

NASEO



*National Association of
State Energy Officials*

*NASEO Perspective on Energy
Efficiency, Codes and the CPP*

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National Energy Codes Conference

Tucson, AZ March 24, 2016



About NASEO and State Energy Offices

- **NASEO represents the 56 governor-designated energy offices from each state and territory. *State Energy Directors:***
 - Advise governors, legislatures, and regulators
 - Advance practical energy policies and support energy technology research, demonstration, and deployment
 - Partner with the private sector to accelerate energy-related economic development and enhance environmental quality
 - Engage in the development of state energy policies and the oversight of billions of dollars in state-based energy funding
 - Lead state energy policy planning in most states

+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.





CPP Challenge

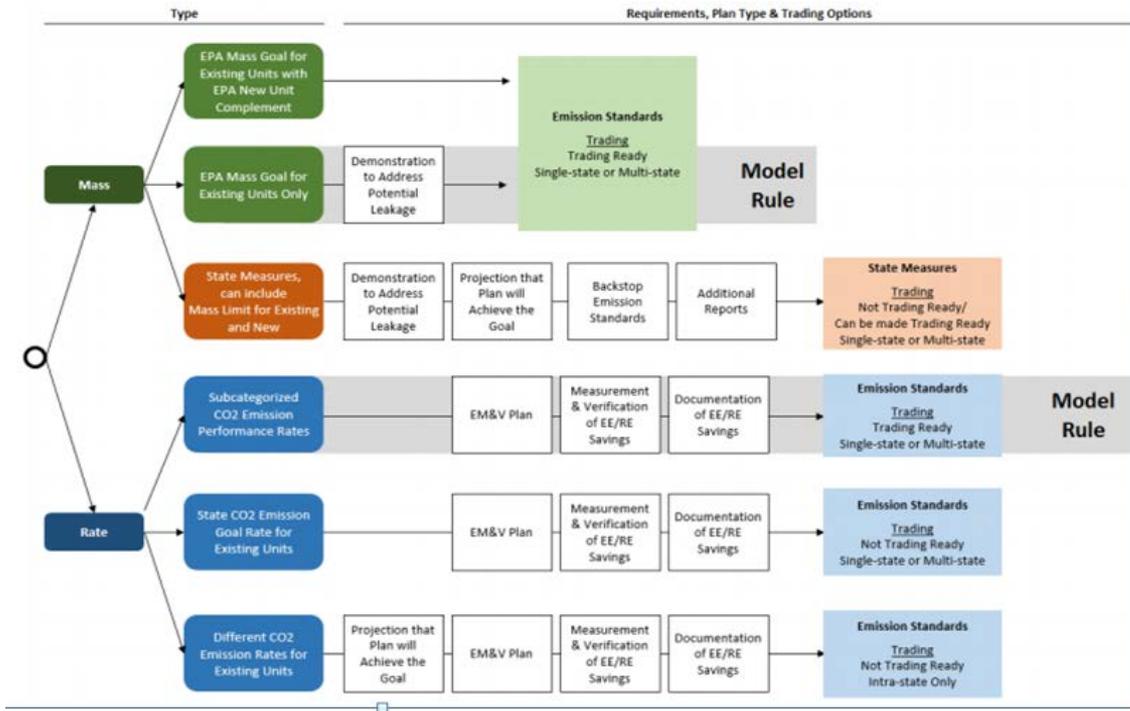
- Regulates *existing* utility scale fossil fueled generation CO₂
- New frontier for Clean Air Act
 - Modest CAA §111(d) experience; little CO₂ regulatory experience
- Complexity of electricity system
 - Interstate flows, changing technologies, reliability and affordability, environmental rules, varied utility regulation and governance (IOUs, co-ops, public power; integrated and deregulated)
- Multi-agency/jurisdiction relevance and responsibilities
 - State Energy Offices, Air Quality Agencies, Public Utility Commissions...and others—code officials
 - Relative unfamiliarity with each others' jobs and challenges
- Complexity of the rule
 - Just plain complex!
 - Flexibility and multiple state pathways good but comes with uncertainty
- ...did I mention a bit of political contention?
- And now a Supreme Court stay

