

US ENERGY ★ ————— ★ SECURITY

HOW REAL IS THE NEW WORLD OF US ENERGY?

There are two sides to every story, and the narratives of energy regulation and politics are no exception.

The International Energy Agency made global headlines earlier this year when it predicted that the US, for decades the very epitome of a country dependent on foreign energy sources in a way that warped global politics, is nearing energy independence.

While many in the sector have increasingly preferred the word energy security to independence, because it acknowledges the realities of interdependence in both the context of the globe and the North American context, the stark facts of growing energy production in the US couldn't be ignored by forecasters.

Many of the potential outcomes for the US, for North America, and arguably for the world, are good ones. Greater self-reliance in energy cuts down on the need for a foreign policy often influenced by questions of resource access and creates potentially beneficial side effects for everything from monetary policy to manufacturing job growth.

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But the numbers have proved a flashpoint for contention inside the energy industry, where multi-billion-dollar businesses have been built on regulatory structures established when the US economy was starving for energy access. The details are important, and while the reserves revisions of recent years are now thought to be “real” and the opportunities potentially enormous, how markets are structured and how infrastructure is permitted and built remain huge open questions.

Two of AOL Energy’s regular contributors – Felicity Carus and Glenn Williams – recently wrote about the IEA report and their pieces illustrate the two main strands of reaction to the report in the energy business. Their stories are below, and detail both the incredible opportunities and the remarkably complex challenges presented by a “game-changing” resource opportunity.

US Energy Security Assured

America’s “energy renaissance” will redraw the global energy map and transform the oil and gas trade triggering trillions of dollars investment, according to the International Energy Agency.

The US, which currently imports around 20% of its energy needs, will surpass Saudi Arabia’s oil production by 2017 and will become a net oil exporter by around 2030 and a net exporter of natural gas by 2020, according to the IEA’s World Energy Outlook 2012 released in London. By 2035, the US will be almost self-sufficient energy.

Maria van der Hoeven, the IEA executive director, said: *“North America is at the forefront of a sweeping transformation in oil and gas production that will affect all regions of the world, yet the potential also exists for a similarly transformative shift in global energy efficiency.”*

By 2035, Saudi Arabia will reclaim its position as number one crude exporter - 90% of Middle Eastern oil exports will fuel growing energy demand in Asia. Also from 2035, Iraq will be producing 45% of the world’s oil, usurping Russia from its number two export position.

Projected US domestic crude oil production will increase to 6.8 million bbl/d in 2013, the highest level of production since 1993. Natural gas production is predicted to increase 29% by 2035 almost exclusively because of the growth in shale gas production thanks to innovations in hydraulic fracturing.

Fatih Birol, the IEA’s chief economist and the WEO’s lead author, said that the US will begin exporting natural gas from around 2018, a controversial decision that could increase the costs of domestic supplies. In terms of production, the US will overtake Saudi Arabia’s production by 2017, and in 2015, the US will overtake Russia to become the world’s largest producer of natural gas.

The report also assumes that the price of oil will stay around \$100/barrel through 2035 in order for oil and gas companies to pay for exploration and development costs.

Birol also said that the IEA predicted another *"unconventional energy revolution in energy efficiency."* Last year, the US implemented new fuel efficiency standards of 54.5mpg by 2020, which would reduce demand just as oil production increases, he noted.

Of the \$37 trillion investment required in the world's energy supply system between 2012 and 2035, \$19 trillion would be needed for the oil and gas industry and \$17 trillion for the power sector, according to the report.

Global fossil-fuel subsidies reached \$523 billion in 2011, almost 30% higher than in 2010, the report noted. Financial support to renewable energy, by comparison, amounted to \$88 billion in 2011.

If the US government permits exports, shipments could reach 19 billion cubic meters in 2020, according to the report.

Emerging economies will drive global energy markets, with the share of non-OECD energy demand rising from 55% in 2010 to 65% in 2035, said the report. China's demand will rise 60% by 2035 and demand in India will more than double. OECD energy demand in 2035 will be just 3% higher than in 2010, but natural gas nearly overtakes coal in the global energy supply mix by 2035.

However, the IEA warned that global CO2 emissions have rebounded to a record high and energy efficiency worldwide worsened for second straight year.

Increasing use of fossil fuels would result in a long-term average temperature increase of 3.6 °C as energy-related CO2 emissions rise to 37 gigatonnes in 2035, up from 31.2 gigatonnes in 2011, said the report.

Economic concerns had diverted attention from energy policy and limited the means of intervention, but countries would need to redouble their efforts with energy efficiency as consumption rises to curb emissions, said Birol.

"Our analysis shows that in the absence of a concerted policy push, two-thirds of the economically viable potential to improve energy efficiency will remain unrealized through to 2035," said Birol.

"Action to improve energy efficiency could delay the complete 'lock-in' of the allowable emissions of carbon dioxide under a 2°C trajectory - which is currently set to happen in 2017 - until 2022, buying time to secure a much-needed global climate agreement. It would also bring substantial energy security and economic benefits, including cutting fuel bills by 20% on average."

Or is it?

The International Energy Agency (IEA) claims in their World Energy Outlook that it is now technically possible for the United States to become energy independent by 2020. But that's not their primary message. IEA is also warning that any independence will be short lived, and that message has been lost on most analysts.

