EPA 111(d) PROPOSAL REGULATING GHGs

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MDEQ

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BACKGROUND

- Supreme Court Decision—EPA has the authority to regulate GHGs
- EPA regulated GHG emissions from autos
- EPA proposed 111(b) regulation of new power plants (NSPS)
- 111(b) proposal triggers 111(d) for GHGs

OVERVIEW OF EPA PROPOSAL

- State Goals: Building Blocks
- Alternative Blocks Available
- Planning for 111(d) and Timeline
- Plan Requirements
- Questions

Four Building Blocks

- Block One—Heat Rate Improvement, 6%
- Block Two—Natural Gas Combined Cycle, 70% utilization and dispatch
- Block Three—Renewable Energy, Regionally 15% in 2012
  - Alternatives
    - State assessment of technical and market potential
      - Quantify each technology
      - Market potential for each of the technologies
    - Nuclear capacity increase
- Block Four—Demand Side Energy Efficiency

Building Block 1 in Michigan

PROPOSAL

Heat Rate Improvements at Coal Plants

6% through both O&M and plant upgrades

EPA ESTIMATED EFFECT

About 53 TWh of Coal (2012) from 2,255 to 2,120 lbs/MWh

- Adjusted goal 1,720 lbs/MWh

Building Block 2 in Michigan

PROPOSAL

Increased Utilization of Existing Natural Gas Plants

Dial up existing Natural Gas Combined Cycle to 70% capacity factor

EPA ESTIMATED EFFECT

From 19 TWh Natural Gas Combined Cycle increased to 31 TWh

1,511 lbs/MWh

Building Block 3 in Michigan

PROPOSAL

Zero or low carbon substitution of power from more carbon intensive EGUs

6% at risk nuclear and

Renewable Energy at 7.4% (assumes a 6% annual growth rate)

EPA ESTIMATED EFFECT

1,339 lbs/MWh

Building Block 4 in Michigan

PROPOSAL

Relies on Energy Optimization by assuming a reduction in demand for electricity at 11.77%

EPA ESTIMATED EFFECT

1,161 lbs/MWh – final goal

Alternative Blocks

- Fuel Switching at Individual Units
- Carbon Capture and Sequestration
- New Natural Gas Combined Cycle
- Assessment of Heat Rate Improvement at other than coal-fired units
- Co-firing lower carbon fuels
- Combined Heat and Power
- Distributed Generation
- Retirements

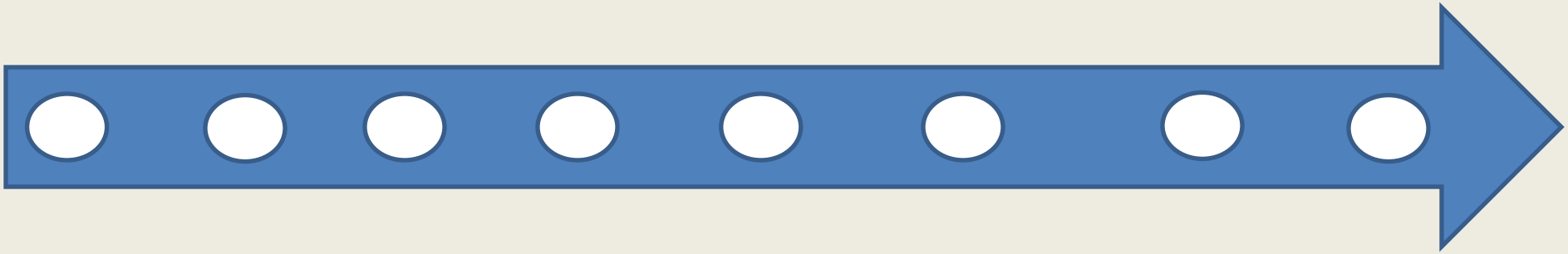
Timeline for 111(d)

June 2014
Draft rule issued

June 2015
Rule finalized

June 2017
State plan due (with 1 year extension)

January 2020-29
Interim goal in effect



October 2014
Deadline for comments to EPA

June 2016
State plan due

June 2018
Multi-state plans due (with 1 year extension)

January 2030 onwards
Proposed goal in effect

Rate vs. Mass

- EPA Goals are proposed as a rate-based
  - lbs of CO_2/GWh
- Conversion to a mass-rate
  - lbs of CO_2/yr
  - Not straight forward
  - EPA guidance is lacking
- Uncertainty on how to make future adjustments with mass-based approach

State Plan Development

- Goals in the Blocks can shift to accommodate the State plan
- “Remaining useful life” of units should be considered.
- Rate-based or Mass-based
- Direct or Portfolio Approach
  - Direct means limits apply to individual EGUs
  - Portfolio means enforceable obligations on a 3rd party other than the owner/operator of the EGU

State Plan Requirements

- Enforceable measures to reduce CO2
- Projected CO2 reduction or equivalent actions to meet EPA established goals
- Quantifiable and verifiable emission reductions
- Reporting process on implementation progress toward goals and implementation of corrective actions, if necessary

QUESTIONS?

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