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## Memorandum

TO: ANNUAL ENERGY OUTLOOK STAKEHOLDERS  
FROM: DAVID WHITE, PHD, PATRICK LUCKOW  
DATE: FEBRUARY 12, 2016  
RE: AEO ELECTRICITY WORKING GROUP MEETING NOTES – FEBRUARY 10, 2016

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### AEO Electricity Working Group Meeting Notes – February 10, 2016

The second AEO Electricity Working Group meeting for AEO 2016, hosted by Thad Huetteman and Chris Namowicz of EIA, was held on the morning on February 10, 2016.

The purpose of this meeting was to present the assumptions for AEO 2016 and some preliminary results. Some of the key items discussed were:

**Modeling Scope** – The number of side cases associated with AEO 2016 has grown. In addition to mass- and rate-based Clean Power Plan (CPP) cases, there will be a No-CPP case, as well as the “standard” side cases related to fuel prices and demand.

**Clean Power Plan** – A previous analysis of the proposed Clean Power Plan was done on AEO 2015 and the general results were a decrease in coal generation along with an increase in generation from natural gas and renewables. This was a rate-based approach. As of this meeting, EIA had decided to model a mass-based approach with trading at the electricity market module (EMM) level in the Reference case, given that a majority of state comments suggested a preference for this approach. Allowances are allocated to load-serving entities to reduce rate impacts, informed by the California approach under its existing cap-and-trade system.

Immediately prior to this meeting, the Supreme Court issued a stay on the Clean Power Plan. EIA is still deciding how to incorporate the policy in the final AEO 2016. Stakeholders suggested two reference cases, one with and one without. While there is some reticence to have multiple reference cases, EIA will consider this, as well as alternate naming conventions to give the CPP and No-CPP cases similar weighting (whereas in general most users of AEO focus on the reference case and pay much less attention to the side cases). Typically the side cases are variations from the Reference case, which makes the choice of the Reference case an important one.

**Other Environmental Regulations** – EPA has conducted further matching and used data sources in addition to EIA-860 to determine plant compliance plans for Mercury and Air Toxics Standards (MATS). Some 30 GW of coal plants still require some additional measures to comply, but no data sources

indicated that these plant operators have plans to implement them. EIA assumes these plants are at a high risk of retirement and lets the NEMS model endogenously determine retirement dates.

**Nuclear** – EIA continues to assume an 80-year lifetime for nuclear plants – two lifetime extensions.

**Coal** – Coal capital costs have increased substantially from AEO 2015 due to a new requirement for new pulverized coal plants to have 30 percent carbon capture, to meet the 111(b) standard of 1,400 lbs CO<sub>2</sub>/MWh. In the new CPP case, coal retirements are up 25 GW from the 2015 CPP case, from 87 GW to 112 GW in 2030. Results from the No-CPP case were not presented in this meeting.

**Natural gas prices** – Natural gas prices are substantially lower than the AEO 2015 Reference case, but higher than the AEO 2015 High Oil and Gas Resource Case. Prices are approximately \$4.50 per MMBtu in 2020 and \$5.20 per MMBtu in 2030 (in 2014\$).<sup>1</sup>

**Loads** – Total electricity sales in the preliminary AEO 2016 CPP case results are very similar to the AEO 2015 Reference case. EIA suggested this was driven by revised economic growth assumptions as well as flat (in constant dollar) power prices in spite of the Clean Power Plan. These flat prices result from the revised, and lower, natural gas price forecast, and probably also the lower solar costs

