

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DO NOT QUOTE OR CITE AS RESULTS ARE SUBJECT TO CHANGE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

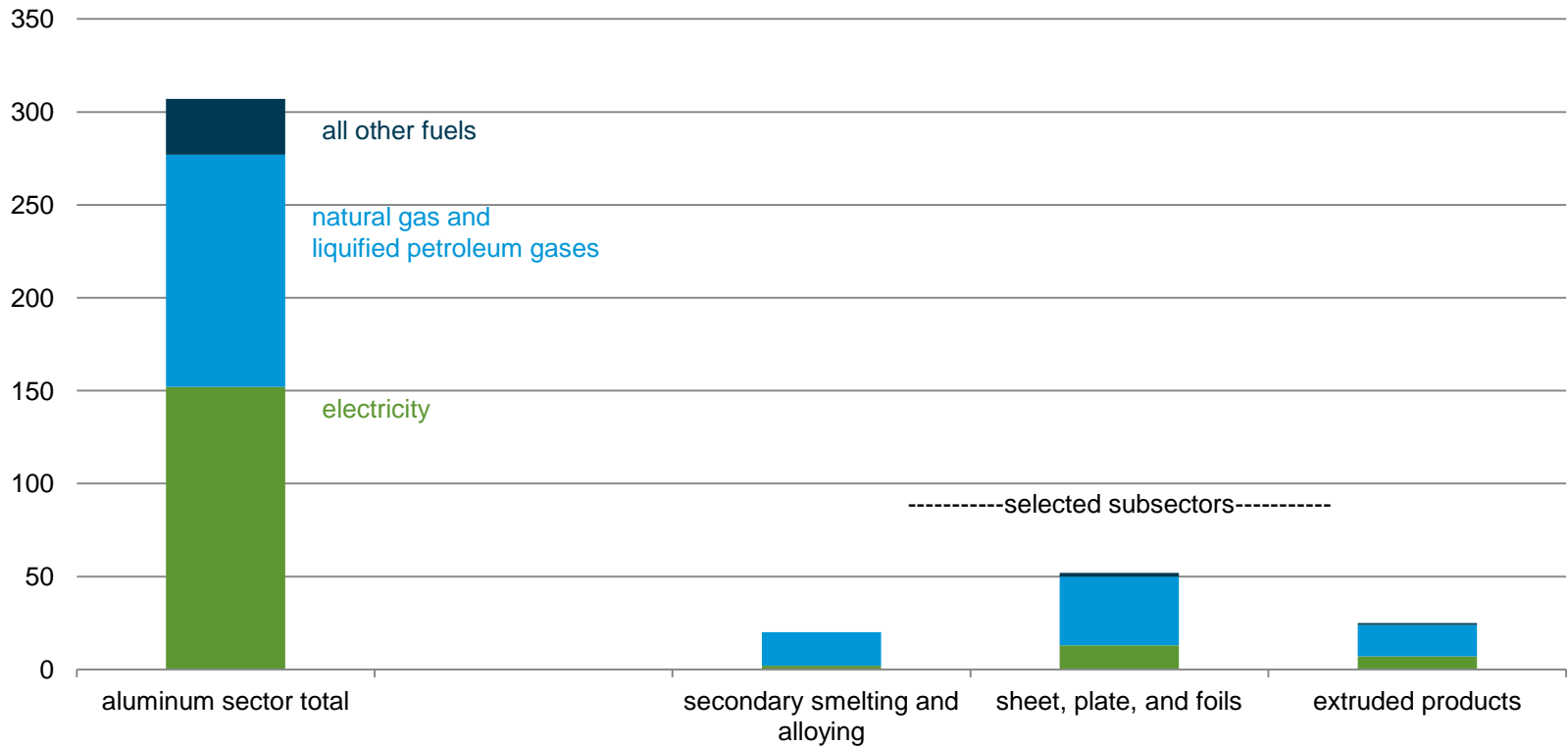
- Aluminum process flow
- Non-manufacturing
- NGL price drivers & bulk chemicals
- Environmental updates
- CHP updates

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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