Week in Energy Newsletter

Welcome to the twentieth edition of the EST&P Energy Newsletter! Send your energy news and updates to the editor at efairman@andrew.cmu.edu, currently a graduate student at Carnegie Mellon University. Use the following link to explore the Energy Science, Technology, and Policy Master’s program: http://www.cmu.edu/engineering/estp. The U.S. submission to the U.N. Framework Convention on Climate Change will be ready later this month—stay tuned!

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International Updates

2014 Global Emissions

The International Energy Agency has reported that emissions did not increase last year for the first time in forty years. Even though the economy continued to grow, carbon dioxide emission remained steady at 32.3 billion tonnes. See the data: http://www.iea.org/newsroomandevents/news/2015/march/global-energy-related-emissions-of-carbon-dioxide-stalled-in-2014.html

Nuclear Power in Japan

All of Japan’s nuclear reactors are currently offline as a result of the Fukushima-Daiichi accident. Five of the country’s 48 idle reactors are being decommissioned, but another was recently given clearance to begin upgrades. In the meantime, the country has turned to coal for electricity generation. In fact, Kansai Electric Power Co. and Marubeni Corp. have announced plans to build a 1.3 GW coal-fired power plant to meet Tokyo’s electricity demand. Another six coal-fired power plants were previously announced. These projects will increase coal power generation in Japan by 7.3 GW in the next ten years.


U.S.-IRAN NUCLEAR TALKS

The impact of these talks could lead to increased oil production in Iran. Read more in the WSJ: http://www.wsj.com/articles/irans-nuclear-deal-could-open-oil-flood-1426524085Thursday 3/19

CLIMATE AND ENERGY IN INDIA

Despite impressive climate targets, the Indian government has reduced its budget for climate and energy. The Ministry of Environment, Forests and Climate Change will receive $268 million instead of $360 million, and the Ministry of New and Renewable Energy’s budget will be cut by 67%. It is feared that there is disconnect between the budget and the country’s goals.

Reuters: http://in.reuters.com/article/2015/03/12/india-budget-energy-idINKBN0M812D20150312

REDUCED SPEED LIMITS IN PARIS

In an attempt to reduce urban emissions, the Paris police have introduced a 12 mph speed reduction on highways within the metropolitan area of Paris. There is also a ban on trash burning within the city.


NEW DELHI VEHICLE EMISSIONS

Air pollution in New Delhi may be sixty times worse than what is considered safe. Many studies have even concluded that an average day in New Delhi would register as a very bad air day in Beijing. Vehicle emissions largely contribute to this pollution. The Indian Minister of Environment, Forests and Climate Change has requested that New Delhi submit an action implementation plan by the end of the month to tackle air pollution.

Responding to Climate Change: http://www.rtcc.org/2015/03/16/toxic-delhi-earthsmost-polluted-city-has-no-plan-to-cut-emissions/

AMAZON RAINFOREST AND CLIMATE CHANGE

A paper in Nature has revealed a rapid decline in the Amazon’s ability to soak up carbon. Trees are dying faster than the forest is able to regenerate by a factor of two.
SMOG AND COAL IN CHINA

After the release of a controversial documentary, China vows to tackle air pollution in its cities with newfound force and motivation.


Last week, Chinese state-run media reported the third of four coal-fired power plants in Beijing was closed. The capital city plans to phase out coal completely by 2020. The 400 MW plant was replaced with a gas-fired plant, and the fourth coal-fired power plant will be shut down next year.

Reuters: [http://www.reuters.com/article/2015/03/20/us-china-pollution-beijing-idUSKBN0MG1D120150320?feedType=RSS&feedName=environmentNews](http://www.reuters.com/article/2015/03/20/us-china-pollution-beijing-idUSKBN0MG1D120150320?feedType=RSS&feedName=environmentNews)

SOLAR INSTALLATION IN CHINA

China’s National Energy Administration has announced plans to install 17.8 GW of solar panels this year, a record high for the country.


SOLAR ECLIPSE AND SOLAR PANELS

The solar eclipse last Friday was an unprecedented test for the European and British system of solar panels. Utilities assured users that the loss of solar power generation during the eclipse wouldn’t be a problem, but it could have resulted in a loss of 35 GW of generating capacity.


CLIMATE CHANGE IN AUSTRALIA

The University of Melbourne has released a study describing how agriculture will be affected in Australia by climate change. Read the report: [http://sustainable.unimelb.edu.au/sites/default/files/MSSI_AppetiteForChange_Report_2015.pdf](http://sustainable.unimelb.edu.au/sites/default/files/MSSI_AppetiteForChange_Report_2015.pdf)
National Legislation

**OP-ED ON GOP DENIAL OF CLIMATE CHANGE**

The authors of this short piece are Senators Whitehouse and Reid. Senator Whitehouse used to give a weekly speech on climate change.