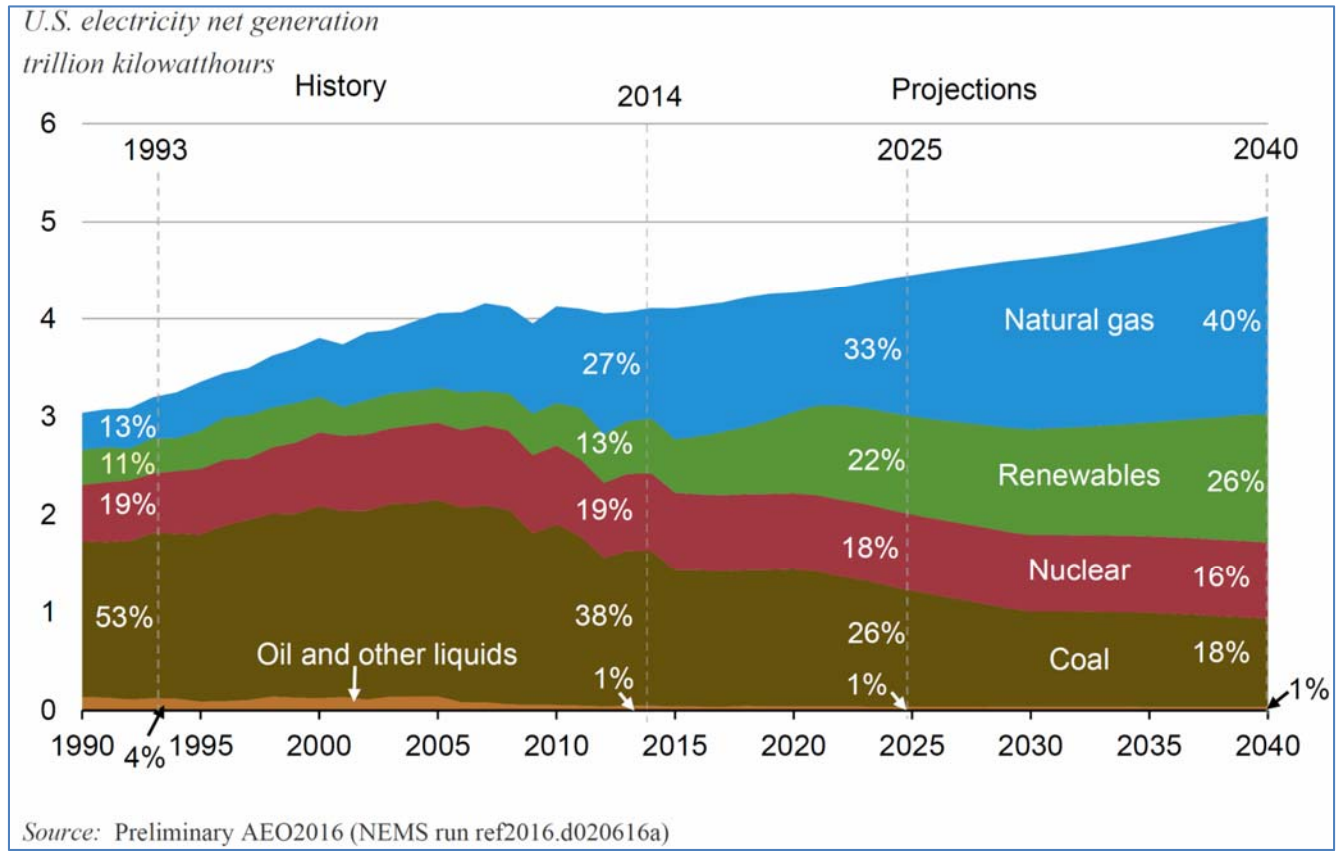
**Preliminary results** – Preliminary results (see figure below) show coal falling to 18 percent of generation by 2040 with substantial increases in natural gas and renewables.

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<sup>1</sup> Note however that current natural gas futures are about \$3.00/MMBtu (2015\$) for 2020.



Preliminary Draft AEO 2016 Generation – 2/10/16. Do not quote or cite as results are subject to change.



**We see the following as current priority issues:**

- **Clean Power Plan implementation:** The implementation of the Clean Power Plan will likely have a major impact on electricity build out. We have not yet seen a No-CPP case, and there is a real chance that such a case becomes the EIA Reference case in light of the Supreme Court stay.
- **MATS regulations:** It is unclear if the NEMS model will allow the 30 GW of “undetermined” MATS compliance plants to continue operating in violation of the standard.

We plan to follow up on these issues with EIA. Please send us any question, comments or suggestions you have at this stage of the AEO 2016 development process.

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