NCSL Capitol Forum
Clean Power Plan

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American Electric Power
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AEP Overview

- 5.4 million customers with operations in 11 states

- Generation
  - Coal
  - Natural Gas/Oil
  - Nuclear
  - Wind, Hydro, Solar, other

- Total generation capacity ~ 32,000 MW

- Transmission line miles ~ 40,000
AEP – Service Territory
AEP Portfolio Diversity

AEP Owned Generating Capacity by Fuel (actual & projected)

- Coal/Lignite: 26%
- Natural Gas: 8%
- Hydro, Wind, Solar & Pumped Storage: 12%
- Energy Efficiency/Demand Response: 6%

Some planned coal to natural gas conversions and/or repower considerations.
No new fossil generation planned between now and 2020.
Utility Scale Solar PV announced (3-5 sites, 1-5MW each, 16MW total by 2017).
AEP Delivers Clean Energy Resources

AEP’s Renewable Portfolio (nameplate capacity)

<table>
<thead>
<tr>
<th>Contributions by Regulated Operating Companies</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEP Ohio</td>
<td>209.10</td>
</tr>
<tr>
<td>Appalachian Power</td>
<td>375.00</td>
</tr>
<tr>
<td>Indiana Michigan Power</td>
<td>465.70</td>
</tr>
<tr>
<td>Kentucky Power</td>
<td>58.50</td>
</tr>
<tr>
<td>Public Service Company of Oklahoma</td>
<td>1,137.30</td>
</tr>
<tr>
<td>Southwestern Electric Power Company</td>
<td>469.15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,714.75</strong></td>
</tr>
</tbody>
</table>

Over 7,500 MW of renewable generation interconnected across the U.S. via AEP’s transmission system today
AEP Investments
Drive Emission Reductions

Historical Environmental Investments (in millions)

Total
$7.5 billion

$540

2014
**Dramatic Reductions in Emissions**

Total AEP System Emissions 1990 - 2014

- **SO₂**: 80% reduction
- **NOₓ**: 80% reduction
- **Hg**: 54% reduction

**15%** reduction in CO₂ emissions from 2005 levels

**Total AEP System – Annual CO₂ Emissions**
(in million metric tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>145.1</td>
</tr>
<tr>
<td>2006</td>
<td>143.9</td>
</tr>
<tr>
<td>2007</td>
<td>147.7</td>
</tr>
<tr>
<td>2008</td>
<td>148.2</td>
</tr>
<tr>
<td>2009</td>
<td>129.7</td>
</tr>
<tr>
<td>2010</td>
<td>134.0</td>
</tr>
<tr>
<td>2011</td>
<td>135.6</td>
</tr>
<tr>
<td>2012</td>
<td>122.0</td>
</tr>
<tr>
<td>2013</td>
<td>115.3</td>
</tr>
<tr>
<td>2014</td>
<td><strong>122.7</strong></td>
</tr>
</tbody>
</table>

**AEP**

**AMERICAN ELECTRIC POWER**
Environmental/Regulatory Signposts

- Revised SO₂, PM₂.₅, and Ozone NAAQS Implementation
- New Taxes / Regulations on Drilling & Fracking
- Light Duty Vehicle CAFE Standards (54.5 mpg)
- Production Tax Credit (PTC) for renewables
- Renewable Portfolio Standards (RPS)
- Steam Electric Effluent Guidelines
- 316(b) Cooling Water Intake Requirements
- MATS
- CO₂ Performance Standards (New & Existing Plants)
- Is the sun setting on coal?

Timeline:
- 2015
- 2020
- 2025
U.S. EPA’s Clean Power Plan

- Final rule published in FR on October 23, 2015
- Compliance starts in 2022, with full reductions required by 2030
- Contains state-specific CO₂ emission standards
  - Rate-based (lb CO₂/MWhr) or Mass-based (tons CO₂/yr)
- Requires a 32% reduction in country-wide CO₂ emissions
  - From 2005 emissions
- Emission standards based on:
  - Heat rate improvements in individual units (2 – 4 %)
  - Redispatch from coal to natural gas generation (to 70% cf)
  - Large increase in new renewable generation
    - Equivalent to an effective ~21% national RPS by 2030
- States must submit an implementation plan or be subject to a federal plan
CPP Implementation Timeline

- Rule Proposed
- Final Rule Issued
- Initial SIP or Extension Request Due
- Final SIP Due w/ 2 Year Extension
- Final FIP Issued
- FIP Promulgated for States w/o SIP
- SIP Approval / Disapproval
- CEIP - Early Action RE & EE Credits

Enforceable Compliance Program Begins

State Planning and Compliance Preparation

CO₂ Emission Reduction Requirements Gradually Become More Stringent
CPP – State Plan Issues

File a state plan or be subject to a federal plan?

Considerations

• Compliance Flexibility
• Allocation of allowances
• Reliability
• Trading
• Final federal plan not expected until summer 2016
Emission Standards Plan or State Measures Plan?

**Considerations**
- **Emission Standards Plan**
  - Based on source performance standards
  - Federally enforceable solely on these units
  - Emissions trading, allocation options for mass-based plan
  - ERCs and energy efficiency measures to support source compliance
- **State Measures Plan**
  - Would rely on state adopted or supported mechanisms (RPS, energy efficiency standards)
  - Federal trading rule would be used as a backstop
Demonstrate Compliance with Rate-based or Mass-based Approach?

Considerations
- Availability of sufficient trading partners
- Availability of sufficient ERCs or allowances
- Familiarity with mass-based trading
- How to administer a rate-based program
- Economic growth
If a Mass-Based Plan -

Considerations

- How to distribute allowances?
  - Allocation or auction?
- What entities should receive allowances, or participate in an auction?
- How many allowances should be made available?
- Set-asides
- Banking
How to address Leakage?

Considerations

- EPA’s 3 options
  - New Source Complement
  - Allowance Set-Aside
  - Demonstrate Leakage Won’t Likely Occur
- Impacts to economic development
- How to demonstrate that leakage would be unlikely
CPP – State Plan Issues

How to Adequately Address Reliability Concerns?

Considerations

- Potential Extension to 2018
- Reductions required in 2022 with glide path to 2030
- Possible Reliability Set-Aside
- How to demonstrate state’s plan has addressed reliability
- How to get input from ISO/RTOs, NERC, affected units to best address reliability in state’s plan
CPP – Conclusions

Preparation of a State Plan that minimizes cost to the rate payers and maintains reliability of the grid will require close coordination with many stakeholders.

- State Environmental Agency
- Public Service Commission
- Governor’s Office
- State Legislature
- State Energy Office
- Utilities
- ISO/RTOs
- Industry

Required state legislation and/or environmental regulation development must be also be considered.