

# Building Energy Codes and the Clean Power Plan



## Overview

- About NASEO
- Clean Power Plan (CPP aka “111(d)”) and energy efficiency overview
- Building energy codes and the CPP



## About NASEO

- Founded in 1986 by the states
- Membership includes the 56 Governor-designated energy officials from each state and territory, as well as private sector affiliates
- Facilitate sharing of best practices and peer learning among states to improve the effectiveness of energy programs and policies
- Serve as a resource for and about State and Territory Energy Offices and state energy policies and programs
- Advocate on behalf of the State Energy Offices with Congress, federal agencies, and private-sector organizations
- Organized through a regional and committee structure

# + NASEO's Affiliates

*A robust and engaged network of +60 private-sector partners, including representatives from business, trade associations, nonprofit organizations, educational institutions, laboratories, and government.*



# + NASEO CPP Activities

## Caveat

- NASEO does not take a position on the CPP
- NASEO does not take a position on CPP emissions targets and the “building blocks” used to develop them
- NASEO favors ensuring system reliability and providing states compliance flexibility
- ...including use of energy efficiency as a compliance tool
- ...which can include building energy codes



## + NASEO CPP Activities

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### Energy-Air Regulatory Integration and the CPP

- Ongoing “3N” NASEO, NARUC, NACAA cooperation
- Compliance Case Studies – Codes, ESPCs, CHP, ...
- Focus on state flexibility and system reliability
- Established CPP resource hub for SEOs [www.111d.naseo.org](http://www.111d.naseo.org)
- Work with VA/KY/GA SEOs, other stakeholders on integrating ESPC projects into emissions compliance plans (e.g., CPP)
- The Climate Registry and NASEO cooperation on EE registry
- Complements
  - TX residential code compliance project
  - Provide support to DOE and SEOs on DOE energy codes conference (March 2015 – Nashville, TN)



## CPP Introduction



- Proposed regulation of CO<sub>2</sub> from existing “utility” fossil fueled power plants (“EGUs”)
- Under Clean Air Act §111(d); strong state role
- Proposal offers much state flexibility
  - Many possible options, scenarios
- Recognizes (encourages) end-use EE
- Complicated issues, many new to air regulators, some beyond traditional air regulator purview
- Preamble asked for comment on many issues

Many questions remain

# + Clean Power Plan Proposed Rule

- State-specific interim and final rate goals (lb CO<sub>2</sub>/MWh)
  - Projected to reduce sector CO<sub>2</sub> emis 30% by 2030 (v. 2005)
  - Each state's goal based on four "building blocks" —
    - Improve heat rate , increase natural gas (NGCC) dispatch, certain renewable and nuclear, EE savings ramped up to 1.5%/yr.
- Schedule
  - Proposed June 2014 (comment period ended December 2014)
  - Final rule expected Summer 2015
  - State compliance plans due 2016-2018 (some flexibility)
  - Compliance: 2020 interim target, 2030 final target
- State compliance plans: 12 components
  - Affected entities, approach, compliance obligations, performance standards, milestones, corrective actions for shortfalls, monitoring/recordkeeping/reporting ...
  - Measures need to be quantifiable, non-duplicative, permanent, verifiable, enforceable



# + Clean Power Plan Proposed Rule

- Much state flexibility
  - Many compliance options
    - Compliance NOT based on “building blocks”
  - Can opt for **mass-based** (t CO<sub>2</sub>) rather than **rate-based** (lb/MWh) targets
    - Affects enforceability and quantification issues
  - Can have multiple “compliance entities”
  - Can have multistate implementation and compliance
- Potentially large EE role
  - Often lowest cost resource + co-benefits (reliability, reduce other pollutants)
  - Can build on existing policies/programs (EE resource standards, codes, energy service performance contracting, etc.)



# + Enforceability Considerations

- State compliance plan must
  - Identify entities responsible for compliance and other obligations
  - Include mechanisms for showing compliance; obligations met
  - Show legal mechanisms to address non-compliance
- Could have multiple compliance entities
  - Power plant owners (utility, non-utility)
  - Local distribution utilities
  - Third party program administrators (e.g., Energy Trust of Oregon)
  - State agencies and authorities
- Issues
  - Mass v. rate basis affects enforceability and EM&V scrutiny
  - Differing util regulation: investor-owned, co-op, public power
  - Non-ratepayer EE: **energy codes**, **privately-contracted EE**,...
  - Multistate plan complications



# + Quantification Issues

## ■ Evaluation, Measurement and Verification

- Varied approaches, assumptions, etc.
- Balancing cost and accuracy, rigor
- Role may depend on state CPP approach
  - Mass-based:
    - Compliance based on CO<sub>2</sub> at stack,
    - No EE credit per se, but EM&V for EE programs
  - Rate-based:
    - EM&V important to show 0 lb/MWh “resource” real

## ■ Emissions Quantification

- Translate EE into avoided emissions
- Various tools; “AVERT” marginal emissions model

## ■ Interstate Considerations

- EE in one state, generation in another
- Multi-state compliance, trading, etc.



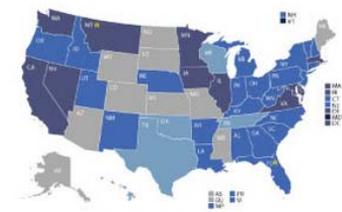


## Building Energy Codes in CPP

- Could count electricity savings from more stringent code and greater code compliance
  - Only electricity savings count in the CPP
- Issues of quantification/EM&V and enforceability in plans.
  - If state uses mass-basis, likely less EPA scrutiny of EM&V and measure enforceability
  - Still, need credible showing and air regulator (state, fed) confidence that savings are real and emissions avoided
  - So, important to understand code compliance rates, energy impacts



**Commercial Adoption**  
States that have adopted a Commercial Energy Code that meets or exceeds the ASHRAE 90.1 standard



**Residential Adoption**  
States that have adopted a Residential Energy Code that meets or exceeds IECC

## + Building Energy Codes in CPP

Hayes, Ungar and Herndon, 2015, “The Role of Building Energy Codes in the Clean Power Plan” (ACEEE)

- Modeled national codes savings:
  - Net savings \$150-250B (NPV); benefit-cost ratio 3:1
  - Energy savings in 2030:
    - 1.8-2.9 quadrillion Btu
    - 2-3% U.S. energy use; 5-7% U.S. building energy use
  - CO<sub>2</sub> avoided in 2030 100-160 million metric tons
  
- Modeled state 2030 annual electric savings
  - CO ~4-7%                      FL ~5-8%
  - HI ~7-12%                    MN ~3-4%
  - TX ~4-6%                      VA ~5-8%
  - WA ~3.5-5.75%



## + Summary

- CPP offers states compliance flexibility
- Some new territory for air quality regulation
- Large potential role for energy efficiency, including building energy codes
- State compliance plans must meet certain criteria
  - Measures need to be quantifiable, non-duplicative, permanent, verifiable, enforceable
- Need to show savings and emissions reduction are real
- Enhanced building energy code stringency and compliance can deliver significant energy savings, emissions avoidance and economic benefits



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