+ NASEO CPP Approach

- NASEO has not taken a position on the CPP
- Recognize electricity system's rapidly changing technological, regulatory, and economic environment
- Supports:
 - Inter- and intra-state discussion
 - State Energy Offices, Air Quality Agencies, PUCs
 - NASEO, NACAA, NARUC "3Ns" process
 - ...and wider stakeholder engagement
 - Electricity system reliability and affordability
 - State flexibility
 - Least-cost and "no regrets" compliance opportunities
 - Energy efficiency, distributed resources, voluntary actions
 - EE multiple benefits (\$, emissions, reliability, jobs) but challenges (awareness, rate structures, split incentives, first cost, quantification)
- **Consideration of broader energy and environmental objectives**



CPP State Choices



Rate or mass target?

EGU “emissions standard” or “state measures”?

Allowance or credit trading? Intra- or interstate? Allocation, tracking.

- Who has compliance obligation?
- Federal v. state enforceability?
- Role of evaluation, measurement and verification (EM&V)
- State policies—**codes**, EERS, RPS, utility rate design, energy planning....
- What happens in case of underperformance? Many questions

+ CPP State Planning Considerations and SCOTUS Stay

- States must make own decisions
 - Continue planning when unsure if rule will hold?
 - Prudent to continue in case rule upheld, perhaps retaining rule's final compliance dates?
- Consider broader context
 - Other environmental rules and concerns (ozone, CSAPR, regional haze, mercury, ash, water intake...)
 - Economic and technical factors (natural gas, renewables, efficiency...)
 - Eventual carbon policy anyway?

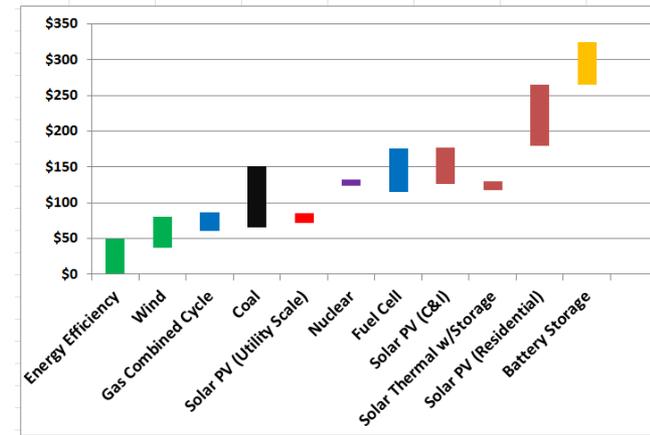
+ Energy Efficiency in CPP

- EE can be used as a compliance approach for CPP
 - Removal of EE “building block” not relevant to compliance
 - EPA encourages EE
 - Supports, recognizes ratepayer and non-ratepayer EE
 - Can work in both rate- and mass-based systems
 - Simplified accounting—don’t need marginal emission impact nor interstate adjustment
 - Model rule, EM&V draft guidance
 - Clean Energy Incentive Program—low-income EE
- But
 - EM&V draft guidance
 - Complex—don’t let perfect be enemy of the good
 - Codes problem—wouldn’t “count” code found cost-effective by DOE [*various groups have commented on this*]
 - EE won’t “happen automatically” under mass-based system
 - EE omitted from proposed federal plan (for rate-based)



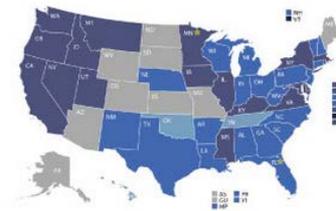
Energy Efficiency Opportunities

- Electric utility ratepayer programs
 - Avg. 4.6¢/kWh (LBNL); ~\$7B per year (CEE)
- Non-ratepayer policies and programs
 - **Codes**
 - Energy Savings Performance Contracts
 - Industrial efficiency
 - Combined heat and power (CHP)
 - Energy financing programs (e.g., WHEEL, C-PACE)
 - Weatherization
 - Above-code construction, renovation, retrofit
 - Benchmarking, disclosure, retrocommissioning (...)

