

August 9, 2013

MEMORANDUM FOR: John Conti  
Assistant Administrator for Energy Analysis

Alan Beamon  
Office Director  
Office of Electricity, Coal, Nuclear, and Renewables Analysis

Paul Holtberg  
Team Leader  
Analysis Integration Team

FROM: Electricity Analysis Team

SUBJECT: Summary of First AEO 2014 Electricity Working Group Meeting  
held on July 24, 2013

ATTENDEES: Diefenderfer, Jim  
Aniti, Lori  
Milton, Carrie  
Jones, Jeff  
Martin, Laura  
Bredehoeft, Gwendolyn  
Eynon, Bob  
Leff, Mike  
Mellish, Mike  
Kearney, Diane  
Slater-Thompson, Nancy  
Napolitano, Sam  
Hodge, Tyler  
Jones, Ayaka  
Namovicz, Chris  
Adams, Greg  
Gospodarczyk, Marta  
Fan, Cha-Chi  
\*Schmalzer, David (Argonne)  
\*Van Brunt, Michael (Covanta Energy)  
\*Wright, Evelyn (DecisionWare)  
\*Chartier, Dan (Edison Electric Institute)  
\*Niemeyer, Vic (Electric Power Research Institute)  
\*Nethercutt, Elliott (North American Electric Reliability Corporation)  
\*McGough, Michael (Nuscale Power)  
\*Showalter, Sharon (OnLocation)

- \*Wood, Frances (OnLocation)
- \*Sanders, Sandy (OnLocation)
- \*Evenson, Eric J. (U.S. Geological Survey)
- \*Fleischman, Lesley (Union of Concerned Scientists)
- \*Rollison, Eric (U.S. DOE: Office of Electricity Delivery and Energy Reliability)
- \*Kislear, Jordan P (U.S. DOE: Office of Fossil Energy)
- \*Khan, Sikander (U.S. DOE: Office of Fossil Energy)
- \*Zelek, Charles (U.S. DOE: Office of Fossil Energy, National Energy Technology Laboratory)
- \*Bergman, Aaron (U.S. DOE: Office of Policy and International Affairs)
- \*Schoeberlein, David (U.S. DOE: Office of Policy and International Affairs)
- \*Clement, Zachary (U.S. DOE: Office of Policy and International Affairs)
- \*Fields, Fletcher (U.S. DOE: Office of Policy and International Affairs)
- \*Hodson, Elke (U.S. DOE: Office of Policy and International Affairs)
- \*Stevens, Bill (U.S. Environmental Protection Agency)
- \*Kelley, Matthew (Westinghouse)

\*Non-EIA Attendees

*Presentation topics included the main environmental regulatory assumptions that will be used in the AEO2014, enhancements that were made or are planned for the model, and updates to the data and input files. Discussion of the environmental regulations centered on updates to the MATS modeling from AEO2013, updates to RGGI, and a discussion of the upcoming environmental issues that EIA is monitoring. The model enhancements discussed included reserve margins and capacity payments, spinning and operating reserves, O&M cost updates, municipal utility pricing data updates, and carbon transport utilization and storage. The presentation concluded with summaries of the EIA data updates related to the data collection cycle for the year ending December 31, 2012.*

Specific issues raised by participants included the following topics

**New Source Performance Standards (NSPS)**

A participant mentioned that the new NSPS would be effective on the date of promulgation, which is expected to be on September 20, 2013 and wanted to know whether the new standards would be reflected in the Reference Case. **Staff responded that the new rule could impact EIA's "freeze" date, and that EIA would likely include the new rule if it is available at that time.**

**Capacity Payments**

There was some discussion around the fact that EIA was not explicitly modeling a capacity market. Staff explained that there is no uniformity across the country and that EIA is trying to mimic PJM, New England, and New York by setting the cost of a new turbine to be the cost of new entry (CONE) price. Staff indicated that EIA uses a fixed reserve margin unique to each region, and that capacity payments are paid on top of generation costs. The new algorithm applies to all regions, even Texas. Staff added that while all markets are different in the real world, in the NEMS framework a consistent modeling approach is applied for each region. However, capacity payments only apply to regions that are modeled competitively.

### **Planned Coal Plant Retirements**

A participant indicated that he had seen 37 GW of projected coal retirements in the Energy Velocity dataset, and wanted to know why EIA's number was lower (approximately 30 GW). Staff explained that EIA includes the planned retirements in the model that have been reported to EIA on the Form EIA-860. Energy Velocity, as a data vendor, uses EIA data as a starting point, but also includes press reports and other non-EIA sources. Another participant inquired as to whether there were stipulations with EIA that respondents must have cleared retirement decisions with the ISOs or with the EPA before they can report to EIA. Staff replied that there are not, but that in general plant owners tend to be more conservative in reporting to EIA. Staff also indicated that EIA had identified cases where respondents indicated to the EPA that they would retire units as part of their settlement agreements but then did not report those retirement plans to EIA. EIA is following up with respondents to resolve such discrepancies.

