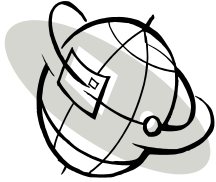


Energy Issues

IEP Newsletter

Fossil Fuels: A Change in Sentiment

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“The irony is that as commodity prices are going down people are going to care less about renewables” –

Tim Seymour, Triogem Asset Management



Coal-fired electrical generating plant

In July, America’s two biggest oil companies, Exxon Mobil Corp. and Chevron Corp., reported their worst profits from pumping oil and natural gas in more than a decade as low crude prices lopped off billions of dollars from the quarterly profits most have grown to expect. Additionally, the cost of extracting new supplies of oil and gas has grown faster than anticipated. When oil was over \$100 per barrel, the worries of oil firms were not so obvious. But with supplies growing more expensive to extract and margins contracting, oil companies are spending more cash to prop up dividends and ultimately stock prices. The oil business uses a counter-cyclical model. When oil prices are high, they make money via extraction. When prices are low, they make money in refining. Now, since neither is profitable, they are seeking to cut costs through layoffs and negotiating vendor discounts.

Natural Gas Surpasses Coal

April is normally a low power demand month with its comfortable temperatures and lower economic activity. However, for the first time ever, electricity produced by natural gas this past April exceeded that of coal-fired facilities. The last time this phenomena came close to happening, spot prices for natural gas were \$2 per MM Btu before returning to the mid \$3.00’s prior to the end of 2012. This April, gas prices were around \$2.60 per MM Btu.

The Energy Information Administration (EIA) predicts that coal-generated electricity will continue to lead through the end of 2015, but the margin will continue to tighten. Coal has continued to lose its

share of the generation pie to natural gas and also to renewables like solar, wind and biomass.

Diesel Cheaper than Gasoline

In July, the average price of diesel fell below that of gasoline for the first time in six years. In Lincoln, NE the average price of diesel was \$2.60 per gallon, while gasoline was selling for \$2.78. Diesel prices have followed crude prices downward, but demand has held up the price of gasoline higher. A cold winter could reverse these figures once again. Margins for refined products are getting tighter while extraction costs are increasing. Petroleum is painted into the proverbial corner.

US Clean Energy Plan Announcement

President Obama announced a revised Clean Power Plan that will increase the required cuts in carbon emissions from the power sector to 32% from 2005 levels by 2030, up from the 30% requirement in the original draft.

“Right now our power plants are the source of about a third of America’s carbon pollution—that’s more pollution than our cars, our airplanes and our homes contribute combined,” the President said. “That pollution contributes to climate change, which degrades the air our kids breathe, but there have never been federal limits on the amount of carbon that power plants can dump into the air.”

The irony is that as commodity prices are going down, people care less about renewables and even energy in general. There is too much carbon available for people to care about a price for it.

Fossil Fuels: A Change in Sentiment (continued)

For the first time, the environment has become a topic of an encyclical – a papal letter sent to all bishops of the Roman Catholic Church. “No pope has ever issued a statement [about the environment] on this level of document,” said Kevin Irwin, a priest and theologian who teaches at the Catholic University of America.

His thinking on the environment connects with other major themes of his papacy, including care for the poor and the importance of human life. In the draft, he writes that the heaviest impacts of climate change “will probably fall in the coming decades on developing countries. Many poor people live in areas particularly affected by phenomena related to heating, and their livelihoods strongly depend on natural reserves and so-called ecosystem services, such as agriculture, fisheries, and forestry.”

Although American Catholics are a sizable group, they’ve got nothing on the whole of Francis’s church: There are 1.2 billion Roman Catholics in the world, and nearly 40 percent of them live in South America, not North America. Sub-Saharan Africa is another area of rapid growth for the Church; demographers expect the number of Christians in the region to double by 2050 to nearly 1.1 billion, although some of those will be Protestants. Considering that Latin America and Africa are Francis’s two biggest “constituencies,” it’s no wonder that the environment is a point of pressing concern for the global Church: Climate change affects those who are poor and live in developing countries much more intensely than those who live in the developed world.

Carbon Glut

There is now more carbon being pumped into the world’s biosphere than any time since humans have existed. Not only is it abundant, it is cheap. So abundant and cheap in fact, companies are producing it with little regard for profitability. Consequently, people are not concerned about its origin, nor its effects. There is almost no interest in placing a price on carbon emissions. The poor and disenfranchised will ultimately pay the price and it could be enormous, but short of civil unrest, there is almost no way the trajectory can be pulled back.

The answer may lie in defining good carbon versus bad carbon. The debate between biogenic carbon and fossil carbon is profound. Biogenic carbon is already in the biosphere, the spherical slice of life surrounding the rocky core of planet Earth. Fossil carbon is coal and petroleum and has been “sequestered” for 75 million years. Another key concern is to begin thinking about how carbon should be spent. Should we burn it to travel or save it to make products that ultimately generate energy without additional carbon input?

