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Energy Matters

The energy news you need to know right now

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The e-Newsletter for Premium Members of the American Energy Society
"Sound-bite" summaries of: conventional, renewables, electricity, policy;
jobs, events funding, online courses and professional development

Headline News

Conventional

- **The F.B.I. has [warned](#) US oil companies of "intense" and "prevalent" corporate espionage.** Since the US has some of the best drilling technology and intellectual property, many foreign companies are stealing extraction technologies and data from US firms; some of these foreign companies are backed by government funds and use agents to bribe and steal secret documents.

- There are **four [nuclear reactors](#) scheduled to come on line** in the next year (and maybe a fifth), but five nuclear reactors have been closed in the past year, and another nine may be retired soon.

- **Shell has suddenly [ceased exploration](#) in the Chukchi Sea off Alaska's coast.** Ann Pickard, Shell's top Arctic executive, explains the economics of drilling: if oil prices remain below \$50 a barrel, the off-shore venture would yield no profit; at \$70, Chukchi oil would be "competitive"; and at \$110 it would be a huge winner. Apparently, Shell has lost confidence about future prices.

- **FEATURE STORY:** With oil hovering at \$50/barrel, operators have [cut production](#) - clearly, **there is plenty going wrong for O&G right now (and yet ...)**
The US EIA says that O&G investment in production over the next several years will be in ["sustained decline"](#);

Investment in upstream O&G is ["uneconomic"](#) at \$50 per barrel, according to a Wood Mackenzie report; [ConocoPhillips Co.](#) has confirmed that it is looking to reduce its global workforce by 10%; [Halliburton](#) is planning to cut about 16% of its current positions; [TransCanada](#), the company that was planning to build the Keystone XL Pipeline, is reducing senior management positions by 20%. [Total debt](#) for 30 of the largest shale companies has risen to above 40% of their value - a financial challenge that will force the "idling of drilling rigs," according to Bloomberg News. Natural gas production will be [significantly reduced](#) next year since shale drillers continue to idle rigs as a result of the persistent slump in oil prices.

AND YET...

Halliburton is [acquiring](#) O&G companies around the world, especially those that specialize in "re-fracking" techniques.

[Carl Ichan](#), T. Boone Pickens, and Warren Buffet are aggressively buying O&G related stocks.

- **Compare the state of coal around the world:** a collection of Appalachian coal mines just sold for: [nothing](#). On the other hand, energy consumption in Asia (especially China and India) is increasing at a rate of about 31% per year; two-thirds of that demand is [driven by coal](#).

- **Coal from the Appalachia region in the US is [more competitive](#)** against the Illinois and Powder River basins due to better quality and lower extraction and processing costs. However, **coal producers in [Appalachia](#) are generally suffering more than anyone else in the industry.**

- **[California's gas prices](#) are always higher than the rest of the nation. Why?**

The California gas tax adds \$.20/gallon; The cleaner-burning CARB fuel made for California adds another \$.10/gallon; The new California Cap-and-Trade (CaT) fuel program adds another \$.10/gallon.

That's \$.40/gallon. Additionally, last February, a fire at the Exxon Torrance refinery reduced the state's total gas production by 10%, which raised prices by about \$.40 - \$.50/gallon. The Torrance refinery is now back in full production; meaning, prices should start to go down a bit.

Renewables

- Shell CEO Ben van Beurden says that **solar will one day be the [backbone](#) of a global energy system.**

- More power from the sun hits the Earth in a single hour than humanity uses in an entire year; yet solar only provided 0.39% of the energy used in the US last year. This begs the question:

Q. [How many solar panels](#) would be needed to capture all the power needed by the world?

A. At current efficiency rates, 496,805 square kilometers (or 191,817 square miles) of solar panels - a bit less than the equivalent size of Texas, or a bit more than California - to provide enough power for the entire world every day.

- **The "[India Solar Map, 2015](#)" has been released**, and the overall conclusion is obvious: solar is growing rapidly in India. (*AES Premium Members have free access to the report.*) The highlights:

- Solar in India is projected to grow by 250% in 2016;
- India will likely become a global top 5 solar market in 2016;
- India currently has more than 4 GW of cumulative installed utility-scale solar capacity;
- The top 3 private solar project developers in India are:
 - Acme (1,100 MW)
 - Welspun (830 MW)
 - Adani (810 MW)

- A Jersey-Shore makeover - the US Department of Interior has announced that it will **auction 344,000 acres of open ocean off the coast of Atlantic City next month for future [offshore wind development](#).**

- **[Canada's renewable energy](#) sectors are growing steadily at 14% per year**, with 88% more investments in the past year, even without a clear "federal" policy.