### **Retrofits**

A participant raised a question regarding EIA's presentation slide related to FGD and DSI retrofits and EIA clarified that the values presented were reflective of planned installations. Another participant indicated that several ISOs had conducted surveys of generating plants regarding plans to comply with MATS and wondered whether EIA had looked at those data sets. He claimed that those survey results seem to indicate a higher level of DSI retrofits, but that the results of the surveys were not final. **Staff responded that EIA would research the MATS compliance plans reported to the ISOs and try to resolve any discrepancies relative to EIA reporting.** Another participant stated that to the extent that the numbers change, it won't really affect the electricity prices, but Staff pointed out that the importance is to understand MATS compliance activities. He also pointed out that the reported retrofits are input into the model, but the model also determines if additional retrofits are required. Staff added that EIA is trying to inform the model inputs as much as possible.

### **Coal CCS plants**

A participant asked about whether the coal additions include the CCS plants, such as Kemper County. Staff said there is a slide from the Coal Working Group that EIA can provide that has a list of the coal plants that will be included in the model.

### **Capital Costs**

A participant asked if EIA would be using different capital costs from those used for AEO 2013. EIA staff confirmed that the capital costs for AEO 2014 would also be based on the SAIC report originally prepared for AEO 2013. A participant wanted to know whether there will be an update to the capital cost study from SAIC in the foreseeable future. Staff replied that EIA is trying to do a new study every two to three years, depending on funding, but that EIA has no defined time frame for the next study at this point.

### **Water Usage**

A participant wanted to know whether there would be any other assumptions with regards to water needs other than 316(b). Staff replied that the consideration for the cost of building new plants already takes into account the best available control technology, and that every new unit built must have state-of-the-art controls. The participant followed up by explaining that there is a lot of focus on saline, groundwater, brackish water, and waste water return flows. Staff replied that EIA's model does not account for that, but that it is implied in the O&M costs. **Staff indicated that EIA would evaluate those plants that report use of alternative sources of water.**

### **Coal Plant Modeling and Cost of Capital Adders**

A modeling participant brought up the fact that as gas prices rise to a level of \$7 [per MMBtu] toward the end of the forecast, he is seeing coal builds (by 2050) on the order of 50-60 GW. He also pointed out that although the NSPS is not final yet, EIA uses the cost of capital adder to indicate uncertainty around the NSPS issue. He also wanted to know if there was something in the EIA model limiting the life of coal plants, and he expressed concern that the EIA projection differs from what others are seeing and expecting. Staff explained that additional O&M costs are assumed after a plant reaches 30 years of age but there are no explicit limitations regarding the age of plants. Another participant pointed out that the cost of capital adder is designed to account for regulatory uncertainty, but that no other technologies are being penalized in the same way. The initial participant felt that EIA's coal forecast in 2040 was low and that using the cost of capital adder throughout the entire forecast was unrealistic. **EIA will evaluate the appropriateness for retaining the cost of capital adder.**

### **Nuclear**

A participant questioned EIA's assumption that all new nuclear builds would be the AP1000's in the out years, and that the system has the ability to absorb SMRs with lower costs. Staff replied that an SMR side case was performed for AEO 2013, which did impact the amount of nuclear capacity that was being built in the out years of the model. EIA does not anticipate changes in modeling SMRs, given updated guidance from the NRC, and the available cost data for SMRs. The participant pointed out that \$452 million in DOE funding is a significant change from last year, to which Staff responded that this continues to be something that EIA monitors.

A participant wanted to know whether EIA uses a cost inflator on the nuclear units to reflect greenfield costs, which would be of particular importance in the high GHG case. Staff replied that there are many hypotheticals that EIA could include in the model, but that one could easily

argue that as the nuclear industry grows, it will be easier to find workers, the materials costs could drop, but it may be more expensive to site a new plant. He pointed out that it's difficult to build scenarios in a deterministic model. Also a nuclear renaissance could impact the fuel prices.

### **Renewable Resource Data**

A participant inquired if EIA was planning to update the renewable resource information from NREL. Staff responded that a request had been made, but that funding was not in place for this year. The information was updated two years ago, but some updates, such as the availability of new transmission, matching different technologies in different areas of the country still needs to be done. **EIA hopes that this will be done next year.**