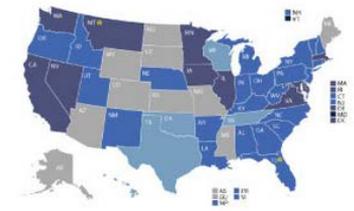


+ Building Energy Codes in CPP

- 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, 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

- Modeled national codes savings (ACEEE):
 - Net savings \$150-225B (NPV); benefit-cost ratio 3:1
 - Electricity savings in 2030:
 - 140-230 million MWh
 - 3-5% U.S. electricity sales; 5-9% of covered 2012 generation
 - CO₂ avoided in 2030 75-175 million metric tons

- Modeled state 2030 annual electric savings (as % of sales)

■ AZ ~5.5-8.5%	■ FL ~5-8%
■ KY ~2-3%	■ MI ~2-3.5%
■ TX ~4-6%	■ UT ~5-8%
■ VA ~5-8%	■ WY ~2%



+ Building Energy Codes in CPP

- Energy Efficient Codes Coalition *CPP Energy Code Emissions Calculator*
 - Code scenarios by state—building rate, adoption, compliance
 - Projected cost, electric, gas savings; avoided CO₂, other emissions

111(d)-Related Results

Electricity Savings Summary

2020 Snapshot

Avoided Emissions / Energy	Residential	Commercial	Total
Annual MWh	205,839	349,010	554,849
Cumulative MWh	852,429	1,395,748	2,248,177
Annual Metric Metric tons of CO2	103,767	175,942	279,709
Cumulative Metric Metric tons of CO2	429,724	703,620	1,133,343

2030 Snapshot

Avoided Emissions / Energy	Residential	Commercial	Total
Annual MWh	291,903	413,419	705,322
Cumulative MWh	3,364,008	5,402,708	8,766,716
Annual Metric Metric tons of CO2	147,153	208,412	355,565
Cumulative Metric Metric tons of CO2	1,695,852	2,723,595	4,419,447

Cost & Savings

Projections Through 2040	Residential	Commercial	Total
Energy Cost Savings (Millions \$ NPV)	\$3,678	\$4,124	\$7,802
Costs (Millions \$ NPV)	\$2,764	\$2,472	\$5,236
Benefit-Cost Ratio	1.33	1.67	1.49

Results By Year

Year	Cumulative MWh	Cumulative CO2 (Metric tons)
2014	0	0
2015	0	0
2016	204,726	103,206
2017	614,871	309,967
2018	1,150,332	579,902
2019	1,693,328	853,635
2020	2,248,177	1,133,343
2021	2,833,124	1,428,225
2022	3,419,624	1,723,889
2023	4,027,498	2,030,329
2024	4,676,884	2,357,695
2025	5,329,826	2,686,853
2026	5,993,281	3,021,312
2027	6,681,029	3,368,018
2028	7,360,025	3,710,310
2029	8,061,393	4,063,882
2030	8,766,716	4,419,447

1. Location and Baseline

2. Building

3. Building Code Updates

4. Display Results

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111(d)
Results

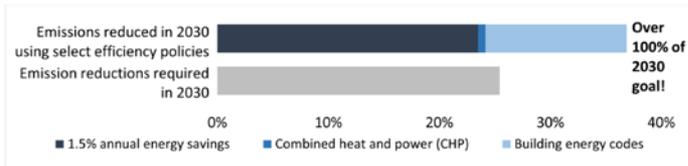
More
Results

+ Building Energy Codes in CPP

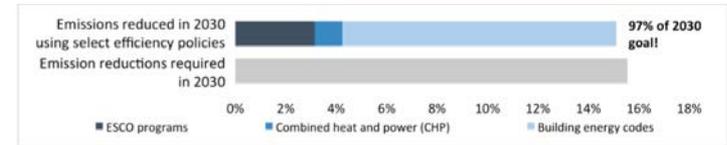
■ ACEEE State and Utility Pollution Reduction Calculator (SUPR)

- Projects impacts of various EE (incl. codes), RE, nuclear policies/programs.