USA Today: http://www.usatoday.com/story/opinion/2015/03/13/climate-change-reid-whitehouse/70233186/

**WIND ENERGY IN THE U.S.**

The Department of Energy has reiterated that wind energy could become a leading source of energy in the near future for the United States. In its Wind Vision Report, the agency makes near-term goals of 10% wind generation by 2020 and 20% by 2030. Read the report here: http://www.energy.gov/sites/prod/files/WindVision_Report_final.pdf

**EMISSIONS TRACKING AT THE WHITE HOUSE**

Obama has ordered federal agencies to cut their carbon dioxide output by 21 million tonnes tons by 2025, a 40% reduction from 2008 levels. These reductions will be possible with increased efficiency and reliance on renewable generation. The president has also released a scorecard which will publically track self-reported emissions disclosures from all major suppliers.


Defense and aerospace contractors are among the most proactive among all U.S. government vendors in measuring and shrinking their carbon footprints. In fact, five of top ten companies receiving the largest share of U.S. government dollars in 2014 are leaders in both disclosing their greenhouse gas emissions and setting targets to lower those emissions. These leaders include Lockheed Martin Corp., Boeing Co., Raytheon Co., Northrup Grumman Corp., and United Technologies Corp. Last week, The EPA has announced plans to require industrial facilities to submit certain air emissions data electronically instead of with a hard copy. This proposal is subject to a 60-day comment period.

**EPA BILLS**

In the ed. 18 newsletter, HR 1029 and 1030 were proposed bills affecting the Environmental Protection Agency (EPA). Both bills were recently passed.
COMPLIANCE WITH EPA'S CLEAN POWER PLAN

An interstate trading market would greatly aid compliance with the Clean Power Plan, according to the Georgetown Climate Center. Either a rate-based or a mass-based plan could be successful, although mass-based seems to be the most popular option. One of the big questions is how will renewable energy credits be dividing among producing and consuming states?


As a result of the Clean Power Plan, new power lines would have to be installed to bring new renewable energy to consumers. According to ICF International, this installation would require investments between $1.5 B and $2.5 B over the next five years. These costs are based on calculating what new transmission might be necessary in the system of the Midcontinent Independent System Operator (MISO) and then extrapolating those levels to the entire country. Read the analysis: [http://www.energycentral.com/marketing/pdf/031715_icf_slides.pdf](http://www.energycentral.com/marketing/pdf/031715_icf_slides.pdf)

Unfortunately for Obama and the EPA, a renowned Constitutional Scholar from Harvard Law School, Laurence Tribe, has called the Clean Power Proposal unconstitutional. As a result, Senate Majority Leader Mitch McConnell has been urging states to ignore the proposal.


OZONE REGULATIONS


STATE OF THE NATIONAL GRID

The Senate Energy and Natural Resources Committee held a hearing to evaluate the state of technological innovation related to the electric grid. Watch the webcast: [http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=1348cae4-e8dd-448a-b111-6357cf9af113](http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=1348cae4-e8dd-448a-b111-6357cf9af113)
HYDRAULIC FRACTURING REGULATIONS

Four bills were introduced as the Frack Pack: (1) The Frac Act would repeal the “Halliburton Loophole” and allow the EPA to regulate hydraulic fracturing; (2) the Fresher Act would increase regulation of drilling under the Clean Water Act; (3) the Breathe Act would require emissions from multiple related wells to be aggregated to determine their total pollution; and (4) the Shared Act would require base-line testing of drinking water sources before drilling and fracking operations are begun in order to document any contamination.

These four bills are still under debate, but a rule on oil and gas exploration was released. The regulations, which are to take effect in 90 days, will allow government workers to inspect and validate the safety and integrity of the concrete barriers that line fracking wells. This ruling all but bans pits at well sites, so wastewater must now be stored in metal tanks. The regulations also require companies to publicly disclose the chemicals used in the fracturing process within 30 days of completing fracking operations, using an industry-run website called FracFocus. Of course, the rule was challenged in court within an hour of its announcement. The Independent Petroleum Association of America (IPAA) and Western Energy Alliance (WEA) filed suit to block it in U.S. District Court in Wyoming.

NYT: http://www.nytimes.com/2015/03/21/us/politics/obama-administration-unveils-federal-fracking-regulations.html?_r=0

OFFSHORE DRILLING IN THE U.S.

In a hearing by the Energy and Mineral Resources Subcommittee, Republicans argued for an increase in offshore drilling, but Democrats urged for limits on production to avoid spills. This debate will be a challenge for the Bureau of Ocean Energy Management (BOEM) as the agency moves forward with its 2017-2022 leasing plan. The BOEM’s proposal would open 317 million acres along the nation’s coastline to oil and gas drilling.

