# Annual Energy Outlook 2013
# Renewable Electricity Working Group

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# Agenda

- Review status of AEO 2012
- Discuss new model updates and development efforts for AEO 2013 and future AEOs
  - Capital cost updates
  - Performance updates
  - Policy updates
  - Planned additions updates
  - Model updates
- Obtain feedback from stakeholders on any key items that EIA should look at

# Status of AEO 2012

- AEO 2012 (full version) was released in late June, 4 months latter than planned
- This delay was the result of several major model development exercises that got behind schedule
  - Including development of a new Liquid Fuels Market Module
  - Also affected by late inclusion of Mercury Air Toxics Standards issued in December 2011
- As a result, the AEO 2013 development cycle got off to a late start
  - In order to try to return the AEO publication cycle to “normal”, we are not planning on doing major model development efforts for AEO 2013
  - We will be doing routine (and even some non-routine) data updates
  - We will also be continuing to do model development for AEO 2014

# Input Updates: Capital Cost

- EIA has funded a task with R.W. Beck/SAIC (now SAIC Energy, Enviroment & Infrastructure, LLC) to update technology costs used in the electric power sector
  - R.W. Beck did a similar report for EIA in 2010, which serves as the basis for AEO 2011 and AEO 2012 capital costs
- The contract was recently awarded, and work should be substantially completed by mid September
- We will try to prioritize preliminary data to focus on technologies that have seen the biggest changes in cost over the past 2 years
  - This will likely include some renewables, especially solar, and possibly wind
- Although we will try to obtain feedback on the draft figures, stakeholder involvement will likely be more limited because of time constraints

# Input Updates: Hydro Capital Costs

- The R.W. Beck approach is not detailed enough to fully capture the detailed and specific nature of our hydroelectric cost estimates
- These costs were developed by INL about 10 years ago
- EIA is developing a task with INL to update the costs in our current database of hydro sites
  - Task will not be completed for AEO 2013
- EIA will also continue to pursue other data that could enhance our database of sites and otherwise improve our hydro modeling

# Input Updates: Performance

- EIA and LBNL have (independently of each other) been analyzing wind performance (capacity factor) trends
- EIA has occasionally updated the parameters used to project capacity factors for wind in the AEO
- Newly developed data will provide an opportunity to update model parameters for AEO 2013
- EIA may also be able to update the methodology used to project wind capacity factors, but this is something that will have to wait for a future AEO

# Input Updates: MSW/LFG

- EIA re-evaluated the supply of municipal solid waste and landfill gas
- EIA will update the "biogenic" split of MSW
  - This affects how much generation from MSW plants is accounted for under "renewable" generation in the AEO tables
- While additional study may be warranted, no additional near-term model updates are anticipated for AEO 2013

# Input Updates: Federal Policy

- EIA uses “current laws and policies” in the Reference case
  - This includes any expiration dates embedded in current law
- At the Federal level, the expiration of the PTC for wind in 2012 and other renewables in 2013 has potential to cause problems with the model development schedule
  - A late extension (after finalization of the model runs in the fall) could be difficult to include in the “Early Release” case, especially if accompanied by significant changes to the policy (other than a simple deadline extension).
  - In addition, this will make it difficult to gauge planned additions in light of the policy uncertainty
- We will also monitor other Federal environmental policies that may impact electricity markets to incorporate as necessary (and as time permits)

# Input Updates: State Policy

- At the state level, we will continue to monitor new and revised RPS and environmental policies that could impact electricity and renewable energy markets
- Generally, we look for laws that are on-the-books by early September
- Depending on the particulars of the law, we may have to wait for regulatory specifications to fully understand the implications of the law and incorporate it into the model
- Note: we have a regional model structure that cannot account for all details of State policies
  - We try to capture the key elements of the policy, including key incentives and limitations

# Input Updates: Planned Additions

- Planned additions are power plants that have reported to EIA as being in the process of planning and construction
  - Our model cannot pick-up very near-term demand for new plants, but is able to make projections for most plants types over the next 2 to 5 years
  - The planned additions are intended to account for growth during this “blind spot” in model coverage
- In general, EIA only includes plants that have started construction in the AEO projections
  - Past experience suggests a high degree of uncertainty over plants that report earlier planning milestones
- For some renewables, EIA has previously included plants that have received regulatory approvals as well
  - This is a result of the short lead-times and pressures of expiring tax credits
  - We will need to re-evaluate our inclusion criteria given the potential for tax credit expiration, extension, or modification

# Model Updates: Buildings Sector

- Annual updates
  - Interconnection limitations (DSIRE)
  - Historical generation by and capacity of combined heat and power and renewable distributed generation systems (EIA- 860, IREC, AWEA)
- Photovoltaic system cost path
  - Tracking the Sun IV (LBNL, 2011)
  - Residential, Commercial, and Utility-Scale Photovoltaic (PV) System Prices in the United States: Current Drivers and Cost-Reduction Opportunities (NREL, 2012)
  - SunShot Vision Study (DOE, 2012)

# Model Updates: Extension to 2040

- EIA plans on releasing AEO 2013 projections through 2040
- Most model development work was completed as part of the AEO 2012 development cycle
- Assumptions and results need to be checked to ensure that all "over-the-horizon" issues are properly handled
  - Evaluate the potential for new technologies
  - Evaluate whether any new resource or operational constraints may be introduced for existing technologies

# Model Updates: Biomass Supply Integration

- EIA has obtained from the University of Tennessee an updated POLYSYS model to facilitate integration
  - Currently working on coding changes
- EIA has decided on a new approach that will result in significant changes in how biomass price and quantity information is communicated among the various modules in the model
  - The model will now solve for consistent price/quantity pairs for the Electricity and Liquid Fuels Market Modules
- Although completion is possible for AEO 2013, the significant cross-module changes may result in postponement until AEO 2014 to avoid delaying the current model development cycle

# Model Updates: Wind Intermittency

- EIA has funded a task to look at several aspects of wind intermittency and impacts of variable operation on the efficiency of fossil generators
- The task was initiated in June, and work is not expected to be completed in time for inclusion in AEO 2013
- The task will improve representation of these interactions, which may become significant at higher levels of wind/intermittent penetration
  - New model structures may have additional benefits in representing other aspects of grid operation
  - Could include some representation of storage

# Feedback

- We will be soliciting feedback specifically on our capital cost updates, but any input on this issue would be welcome ahead of time
- Are there any cost, performance, technology, or policy trends that we need to be aware of?
- Are there any other issues that we need to address?

# For more information

U.S. Energy Information Administration home page | www.eia.gov

Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

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