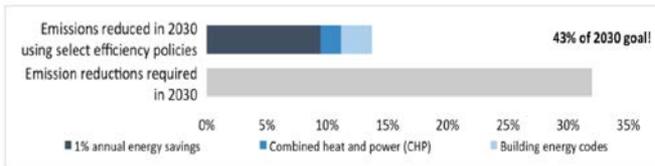
AZ



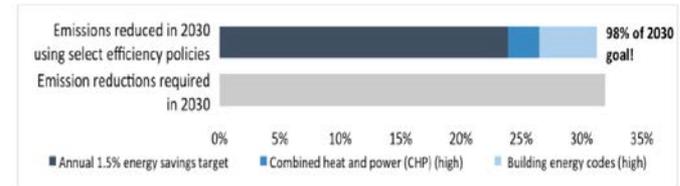
FL



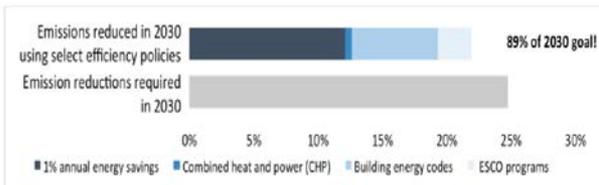
KY



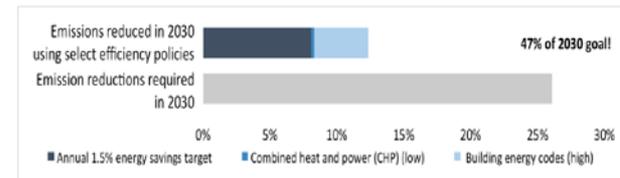
MI



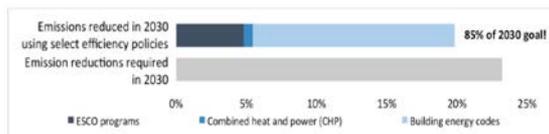
TX



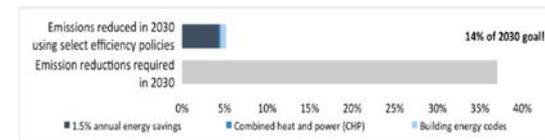
UT



VA



WY



+ NASEO Activities and Next Steps

- The 3Ns: NASEO, NACAA, NARUC
 - Discussions among SEOs, air regulators, PUCs
 - Wider public, private, and NGO stakeholders discussion
 - 3N consensus Energy Efficiency Principles--reliability, national energy efficiency registry, early action
 - Most recent 3N meeting February 11-12, 2016
- Collateral and related products and efforts:
 - NASEO EE Strategies for CPP Compliance Report, example plan language
 - Energy Efficient Codes Coalition *CPP Energy Code Emissions Calculator*
 - ACEEE templates and calculator
 - CHP, ESCO/ESPC, Industrial EE papers and templates

+ NASEO CPP Activities and Next Steps

- **Energy-Air Resource Hub:** cpp.naseo.org/
 - “Answers to State Questions” (“ASQ”) for SEOs and other state officials—with ACEEE, RAP, E4The Future
 - Broaden to multipollutant consideration
- Direct work with states on EE “pathways” for CPP and beyond (multipollutants, state energy planning)
- Calls, webinars, workshops
- Broader engagement; states, business, NGOs, DOE, EPA...
- EPA comments: CEIP, Federal Rule & Model Trading
 - Industrial Working Group comments
- EE Registry concept: Collaboration with The Climate Registry, E4TheFuture, states (DOE SEP award—TN lead, GA, MI, MN, PA, OR)



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