Watch the hearing webcast:

RENEWABLE FUEL STANDARD DEBACLE

The EPA is supposed to finalize the following year's mandates for conventional ethanol and most advanced biofuels by Nov. 30 of the previous year, but the agency has yet to finalize the annual mandates for 2014 and 2015. Thus, the EPA is being sued for failing to establish biofuel mandates.

**Crude Oil Exports**

The Senate Energy and Natural Resources Committee held a hearing on lifting the domestic crude oil export ban. There is bi-partisan support for lifting the ban. Depending on oil prices, U.S. crude oil is on track to achieve a record for production levels this year. In 1970, the EIA reported monthly production averaged 10 million barrels per day. The average output for the year was about 9.6 million barrels per day, the annual record. December 2014 average production is estimated to have been nearly 9.23 million barrels a day. The annual average for 2014 is estimated to be 8.65 million barrels a day.

Watch the hearing webcast: [http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=84bfa5d4-7de5-4a4c-a380-df031cb3d2ef](http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=84bfa5d4-7de5-4a4c-a380-df031cb3d2ef)

**Diesel Emissions Reduction Act Program**

The EPA has awarded $8 M to projects under the [Diesel Emissions Reduction Act](http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=84bfa5d4-7de5-4a4c-a380-df031cb3d2ef). These projects seek to retrofit older school buses, upgrade marine propulsion and agriculture engines, and replace semi-trucks that travel long distances.

Press release: [http://yosemite.epa.gov/opa/admpress.nsf/0/7a5aa31ea10d60de85257e0e004aab55?OpenDocument](http://yosemite.epa.gov/opa/admpress.nsf/0/7a5aa31ea10d60de85257e0e004aab55?OpenDocument)

**Geothermal Production Expansion Act of 2015**

This [bill](http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=84bfa5d4-7de5-4a4c-a380-df031cb3d2ef) would rejuvenate the development of geothermal energy on public lands which has stalled in recent years. It would also authorize noncompetitive leasing for limited acreage to developers adjacent to existing hot spots.

**Yucca Mountain Visit**

On April 9th, the Department of Energy will give a tour of the proposed nuclear waste depository to the House Energy and Commerce Subcommittee.


**Pipeline Safety and Regulation**

In light of recent events (there were multiple pipeline-related accidents reported in the 18th ed.), the Department of Transportation has begun rewriting existing pipeline safety regulations.
Although oil and pipeline industries are already lobbying against the idea, the Pipelines and Hazardous Materials Safety Administration (PHMSA) may have to tell companies to replace aging infrastructure in the near future. Read a draft of the proposal:
http://www.eenews.net/assets/2015/03/13/document_ew_01.pdf

**Residential Boiler Regulations**

The Department of Energy has released new regulations for gas- and oil-fired hot water or steam boilers that provide heat to a home through radiators. The regulations also address standby and off-mode efficiency requirements for all residential boilers. This will raise the minimum efficiency requirements up to 85% for gas-fired boilers and 86% for oil-fired burners. Such an increase in efficiency will save 13 million tonnes of CO2 emissions per year and 0.25 BTUs over 30 years. Read the regulation here:

**Water Pump Regulations**

The DOE has released water pump regulations based on those from the E.U. that would apply to the least-efficient 25% of pumps used for irrigation, in high-rise apartment buildings, and for other commercial and industrial purposes. These regulations will be finalized by the end of the year and would not take effect until 2020. Read the regulation here:

**Funding for Government Microlabs**

The bill S. 784 would establish microlabs near, but off-campus, the seventeen national laboratories. These microlabs could enhance private-public collaboration and improve technology transfer in science education. The legislation would provide $50 M to establish these facilities; additional funding would be required from states, local, and private sectors. This bill has bipartisan support.

**State News**

**Hydraulic Fracturing in North Carolina**

North Carolina has lifted its moratorium on fracking, even though the state’s natural gas reserves are yet unknown. Read more in the Charlotte Observer:
**MICHIGAN’S ENERGY PLAN**

The governor of Michigan has proposed replacing electricity generation from aging coal plants over the next ten years with more efficient renewables and natural gas. His plan aims to improve reliability, affordability, adaptability and environmental protection:

http://www.eenews.net/assets/2015/03/16/document_ew_04.pdf

Editorial in *The Detroit News*:

http://www.detroitnews.com/story/opinion/editorials/2015/03/18/editorial-energy-future/24974363/

**FAILED CLIMATE TARGETS IN MASSACHUSETTS**

Massachusetts plans to reduce its greenhouse gas emissions to 80% of 1990 levels by 2050, but is not currently on track to meet these goals. The state is not likely to even meet its 2020 goals to reduce emissions to 25% of 1990 levels. A report by Regional Economic Models, Inc. suggests that Massachusetts could more than meet its 2050 target by 2031 if it imposed a $45 tax per ton of carbon. Therefore, the state senator Michael Barrett has proposed carbon tax.