- **Congress may end the federal investment tax credit for solar**; advocates of the tax credit

say ending it will reduce the number of projects by 10% to 30%. However, some within the industry are beginning to think that solar [may not be harmed](#) by a shift in policy.

- **Climate change will generate 2 percent [more wind energy](#)** in the Midwest, if regional climate models are correct.

Policy

Featured story - **Every nation attending COP21 has been [assigned two critical tasks](#)**: 1) set emission reduction targets and a plan to reach them, and 2) wealthier nations must contribute to a \$100 billion fund that will help poor nations in their effort to meet their own targets. Task 1 is nearly complete. As for Task 2, "financing is the most challenging aspect of the whole deal. There is no credible road map to the \$100 billion, or how it will be used," says Christiana Figueres, executive secretary of the UN Convention on Climate Change (for COP21).

- CEOs of several major [food and beverage companies](#), including General Mills and Mars candy, are **calling on world leaders to push for a meaningful agreement at COP21**. In an open letter they said, "We are asking you to embrace the opportunity presented to you in Paris, and to come back with a sound agreement, properly financed, that can effect real change."

- According to a recent [poll](#), **84% of all American voters said they support accelerating clean energy** in the US, and that includes 72% of Republican voters and 68% of conservative Republican voters.

- **The [major candidates](#) running for the US Presidency are starting to articulate their positions on energy** and the environment. No surprise - all have been slow to respond, all are following (not leading) public opinion, all are waffling when asked for details, and all are staying safe by not challenging party leadership.

- **The US EPA will almost certainly [sue](#) Volkswagon** - it can ask for \$37,500 per incident, or roughly \$18 billion in fines.

- President Xi Jinping has confirmed that [China will implement a national cap-and-trade program](#) by 2017.

- A few years ago, some New England states passed a series of aggressive "[cleaner fuel programs](#)"; turns out, **the programs have driven up carbon dioxide emissions**, much to the frustration of state officials who authored the bill that became the law that turned into a debacle.

- When TransCanada applied to build the Keystone XL pipeline, John McCain had just picked a little-known Alaska governor as his running mate in a bid to slow the campaign juggernaut of a freshman senator named Barack Obama. [TransCanada is still waiting for a decision](#).

- The White House is preparing to **establish [regulatory limits on methane](#) emissions** associated with natural gas production on federal lands.

- Inside the beltway, rumor has it that "**energy and the environment**" will be the [last big push of the Obama Presidency](#), highlighted by one goal: to reach a meaningful deal at COP21 in Paris later this year.

- Note: **the US Congress is currently considering an appropriation bill for ARPA-e**. Last year, (FY2015) Congress provided funding for 280 total projects. The current FY2016 request in the US House is 280 (again) and the Senate has submitted a request to fund 291 projects.

Congress will likely choose the most expedient path - funding 280 projects. Reply by email to this Newsletter if you would like help contacting your representatives.

Climate

- Bank of England governor Mark Carney told Lloyd's insurers that the [insurance markets are heavily exposed](#) to climate change risks.
- Russian **scientists are warning of "exploding pingos" across Siberia** - mounds of icy permafrost that hold massive amounts of methane. When pingos melt (or explode), they release the dangerous gas into the atmosphere.
- **The world's 4 [worst cities for traffic-caused pollution](#):**
 4. Jakarta, Indonesia
 3. Sao Paulo, Brazil
 2. Rio de Janeiro, Brazil
 1. Manila, Philippines
- University of Nebraska-Lincoln **offers courses that [help farmers prepare](#) for climate change.**
- The Thwaites Glacier in Antarctica - which is bigger than Pennsylvania - is now [discharging ice at a rate of over 100 billion tons a year into the Amundsen Sea.](#)
- The record number of [acres burned](#) in the US in a single year is 9.8 million; right now, **9 million acres have burned in 2015** (the equivalent size of Connecticut and New Jersey combined). (Note: This figure does not include the record number of acres that have burned in Canada.)
- **BP is ranked as the [number one](#) corporate opponent of action on climate change.**
- Can COP21 live up to the hope and promise? Its predecessor, the 2009 United Nations climate conference in Copenhagen, did not. In private conversations, **"disaster" and "a total failure" were the assessments of many who attended.**
- The UN has asked participating countries in COP21 to come up with a plan to reduce emissions by at least 30%. [Brazil and India](#) just pledged to reduce emissions by 35%, but [Israel](#) released a less-than-ambitious greenhouse gas emissions target: 25%.
- **What is the [appropriate phrase](#) for media to use when describing someone who doesn't believe that "climate change" is real?** The press struggles with distinctions between "climate denier," "climate skeptic," and "climate doubter" - but lawsuits may force the issue.

