

WORKING GROUP PRESENTATION FOR DISCUSSION PURPOSES
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October 17, 2013

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FROM: MACROECONOMIC & INDUSTRIAL ENERGY
CONSUMPTION & EFFICIENCY ANALYSIS TEAMS

SUBJECT: Second *AEO2014* Macro-Industrial Working Group Meeting
Summary (presented on 09-26-2013)

Attendees:

- Bob Adler (EIA)
- Robert Hershey, Consultant
- Keith Jamison (Energetics)
- Tom Lorenz (EIA)
- Russ Tarver (EIA)

Remote attendees:

- Nate Aden (World Resources Institute)
- Martha Moore (American Chemistry Council)
- Dilo Paul, (SAIC)
- Ridah Sabouni (Energetics)
- Anna Shipley (SRA)
- Peri Ulrey (Natural Gas Supply Association)
- Frances Wood (OnLocation)

Presenters:

- Kay Smith, Elizabeth Sendich (Macro)
- Kelly Perl, Peter Gross, Susan Hicks, Paul Otis, Mark Schipper (Industrial)

Macro: The macro presentation provided an overview of the economic drivers that impact industrial value of shipments and a detailed presentation of value of shipments by industry. The GDP, employment, and productivity results are critical inputs for many NEMS modules, especially the Industrial Demand Module, thus they are produced first during AEO development, which allows the presentation of *AEO2014* results for the second Working Group Meeting. The critical changes for the overall economy model are related to population revisions, which result from the release of the 2010 Census. These population changes include reductions in growth of younger age groups, lower net migration, a lower starting population size, and increased life expectancies, which mean longer working life (later retirement).

In comparing the *AEO2014* macro industrial forecast with the *AEO2013*, the presenters stressed the importance of incorporating EIA's shale gas expectations (both in terms of robust supply and low price) and how this influenced GI's growth expectations for natural-gas intensive industries. In addition, GI's lower expectations for imports of commodities such as basic chemicals, primary metals, and metal-based durables also contribute to the *AEO2014*'s higher gross output expectations in the short to medium term. The preliminary *AEO2014* oil prices are lower than the *AEO2013* prices, contributing to industrial output that is more similar to the GI baseline. Overall value of shipments (including services, over 70 percent of the economy) shows a 0.1% lower growth, although the composition of output is different, with manufacturing showing higher growth and services with lower growth when compared to *AEO2013*. Finally, an updated equation for construction, which included more detail and better accounts for the construction of commercial buildings, was implemented for the *AEO2014*.

Specific discussion/questions:

1. What drives the transportation equipment output forecast, especially towards the end of the projection period? Is it primarily aircraft or motor vehicles?
 - a. Transportation equipment shipments are impacted by strong net export growth; robust consumption demand growth early in the forecast period and lower oil prices compared to *AEO2013*.
2. Why does industrial output continually grow, especially later in the projection period when natural gas prices increase? Shouldn't industrial output level off?
 - a. Natural gas intensive industrial output does level off, as the bulk chemical output shows. Roughly half of the output in energy intensive industries is food processing, which would not change when natural gas prices change.
3. Comment from participants: Recently ethane prices are decoupled from oil prices, so hope is that ethane prices are not solely dependent on oil prices.
 - a. The EIA formulation of ethane prices includes not only oil prices but also demand of ethane-using industries and the supply of liquids as determinants of ethane price.

Industrial: The industrial part of the working group presentation provided general model changes associated with major updates for the *AEO2014* version of the Industrial Demand Module (IDM). Preliminary model results were also presented. Model results are based on as of the 9/23/2012 running of NEMS were shown. These included:

1. Process flow status and updates: preliminary glass process flow submodule results were shown. The food model results were shown as well, although food is not a process flow model, owing to its complexity.
2. The cement submodule was enhanced to allow multi-channel burners (burners of more than one fuel). This change allows renewables, such as municipal waste, to be burned. Preliminary results were shown.
3. Results of the nonmanufacturing data update were shown. Data was updated from USDA and non-manufacturing surveys. This changed the distribution of fuels used in nonmanufacturing industries: agriculture, construction, and mining. SEDS benchmarking is now made across the industrial sector rather than just manufacturing as was done in previous years.
4. Projected naphtha and LPG feedstock consumption for bulk chemicals were shown. While naphtha grows about the same rate as last year, LPG feedstocks show considerable growth. LPG prices and naphtha prices grow on a parallel path, while LPG prices are lower.
5. Showed results of the updated CHP-with industry disaggregation. The model updates will allow variation in utilization, risk factor, penetration rate for four major CHP industries allows running mini side cases. Bulk chemicals, paper, food, and iron and steel use the vast majority of industrial non-refining CHP.
6. Starting with IEO2013, which was released in July 2013, EIA will adopt a two-year production cycle for both the IEO and AEO. Under this approach, a full edition of the IEO and AEO will be produced in alternating years and an interim, shorter edition of each will completed in the “off” years. A full AEO and a lite IEO will be produced in 2014, and a lite AEO and full IEO in 2015.

Specific discussion/questions:

1. When will the early release of the AEO2014 will available?
 - a. The AEO2014 Early Release will be available on December 16th.
2. How are renewables considered in cement manufacturing?
 - a. The addition of a multi-channel burner as a technology choice in the cement module of the Industrial Demand Module will allow more varied renewable fuels to be modeled. However, based on European linkages and experiences with competing demands for renewable sources or recovered waste products by the power and industrial sectors, there is no corresponding supply model to which the demand for renewable/waste by the cement industry are coordinated. This linkage will likely be a consideration for future AEOs.

3. How is the High technology case defined?
 - a. The high technology case assumes introducing new technologies sooner than the reference case, including automation, as well as enhanced recovery of renewable sources of energy. In some cases this can result in more energy intensity. Specific details on definitions may be found in *Appendix E: NEMS overview and brief description of cases* at webpage http://www.eia.gov/forecasts/aeo/chapter_appendices.cfm.

Open discussion/questions:

1. What specifically will be in the AEO interim edition?
 - a. The AEO interim will include only the Reference case, price cases, and macro cases, will generally only update the model to reflect changes to regulations, and will have limited data updates. Specific data updates are not known at this time. This change will allow EIA to focus more resources on rapidly changing energy markets and how they might evolve over the next few years,