AEO Renewable Working Group Meeting Notes – December 7, 2015

The first AEO Renewables Working Group meeting for AEO 2016, hosted by Chris Namovicz of EIA, was held on the morning on December 7, 2015. Here are some highlights from that meeting.

The purpose of this first meeting was to present the "going in" assumptions for AEO 2016. The next meeting will present the results from a stable, but not necessarily final, set of runs. Some of the key items discussed were:

Modeling Scope – AEO 2016 will be a full version (like AEO 2014) with many side case alternatives considered. However, with the late start (about five months behind) the schedule is much compressed, so that likely limits how extensively issues can be explored.

Clean Power Plan (CPP) – A previous analysis of the proposed CPP was done on AEO 2015 and the general results were a decrease in coal generation along with an increase with that from natural gas and renewables. The final CPP is different in a number of ways from the proposed one but the outcomes are likely to be similar in a broad sense. The CPP will be included in the AEO 2016 Reference case. However, a side case will be run without the CPP, and additional cases may also be run with different implementation paths. Other environmental requirements will also be updated, including CSAPR (replacing CAIR in AEO 2015), Regional Haze (assumed reflected in EIA 860 filings, to be reassessed), and Coal Combustion Residuals (added for the first time in this AEO).

Capital Cost Updates – EIA has engaged Leidos (formerly R.W. Beck/SAIC) to update the capital cost assumptions. A preliminary cost comparison chart was provided. Coal costs are higher than in AEO 2015 and will likely increase further from the estimate given in this meeting, in order to accommodate a requirement for new coal plants to incorporate some form of CCS under EPA's New Source Performance Standards. The costs for PV technologies (both fixed tilt and tracking) are much lower than the previous ones, while those for wind are slightly increased. EIA has agreed to provide a separate meeting to focus on these cost issues.

Federal Tax Credits – The continuation, or not, of tax credits may have an effect on renewable buildouts, and the retirement of the PTC and coming reduction in the ITC at the end of 2016 are incorporated in AEO. Restructuring the developer financial models may moderate that effect in the real world. Another point of interest is that AEO uses a common "utility" financial model for building new resources that doesn't represent the differences that exist for various technologies.

Modeling Changes – The macro economic assumptions are for lower interest rates and lower cost escalation rates, which will benefit capital intensive resources such as renewables and nuclear. Natural gas prices for the near term will be lower than in AEO 2015, but are not yet determined for the longer term. EIA is also looking at changes in implementing distributed generation in buildings.

<u>We see the following as current priority issues:</u>

- **Renewable cost assumptions:** We have concerns that some of these assumptions, particularly for wind capital costs, are too high. We will defer our major concerns on this issue to the forthcoming meeting.
- **CPP implementation:** The implementation of the Clean Power Plan will likely have a major impact on electricity build out. Assumptions such as mass vs. rate based compliance, what types of trading are allowed, and the use of energy efficiency will all play a major role.
- **Model structure:** There was no discussion of the appropriateness of NEMS to modeling higher levels of renewable energy. While we won't count on any improvements in this cycle, it is important that EIA has plans to address that. Even better would be an acknowledgement of what limitations the current structure poses in the final report.

- **Distributed PV:** The ownership model reflected in AEO may not accurately reflect the recent adoption of third-party ownership structures, which have the potential to encourage residential and commercial PV adoption by reducing capital requirements.

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

David White & Patrick Luckow, Synapse Energy Economics, 12/7/15.