WBUR: http://www.wbur.org/2015/03/12/massachusetts-carbon-tax-proposal

**SEVERE EXTENDED DROUGHT IN CALIFORNIA**

According to NASA, California’s water supply will only last one more year. Four years of extreme drought have left the state’s water reservoirs and backup groundwater storage at dangerously low levels. The government announced $1 B in local drought relief and infrastructure projects aimed at protection from extreme weather events as part of a $7.5B bond passed in November 2014.


**ELECTRIC VEHICLE REBATE IN CALIFORNIA**

The utility *Pacific Gas and Electric Co.* has proposed offering one-time rebates to customers who use electric vehicles because electricity qualifies as a low-carbon fuel under CA’s low-carbon fuel standard. This proposal still requires approval from the *California Public Utilities Commission*.

COAL-FIRED POWER PLANT IN FLORIDA

The coal-fired Cedar Bay Generating Plant has bound the utility Florida Power & Light Co. (FPL) in a 1988 contract. However, if FPL purchases the plant for $520.5 M, then it could void the contract, cut its carbon emissions, and save ratepayers $120 M annually.


SOLAR TOWN IN TEXAS

By next year, Georgetown, TX will be the first city in the state of Texas to be 100% renewable. SunEdison, Inc. is currently installing 150 MW of solar farms to replace fossil fuels.


PROPOSED LEGISLATION IN ILLINOIS

The Chicago-based utility ComEd has proposed a bill that would establish a demand-based rate structure, allow return on energy efficiency investments, enable voltage optimization project, invest $100 M in 500 electric vehicle charging stations over the next five years, and invest $300 M on six pilot microgrids.


Industry

WIND AND INDUSTRY ALLIES

The chemical company DOW’s energy division has agreed to purchase 200 MW of power annually from Bordas Wind Energy LLC, a wind farm in Texas. The new power will come online next year. At this point, DOW will become the first company in the U.S. to run a major manufacturing site with renewable energy at industrial scale. DOW will also become the third largest corporate buyer of wind power. The top two corporate buyers of wind power are Google Inc. and Microsoft Corp.

**TESLA DRIVES FORWARD**

In California, another electric charging station was installed between San Francisco and Los Angeles. This is an important state for Tesla, as half of all Tesla vehicles are registered in California. In fact, 40% of all plug-in cars are registered in The Golden State.


Tesla was recently allowed back into New Jersey. The governor has permitted four Tesla locations within the state after New Jersey’s Motor Vehicle Commission revoked Tesla’s dealership licenses last year. The state of Georgia is considering a similar bill.


Tesla has also announced that the Model S will be capable of driving hands-free on the highway after a software update in three months. The update will also include automatic emergency braking and a warning if a car is coming into a driver’s blind spot. Last week, Tesla released two new applications that are meant to address “range anxiety”: the TripPlanner navigates a route that considers the network of Tesla’s supercharging stations, and Range Assurance warns the driver when the car is out of range of a charge station and points to the closest one.

**UBER IN NYC**

There are now more Uber vehicles than taxis registered in New York City. Even though there are technically more vehicles, yellow cabs give 440,000 rides per day compared with 25,000 Uber rides per day.

*Associated Press:*

**FAKE RENEWABLE ENERGY CREDITS**

Washakie Renewable Energy LLC allegedly generated and sold more than 7.2 M fraudulent credits under the renewable fuel standard program between January and October 2010. As a result it will pay $3 M to settle allegations that it profited from RECs for biodiesel.

Research

**CELLULOSIC ETHANOL FEEDSTOCK**

A study by the University of Illinois at Urbana-Champaign indicates that the perennial grass miscanthus would be an ideal feedstock for biofuel production. The researchers used computer modeling to run side-by-side comparisons of the potential production costs and levels of greenhouse gas emissions of different cellulosic feedstocks. It was evident that miscanthus had the lowest average life-cycle greenhouse gas emissions, boasted the highest average yields, and sequestered the most carbon into the soil. Additional research also found that miscanthus had the highest yields of cellulosic ethanol per acre of farmland, at over 800 gallons per acre.


**ELECTRIC VEHICLE BENEFITS CITIES**

A study in *Scientific Reports* has shown that since electric vehicles emit less heat than conventional vehicles, EVs have the potential to ease the load on a city’s power grid by reducing demand from air conditioners and, in turn, mitigating heat island intensity.