Macro Industrial Working Group: Industrial Plans for AEO2013

Macro Industrial Working Group (MIWG)
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WORKING GROUP PRESENTATION FOR DISCUSSION PURPOSES
DO NOT QUOTE OR CITE AS RESULTS ARE SUBJECT TO CHANGE
Overview

• Aluminum process flow
• Non-manufacturing
• NGL price drivers & bulk chemicals
• Environmental updates
• CHP updates
Process flow models

• General:
  – Replace energy consumption based on engineering judgment with specific
technology/equipment choice/diffusion, e.g., wet vs. dry process for clinker
production and ball vs. rolling mills for grinding
  – Technologies are primarily based on CIMS data from DOE’s Pacific Northwest
National Laboratory

• Cement and Lime – completed for AEO2012
  – Technologies include: raw grinding, kilns and burners, and finish grinding

• Aluminum
  – Challenge is primary v. secondary production, as each has vastly different
energy profiles and requirements. To be implemented for AEO2013.
  – Technology/equipment choice implemented (e.g., anodes, recycling equipment)
  – Similar challenges likely in other energy-intensive industries with significant
recycling (glass, paper)
Aluminum industry energy use

consumption by fuel, trillion Btu

Source: EIA, Manufacturing Energy Consumption Survey, 2006
Non-manufacturing

• Agriculture completed for AEO2012

• New for AEO2013
  – Non-manufacturing energy consumption drivers “endogenized” with buildings and transportation modules
  – Construction
  – Mining
    • Coal (“endogenized” with coal module’s productivity, underground vs. surface)
    • Metal & non-metal
    • Oil & gas extraction (uses production and well count numbers)
Natural Gas Liquids (NGL) pricing & Bulk Chemicals

• Multi-team effort to forecast NGL prices
  – Regression-based but allowing for more than “typical” explanatory variables
  – Bayesian approach/Dynamic Linear Models
  – Sectoral propane and ethane prices
  – Useful for chemical feedstock choice and as input for chemical gross output
  – Feedstock choice to be based on demand for basic petrochemicals and relative feedstock pricing
Environmental

• Global Warming Solutions Act of 2006: AB32 cap & trade
  – Industrial results depend crucially on supply modules, especially EMM and LFMM
  – Interpretation challenge: cannot pick up California macro changes
    • Macro neutral
    • Leakage confined to Region 4

• U.S. EPA: Boiler MACT
  – Estimated compliance cost provided to macro as part of industrial final demand
  – Food, Iron & Steel, Chemicals, BOM most affected
  – Apply price fuel factors to incentivize fuel switching
Combined Heat and Power (CHP)

• Economic Assessment: Utilization
  – Lowered assumptions for utilization; since AEO2012, IDM simulates the utilization of installed CHP systems based on historical utilization rates and is driven by end-use electricity demand – i.e., updated appraisal incorporates historical rather than assumed capacity factors for new CHP facilities
  – Utilization of new CHP additions now expanded to allow for both industry and regional differences
  – Update industrial CHP based on EIA’s historical data; preliminary 2011 data from OES
  – Will update regional CHP scorecards when ACEEE data becomes available

• Industrial CHP Coverage
  – Starting with AEO2012, *regulated* generators are covered under EMM
    • Modeling impact is movement of a few hydropower facilities from industrial sector to power sector
Thank you for your attention!

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