relationship between California's shift toward cleaner energy and its recent [economic growth](#).**

- **Many tobacco farmers in Virginia are now turning their crops into [biofuels](#) for airplanes.**

— FEATURES —

Featured Individual - David Mackay, posthumous

The American Energy Society would like to recognize David Mackay, Britain's former chief scientific adviser on climate, who passed away recently. Mackay, a physicist, was the author of *Sustainable Energy Without the Hot Air*, a smart, rigorous, and often witty discussion of renewables. In a pragmatic [TED talk](#), Mackay tours the basic mathematics that show worrying limitations on our sustainable energy options ... and why we should pursue them anyway. Energy is a contentious field, and David Mackay's commanding intellect will be greatly missed.

Quotes

- Tesla just changed one word in their mission statement.

It was: "Tesla's mission is to accelerate the world's transition to sustainable *transport*."

Now it is: "Tesla's mission is to accelerate the world's transition to sustainable **energy**."

(Thank you Lyn Jefferies at [IFTF](#) for noting this change.)

American Energy Society, 654 Gilman Street, Palo Alto, CA 94301