Electricity & Power

- In the wee hours of the morning on October 4th **the so-called "spot price" of electricity in Texas went [negative](#) for several hours.** In other words, power producers were *paying* the state's electricity system to take their electricity because they had too much.
- **[Comparing electrical power sources](#) in the United States:**
 - There are 511 **coal-powered electric plants** that generate 34% of the nation's electricity. Coal is most popular in the Midwest, Appalachia and the East Coast, and the primary source of electricity in Wyoming, Utah, Montana and Arizona.

- 1,740 **natural gas-powered electric plants** in the US, generated 30% of the nation's electricity this year. Natural gas is the predominant source of power in 15 states including all of the Gulf of Mexico states, Virginia, Georgia, New York, Massachusetts, Nevada and California.
- There are 99 reactors at 63 **nuclear electric plants** in the US. They generate 20% of the nation's electricity.
- 1,436 **hydroelectric plants** in the US generated 7% of the nation's electricity this year. Washington, Oregon and Idaho lead the nation in power from hydroelectric plants.
- There are 843 **wind-powered electric plants** in the US that have generated 5% of the nation's electricity this year. Wind is the fastest growing source, especially in the Great Plains.
- 772 **solar-powered electric plants** in the US generated almost 1% of the nation's electricity.
- 1,098 **oil-powered electric plants** in the US generated 1% of the nation's electricity.

Research, Commercial and Tech-To-Market Opportunities

- Featured story: A University of Texas, Austin, **research team led by professor John Goodenough - the man who invented the lithium-ion battery - has developed a [sodium-ion battery](#).**
- **The African Development Bank is offering \$55 billion in public money** to match private investments for any project that [helps eliminate](#) Africa's energy deficit by 2025.
- **Dominion Power is planning to re-issue an RFP for a planned 12-MW [offshore wind project](#) in Virginia** after the single bid it had received was significantly higher than anticipated.
- Dallas-based Fortress Environmental Holdings, an oilfield services company, is using [crowdfunding](#) to **raise up to \$50 million for a new Eagle-Ford Shale play**.
- **At Georgia Tech, researchers have built a new kind of nanoscale [rectenna](#)** (half antenna and half rectifier) that converts solar and infrared light into electricity.
- The Energy/Water Nexus: A new micro-hydropower technology developed by Lucid can [generate electricity from water that runs through pipes](#).

Features

Organization: Fenix, Intl.

- The benefits of the current revolutions in energy are bypassing the approximately 3 billion people in the world who are non- or under- electrified. The American Energy Society would like to recognize [Fenix Intl](#), a start-up based in San Francisco that is trying to help these people. Fenix Intl manufactures, among other devices, "ReadySet," a remote/mobile battery system that can power lights, mobile phones, small cooking-devices and refrigerators, and even LCD TVs. Just as notable, Fenix Intl also recognizes that it is difficult for the people who need the power to pay for it, so they have created an integrated "pay-to-use-and-own" financial platform that allows users to make payments from a mobile phone in exchange for a code that unlocks the power stored in ReadySet. The AES deeply admires the noble work of Fenix Intl and its dedicated staff - rarely has a small start-up done so much for so many with so little.
- **A Special Namastē and Svāgata to our newest Premium Members at the University of**

Petroleum and Energy Studies ([UPES](#)) in Dehradun, in the northern region of India.

Expert: Ilan Gur

Every generation has a field that attracts the brightest minds and talents available. The period of the Founding Fathers was strengthened by the political theorists; the 19th century attracted titans to industry, science benefited in the post-Sputnik era. A decade ago or so, energy was adopted as this generation's greatest challenge, drawing brilliant individuals committed to realizing a sustainable future. **Ilan Gur could have succeeded in virtually any field** ... but fortunately, he chose energy. Founding Director of Cyclotron Road, a new incubation and seed funding platform for breakthrough energy technologies, Dr. Gur previously served as Program Director at the Advanced Research Projects Agency-Energy (ARPA-E), and prior to that, co-founded Seeo, Inc., a lithium battery startup. What is exceptional about Ilan is his desire to help others succeed. He ensures that no one stands alone, which means that everyone does better. In a field like energy, that's better for everybody. The American Energy Society applauds Ilan Gur for his professional commitment to helping others contribute to the world of energy.

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