EPA's Clean Power Plan: Quantifying the Role of Energy Efficiency

ACEEE Energy Efficiency as a Resource Conference

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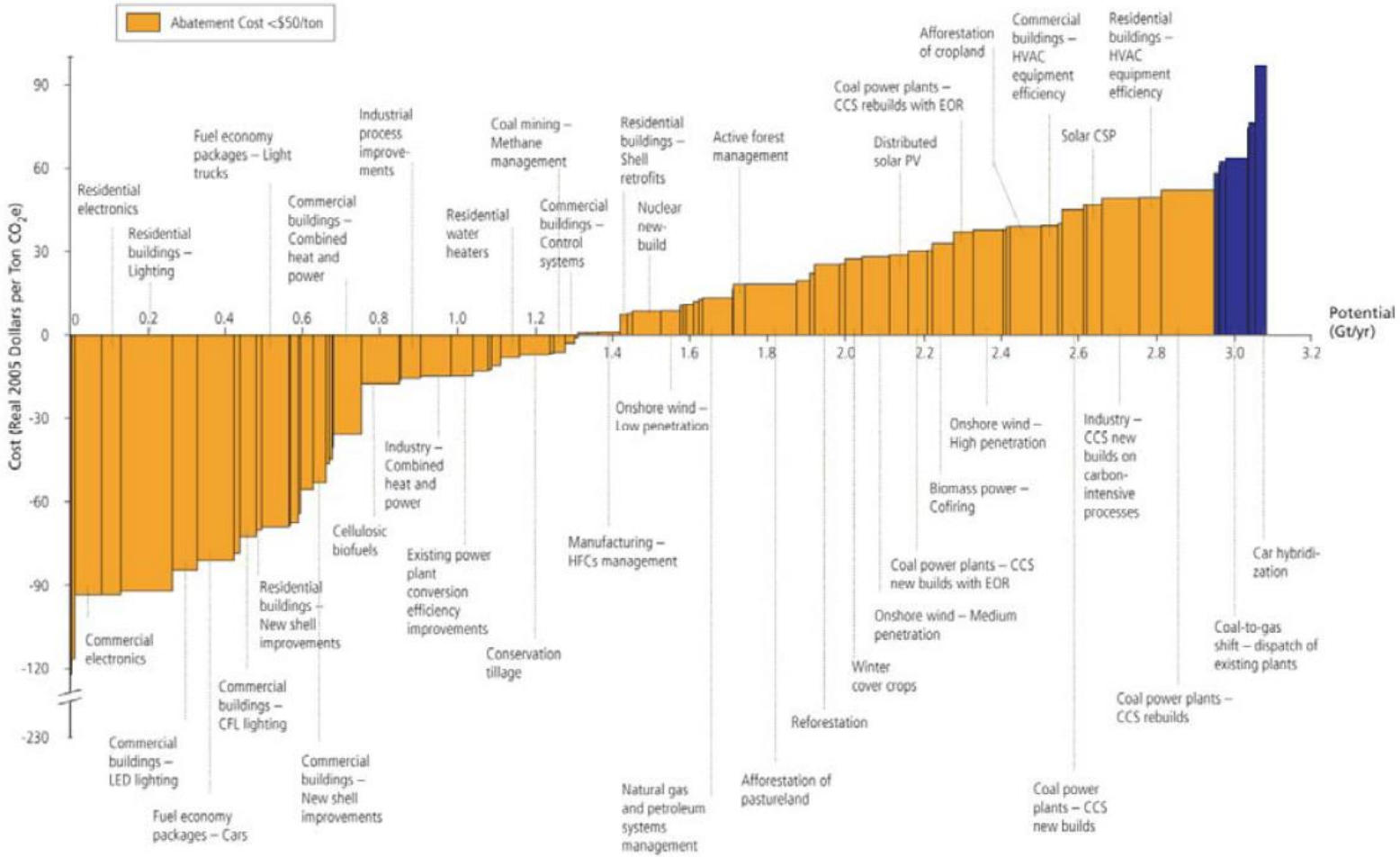
Overview

- How energy efficiency benefits climate policies like CPP—or not
- ICF's analysis of EE impacts on the U.S. power sector under CPP
- Key issues in CPP compliance that affect EE's role and impact
- Considerations in state- and regional-level CPP analysis
- Examples of how EE might play out in compliance scenarios

