

December 23, 2015

**MEMORANDUM FOR:** John Conti  
Assistant Administrator for Energy Analysis

Jim Diefenderfer  
Office Director  
Office of Electricity, Coal, Nuclear, and Renewables Analysis

Paul Holtberg  
Team Leader  
Analysis Integration Team

**FROM:** Chris Namovicz  
Team Leader for Renewable Electricity Analysis  
And  
Renewable Electricity Analysis Team

**SUBJECT:** Summary of AEO2015 Renewable Electricity Working Group  
Meeting held on December 7, 2015

**Presenters:** Chris Namovicz

*Topics included AEO2016 model and data updates, a summary of AEO2015 model results, and a brief overview of planned changes for the AEO2016. Data updates included required modeling development efforts to include the final and proposed CPP rule, as well as capital cost updates, RPS developments, and new federal tax policies. Model changes in other areas include preliminary macro-economic updates, lower near-term natural gas costs, a possible slow-down in demand growth, and how the model addresses distributed generation in buildings.*

**Participants Present:**

Bergman, Aaron	(DOE)
Cunliff, Colin	(DOE)
Feldman, David	(NREL)
Hodson, Elke	(DOE)
Boyd, Erin	(DOE)
Nathwani, Jay	(DOE)
Blair, Nate	(NREL)
Donohoo-Vallett, Paul	(DOE)
Tusing, Rich	(DOE)

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Margolis, Robert	(NREL)
Lindenberg, Steve	(DOE)
Goggin, Michael	(AWEA)
Hensley, John	(AWEA)
Holm, Aaron	(SEIA)
Hunt, Hannah	(AWEA)
Wilson, John D.	(Southern Alliance for Clean Energy)
Boedecker, Erin	(EIA)
Bowman, Michelle	(EIA)
Diefenderfer, Jim	(EIA)
Hodge, Tyler	(EIA)
Huetteman, Thad	(EIA)
Jarzomski, Kevin	(EIA)
Jell, Scott	(EIA)
Jones, Jeff	(EIA)
Kwon, Augustine	(EIA)
Lowenthal-Savy, Danielle	(EIA)
Martin, Laura	(EIA)
Mayes, Fred	(EIA)
Moses, Carolyn	(EIA)
Neff, Shirley	(EIA)
White, Carol	(EIA)

**Participants Via Webex:**

Augustine, Chad	(NREL)
Fields, Fletcher	(DOE)
Wiser, Ryan	(LBL)
Kaarsberg, Tina	(DOE)
Baca, Justin	(SEIA)
Dougherty, Ryan	(Geothermal Exchange Organization)
Katofsky, Ryan	(Advanced Energy Perspectives)
Luckow, Patrick	(Synapse Energy)
Mahan, Simon	(Southern Alliance for Clean Energy)
Matek, Ben	(Geothermal Energy Association)
Showalter, Sharon	(OnLocation, Inc.)
Wood, Frances	(OnLocation, Inc.)
Lee, April	(EIA)
Marcy, Cara	(EIA)

**Issues Discussed**

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- **Learning curves:** A participant inquired about the methodology used to update the learning costs. Response: EIA noted that we were not anticipating changing the learning-by-doing approach currently used in the model for AEO 2016, but are interested in reviewing our learning methodology in the future.
- **Wind costs:** An inquiry was made about making sure that wind costs from the AEO2015 and the LEIDOS report are commensurate with changing performance characteristics. Response: EIA said they would follow up.
- **Form EIA-860 data:** A participant inquired about how to incorporate the data from the Form EIA- 860 into the data input updates. Response: EIA said that data from the Form EIA-860 report is not used to determine the capital cost input into the AEO. Some of the Form EIA-860 reporting is inconsistent and some less common technologies are not reported. Additionally, some of the wind data is too sensitive to be used transparently as model input.
- **LCOE:** A participant asked what about the source of labor, fuel, and maintenance costs. The participant also asked about the source of LCOE as an input. Response: LCOE is a model output, not a model input. The fixed O&M costs are from modeled costs, based on earlier reports from [Leidos](#), as modified by model dynamics; labor is included in capital costs and O&M costs; fuel costs (also in capital costs) are calculated over 30 years and then leveled based on perfect foresight.
- **Financial models:** A participant asked about fixed vs. variable capacity costs and how these costs affect financial models in circumstances where private companies buy solar and wind energy. The participant also asked about how tax credits are incorporated into the financial models. Response: Current financial models are optimized according to current tax credits and assume mortgage finance for residential systems, so new financial models will need to be adjusted to accommodate the expiration of some of the tax credits.
- **Yieldcos:** A participant asked about the impact of interest rates on yieldcos on financial models. Response: The impact of interest rates on yieldcos has not currently been incorporated into modeling efforts due to time constraints, but EIA may look into including it in the future.
- **Solar PV Costs:** A participant wondered how fixed-tilt PV systems could cost more than single-axis tracking systems in the proposed capital costs. Response: The effective cost-equivalence between fixed-tilt and tracking PV systems results from deliberate design decisions by developers to optimize the output of each type of system. The fixed-tilt system characterized by Leidos has a higher inverter loading ratio than the tracking system, thus more DC solar panels are used per unit of AC capacity.

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