IEA is an international organization based in France, which works to ensure reliable, affordable and clean energy for its 28 member countries, including the United States. It is not to be confused with the Energy Information Administration (EIA), which is a different organization that is nestled within the US Department of Energy (DOE). The IEA is not the EIA. But both organizations have credibility. Both organizations provide analysts with primary sources of information about energy, particularly about consumption data.

Nevertheless, forecasts from either organization are not fact and they usually come with a long list of assumptions. It's no different with IEA's World Energy Outlook and their forecasts of energy independence. Their assumptions, when taken together, have a high likelihood of providing analysts with false positives. In fact, the IEA states they believe it is unlikely that the US will actually reach complete energy independence.

To put the energy question into perspective, the US is already energy independent in several sectors. According to DOE's EIA, the nation depends on six primary fuels: Coal, natural gas, renewable energy, energy efficiency, nuclear and petroleum. All those primary fuels have been used to create the nation's only secondary fuel, electricity.

Looking at each fuel separately, the US is already in a strong position. For example, the US has always been a net exporter of coal. According to DOE's EIA, the US is currently exporting approximately 66 million short tons of coal per year to countries like:

- China 7.6 million tons
- Netherlands 6.7 million tons
- United Kingdom 5.4 million tons
- Italy 5.0 million tons
- South Korea 4.3 million tons
- Brazil 4.1 million tons
- Canada 3.2 million tons
- Turkey 3.1 million tons
- Japan 2.9 million tons
- Germany 2.6 million tons
- Morocco 2.0 million tons
- Belgium 1.7 million tons
- Mexico 1.7 million tons

When it comes to coal, the US is a net exporter and it is already energy independent.

Another example is natural gas. Currently, the US can produce more natural gas than it consumes. There are economic incentives to mimic the coal industry and begin exporting surplus natural gas. Cheniere Energy Partners' new natural gas export terminal is scheduled to go online in 2017 and it will join ConocoPhillips's export facility, which has been exporting natural gas from Alaska since 1969. The US is on autopilot to become a net exporter of natural gas. So when it comes to natural gas and coal, the US is already energy independent.

By definition, solar, wind and most other forms of renewable energy are also energy independent. So is energy efficiency. Yes, energy efficiency is a tradable commodity. There are energy markets emerging where energy efficiency commodities are traded as if they were electric power. New businesses, such as EnerNOC, Comverge, and subsidiaries of Exelon have already been formed to buy and sell negawatts and negawatt-hours, the opposite of megawatts and megawatt-hours. When it comes to coal, natural gas, renewable energy and energy efficiency, the US is already energy independent.

That leaves nuclear fuels and petroleum. And the big surprise is the US is not energy independent with respect to nuclear fuels.

Nuclear fuels are used by the nation's commercial nuclear power plants to produce electric power. According to DOE's EIA, only nine percent of the fuel delivered to nuclear utilities in 2011 was US-origin uranium. Australian-origin and Canadian-origin uranium together accounted for 31 percent of the 55 million pounds imported to the US. Uranium originating in Kazakhstan, Russia and Uzbekistan accounted for 40 percent. The remaining originated from Brazil, China, Malawi, Namibia, Niger, South Africa, and Ukraine..

Approximately 20 percent of the nation's electricity originates from commercial nuclear power plants. Approximately 91 percent of the fuels used by those power plants are sourced from foreign nations. Combining the numbers reveals that approximately 18 percent of the nation's electricity depends on foreign sources of nuclear fuel.

Adding to the surprise about the nation's dependence on foreign sources of nuclear fuels is the lack of discussion about domestic production. There is little discussion about changing direction and seeking new opportunities for energy independent nuclear power plants.

The not-so-big surprise is that the US is a net importer of petroleum. But the political rhetoric has many Americans believing the US imports a majority of their oil from the Middle East. It's simply not true.

In 2011, the US imported 4.2 billion barrels of oil. Only 679 million barrels or 16.2 percent came from the Persian Gulf. Approximately 2.5 billion barrels or 60 percent came was sourced from non-OPEC nations. Canada provided the US with 1 billion barrels, or 24 percent of all imported oil. Mexico provided 440 million barrels.

Some politicians and analysts have been confusing the energy independence issue by blending US data with North American data to make numbers more attractive. Nevertheless, domestic oil production has increased and domestic consumption has decreased. The net result is an apparent trajectory towards oil independence.

But that trajectory is an illusion. The bipartisan American Security Project (ASP) warns the real message behind IEA's World Energy Outlook is a very different picture than most headlines suggest. It turns out most of IEA's coverage of oil independence focused on a handful of the report's nearly 700 pages. According to ASP, the majority of IEA's report is a warning against unchecked exploitation of US oil. Specifically, IEA warns:

The United States' ability to lead the world in oil production is realistically limited to between five and ten years at most.

In order to achieve production levels necessary to reach the status of number one oil producer, the US would have had to excavate almost all of its fossil fuel reserves by 2020.

Third, according to IEA's main scenario, which assumes an amount of efficiency policy that is yet to be implemented, the US could still be consuming 5.5 million barrels per day more than it is producing in 2020, when the oil boom peaked.

The news that the US will become energy independent by 2017 is simply not a fact. For the US, energy independence is an unlikely goal. In fact, it could provide more harm than good. But the recent success in natural gas has the nation moving in the direction of independence and that achievement has benefitted the US economy.