

An Interview with Adam Sieminski

Mr. Sieminski is James R. Schlesinger Chair for Energy and Geopolitics, Energy and National Security Program, Center for Strategic and International Studies and former Administrator of the U.S. Energy Information Administration (EIA). He was interviewed on March 17, 2017 by Jennifer Warren.

Jennifer Warren: During your five-year tenure as the EIA's Administrator, what were the most notable shifts in energy trends from your perspective?

Adam Sieminski: I was nominated by President Obama in January 2012 and confirmed by the U.S. Senate in late April. I started the EIA position in early June 2012. At my confirmation hearing, when asked what I was planning to do at EIA, I said that policy makers needed better and faster data on the production of shale oil and gas; it needed to come from a broader number of states than were being surveyed then.

In 2011, oil prices were over \$100 per barrel. In early 2012, they reached nearly \$130 per barrel. Although there were lingering concerns about supply availability in echoes from the ill-founded "Peak Oil" hypothesis of the early 2000s, shale oil and tight oil plays were taking off at those prices. So the significant growth of shale oil and gas was occurring just as I started at EIA.

EIA needed data from North Dakota and Pennsylvania, not just the traditional oil states. The Bakken would soon start to produce one million b/d. Pennsylvania was starting to compete with Texas and Oklahoma to be the top producing state for natural gas. Pennsylvania was not broken out in the monthly production data, and there was no timely data on oil production.

The second major trend during the period was growth in renewables. The combination of improving technology for solar and wind, along with the nearly continuous extension of renewables tax credits was a powerful driver. The tax credits (that have recently been extended for five years) made a dramatic difference in the take-up of renewables. Over the next few years, EIA expects renewables use to grow faster than any other energy source. I think that will slow down eventually, and it will be hard for renewables to surpass oil and natural gas—but it should exceed coal use. The combination of the growth of renewables and relatively inexpensive shale gas has dampened coal consumption. Natural gas will compete well against coal, with or without the Clean Power Plan.

Given the increase in renewables, policy makers needed to know more about the daily patterns of electricity use. The EIA instituted an hourly collection of data across the U.S., a unique survey in the realm of statistical agencies. For cost-effectiveness, EIA swept data from 66 balancing authorities in the U.S. and then

aggregated that data. The net result: the ability to present hourly electricity use in the U.S. in nearly real time (about a one hour lag). This should prove tremendously helpful to policymakers and analysts wanting to understand the effects of different fuels used by generators to power the grid.

A final trend that became clearer while I was at EIA was that the prospects for a “nuclear renaissance” were being thwarted by slow growth in electricity demand; the continuing high costs of building nuclear facilities; the difficulty of competing with subsidized renewables; the shale gas revolution; and the low costs of existing coal plants.

JW: Wasn't the drilling productivity report a contribution during your tenure?

AS: One part of the data initiative to increase timeliness of EIA data was the drilling productivity report (DPR). The EIA had a wealth of historical statistics, and plenty of long-term reference case projections, but did not have good near-term forecasting capabilities. In EIA's Annual Energy Outlook (AEO) 2013, the oil volumetric predications for 2013 and forward were already too low the day they were published. The Bakken, Eagle Ford, and Permian were growing so quickly that the models could not keep up. The DPR was designed to fix that by feeding into the Short-Term Energy Outlook (STEO). I insisted that the STEO team work closely with the longer-term teams who do the models for the AEO. This assured the starting point for the AEO was what we knew right now—our best estimate of what production was at the time of preparation (not what we knew from a year or two ago), given the speed in the changes of production. It turned out to be important when oil prices dropped and as oil production declined in late 2014 through 2016. The DPR could provide early signals.

Other notable achievements of the time included the publication of analyses that considered the effects of allowing freer exports of crude oil and natural gas. The EIA also began tracking crude-by-rail (and energy-by-rail) to supplement what was known from the traditional pipeline system reporting.

JW: With the advances in U.S. shale oil and gas development and supply implications, do you see oil prices staying in some type of moderate price band, like \$50 - \$70, for the next several years?

AS: Anyone making oil price projections has to contend with the tremendous volatility inherent in oil energy markets. The EIA developed a methodology using the options markets alongside the Black-Scholes algorithm. Black-Scholes was formulated to look at near-term volatility in the options markets (something that you can observe and measure) to predict values of the options in the future. Analysts can observe prices in the futures and options markets but needed an independent way to assess what the value of the options were.

EIA needed a way to assess near-term oil price volatility that was independent of its own models. The solution was to take oil prices in the options market (as the best market assessment of producers, refiners, airlines, farmers, truckers and hedge funds) and then run the Black Scholes algorithm backward to see what those prices implied about volatility in the near term.

Remarkably, in looking at prices out to the end of 2018, the implied volatility in the near term is huge. To achieve a 95% confidence level of what the prices would be between now and 2018, the price range is between \$30 and \$100 per barrel. That tells you, when considering a \$50-70 range (and I think that is a sensible range for oil for the next two years—well, maybe \$45-65), that the potential to be wrong on that is enormous! [We both laugh.]