Inference: Energy is getting harder to extract and produce. Companies which produce fossil energy will continue to generate themselves out of profitability until the responsibility of energy production falls out of the private sector and into the lap of government. Life cycle assessments and greenhouse calculations are growing in practice, but the public may not appreciate their importance.

“...a revised Clean Power Plan that will increase the required cuts in carbon emissions from the power sector to 32% from 2005 levels by 2030..”



Wind Turbines

“The answer may lie in defining good carbon versus bad carbon.”

U.S. Electrical Generation - Update

IEP Staff Writer

2014 (U.S.) Electrical Generation: "About sixty-seven percent (67%) was from fossil fuel"



Electrical Generating Plant

Fossil fuels continue to dominate the production of electricity in the United States. In 2014 U.S. electrical generating plants produced approximately 4,093 billion kilowatt-hours (kWh). About sixty-seven percent (67%) was from fossil fuels, with the largest portion provided by coal.

Following are the sources and the percent of kWh generated by each:

- Coal = 39%
- Natural gas = 27%
- Nuclear = 19%
- Hydropower = 6%
- Other renewables = 7%
 - Biomass = 1.7%
 - Geothermal = 0.4%
 - Solar = 0.4%
 - Wind = 4.4%
- Petroleum = 1%
- Other gases < 1%

These percentages have remained relatively constant over the past decade. However, pending environmental (EPA) regulations will dramatically impact coal-fired plants. This, along with the lower stable price of natural gas, will result in an increased emphasis on shifting generation from coal to natural gas. The resulting charges from this shift are expected to increase the cost of electricity in selected areas of the U.S. by up to 13.5%.

While technology will undoubtedly drive down the cost of renewable energy to the point where it will become more competitive with other sources, until that occurs fossil fuels in its various forms will continue to be the dominate force in the generation of electricity in the U.S.

Fossil Fuels Losing Cost Advantage Over Renewables

IEP Staff Writer

According to the *International Energy Agency* (IEA), the cost of producing electricity from renewable energy sources has dropped dramatically over the past five (5) years. Reductions in the cost of solar power generation have reduced the differential between base-loaded power plants and solar.

In 2015 the cost of non-renewable sources (fossil and nuclear) is approximately \$100 per megawatt-hour (MWh). For solar it varies based upon location, but is averaging about \$200 per MWh.

For example, the cost of commercial rooftop solar installations in Belgium is about \$312 per megawatt-hour. But in sunnier Spain it is \$167 per MWh.

In Europe, governments have set targets for lowering carbon emissions and producing power from renewables. The U.K. is in the process of making a final decision on developing new nuclear plants, while Germany has increased generation from coal, following a phase out of nuclear plants after the Japanese disaster at Fukushima in 2011.

Source: Bloomberg News



Topaz Project – California
550 MW

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Important IEP Policy Changes

IEP Staff Writer

Acceptance of Credit Cards for Renewals – To facilitate the process of renewing PEM certifications, IEP has established a secure link on its website homepage (www.theiep.org) for on-line payment of renewal fees. Effective November 1st IEP will begin accepting major credit cards for PEM renewals.

Certification/Renewal Fee Increase – EFFECTIVE JANUARY 1, 2016 THE FEE FOR THE PEM EXAMINATION AND RENEWALS WILL INCREASE TO \$150.00. When first established, IEP offered a one (1) year PEM certification for \$50.00. Subsequently, the offering was extended to three (3) years and the cost set at \$100.00. It was our intent to offer quality training and a recognized professional certification at the lowest possible cost. However, maintaining the low fee is no longer viable. Consequently, the Board has decided to increase the fees for examination and renewal to the equivalent of the initial offering. The certification term remains three years. All examinations and renewals received after December 31, 2015 will be subject to the new fee structure.



Uruguay

Around the World

IEP Staff Writer

Denmark's Wind Energy Output Exceeded National Demand

On July 15th Denmark's production of wind energy reached 140% of the national electricity demands. The surplus power was exported to surrounding countries Norway, Sweden and Germany.

According to *The Guardian*, "interconnectors allowed 80% of the surplus to be shared equally between Germany and Norway, which can store it in hydropower systems for use later. Sweden took the remaining fifth of excess power."

In 2014 approximately 43% of the electrical power requirement for Denmark was provided by wind.



Uruguay Spends \$2.6 Billion to Become South America Wind Leader

Gonzalo Casaravilla, chairman of the state-owned electric utility UTE, announced that Uruguay plans on increasing its electrical power generation from wind 13% by the end of 2017. This would bring the country's total wind generation capability to 38% of its power requirement. Wind power provides this country a low operating cost and a hedge against drought, which impacts its hydroelectric generation.



Sweden

Sweden Aims to be World's First Oil-Free Nation

Sweden has set an ambitious goal to achieve a completely oil-free economy by 2020, without building more nuclear power plants. The Swedish government says it intends to replace all fossil fuels with renewable alternatives.



Professional Energy Manager