What would drive the oil price to the \$30 or below mark? News of slow demand or economic collapse in China. Alternatively, if OPEC negotiations fall apart and the Saudis are unwilling to single-handedly cut production to sustain prices. Or production growth from Russia, Iraq and Iran—or maybe Nigeria and Libya—starts to come back into the market. Developments like that could tank the price, which is what the Black-Scholes calculation is reflecting.

On the upside, it's almost always same: either surprising demand growth or an oil outage. It happened when there was significant growth in the China economy in the early to mid-2000s. Could that happen again? Maybe in China, or India, or the rest of Asia—it's possible. But usually it's a geopolitical problem that affects production in an OPEC country—like during the Iran-Iraq war or when production was lost in Iraq and Kuwait, or during the Iranian revolution and the sanctions period. Those things can really influence where prices go.

What makes sense in a range between \$50-70? I think OPEC countries would like at least a \$60 price, but it may end up nearer \$50 because shale oil seems to be making a comeback on the prospects of higher prices. Closer to the \$70 mark you probably get too much shale in the near-term. The rig count is already coming up.

But remember, there's only 4 million b/d of shale in the whole United States, and I'd be surprised if there were more than 5 million b/d worldwide. There is another 70 million b/d of conventional crude oil production globally. Investment in conventional oil projects has, since mid-2014, waned with the price collapse. The price needed to get conventional crude oil growing again in deepwater Mexico or Brazil, or offshore West Africa and the Canadian oil sands, or anywhere else that is not shale, could be much higher than \$50/bbl. I am inclined to believe that it's above \$60 and closer to \$70. This is a conundrum that oil companies and OPEC will have to solve.

JW: The attention of economists, investors and many stakeholder groups are focused on the "negotiations" of production between OPEC, the U.S., and to some extent other non-OPEC. How do you see this playing out over the next year?

AS: At the late-November 2016 OPEC meeting, OPEC managed to get Iraq and Iran to participate. Then Russia came on board; President Putin was personally interested in taking an active role. That OPEC/non-OPEC agreement announced in December provided a boost to oil market psychology and caused oil prices to rise before a single barrel was cut.

This month, the Saudis have complained in public that some countries are not fully complying. Russian production did decline some and many analysts believe Moscow will continue with deeper cuts than seen so far. In May, a new meeting is expected to determine if the agreement will be rolled over starting June 1. The oil price sell-off in early March was from a combination of U.S. inventory still being high and the supply-demand balances not coming together as rapidly as thought. This was then followed by a vague answer by Russian Oil Minister Novak to questions about cooperation with OPEC: he appeared to indicate that Russia was not fully committed to continuing. The reversal in market sentiment also was fueled by Saudi Minister Khalid al Falih, saying that Saudi Arabia would not act alone to balance the market and that “free riding” was unacceptable.

That gave many traders heartburn. Prices have since been testing the \$50 price for Brent that we had in late 2016. Whether we get back to the \$60-65 range is dependent on many factors, including whether OPEC countries continue to adhere to the agreement through second half of 2017 and if the strength of global economic activity continues.

If considerable oil comes back onto the market from Libya and Nigeria, that could send prices lower. Or if Venezuela, which is vulnerable because of social and economic turmoil, were to lose 2 million barrels per day of exports, that could push prices up.

JW: Is this dance between OPEC, U.S. shale and other producers going to be the new normal in oil markets, and one in which sentiment is attached to every leader's words connected to oil markets?

AS: Oil has been volatile for a long time. In fact, it has been volatile since the oil industry's beginnings in the mid-1800s. I don't know if the effort to fix volatility is a new normal—it may just be the normal. Companies have tried—governments have tried. And success has mostly been elusive. It may be that periods of stability are the ones that are rare.

The economic problem is that both supply and demand elasticities are very low. It takes big moves in price to get small changes in supply both upward and downward. If the economy grows faster than expected, oil prices tend to move up a lot to get that extra supply to meet the extra demand. The system cannot respond that quickly.

A recent surprise has been the resiliency of shale—that production stayed higher than thought. The industry responded quickly to prices declining by concentrating on the best acreage and the best crews and their best equipment and technology. If prices increase, the drilled but uncompleted wells (DUCs) will come online, but at some point, maybe in 2-3 years from now, problems with conventional production timelines and decline curves could be problematic.

JW: So shale does not make up for the larger inelasticity dynamic of oil production?

AS: Right, it does not. Shale will grow, and probably strongly, but demand is still growing and conventional oil is not. It will be an interesting test to see how productive the Permian can be. Does that mean at \$60/bbl that shale can grow by 200,000 b/d or 600,000 b/d. For the next few years, the global market can accommodate the lower number but not the bigger one. In five years, the situation could be reversed; the global market might need 600,000 b/d or more or prices could tighten and surprise to the upside. That takes us right back to that volatility question you were asking..

Jennifer Warren is a writer, analyst and communications specialist focusing on energy, resources and thought leadership work for companies and institutions. Her work has appeared in numerous academic, policy and business publications. She can be reached at jwarren@conceptelemental.com