EE and Climate Policy: the Fundamentals

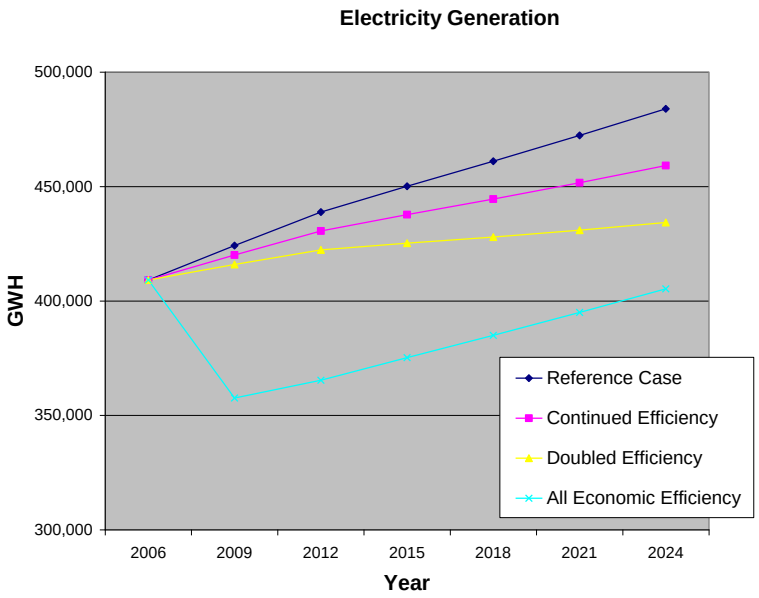
- EE is typically the least-cost, fastest-to-deploy climate change mitigation strategy
- EE does NOT always play directly into climate policy design
  - E.g. cap-and-trade power sector policies
  - EE is often used as a “complementary policy” in such situations
  - Some CPP compliance paths may wind up as cap-and-trade
- Bottom line: EE is always good for climate policy, but climate policy may not always be good for EE
  - Careful policy design is needed to engage EE’s full benefits
  - RGGI cap-and-trade program a prime example
  - CPP appears to use EE, but the details matter

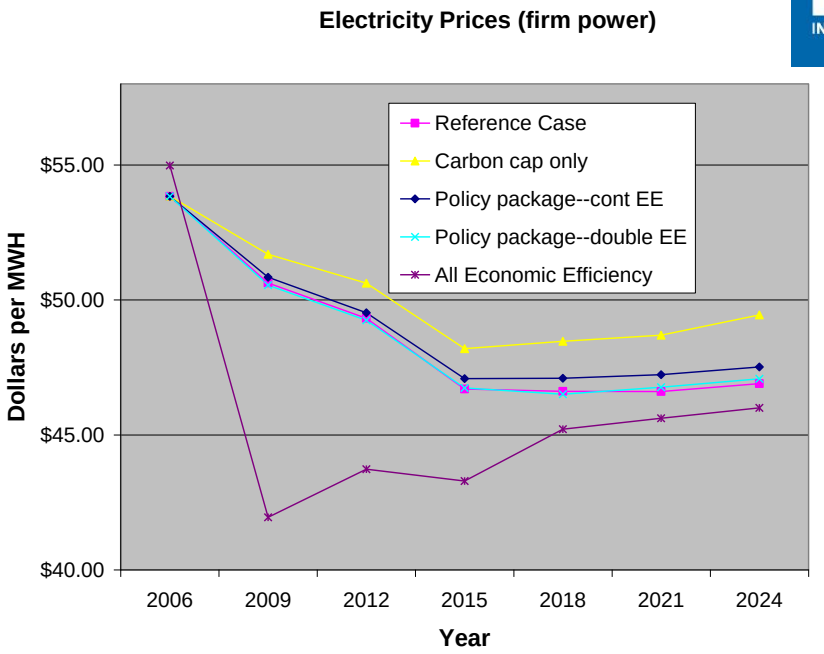
EE: The Least-Cost CO2 Abatement Choice

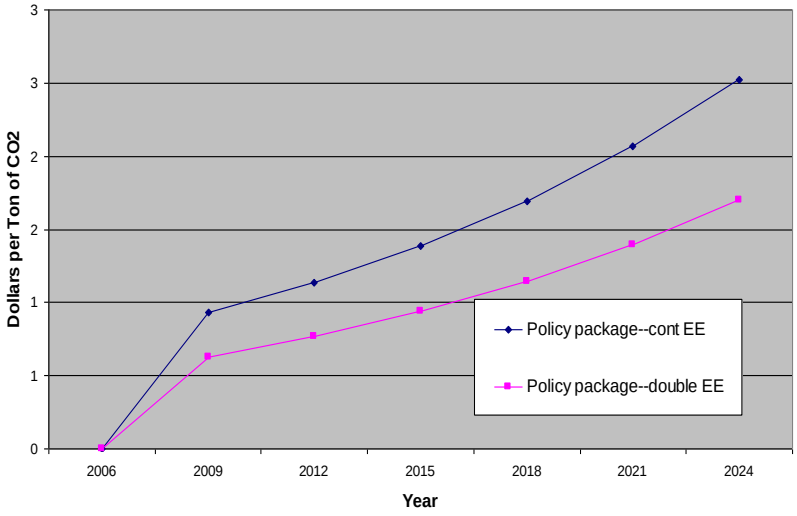


Source: McKinsey & Company, 2007.

RGGI: Poster Child for EE and Climate Policy







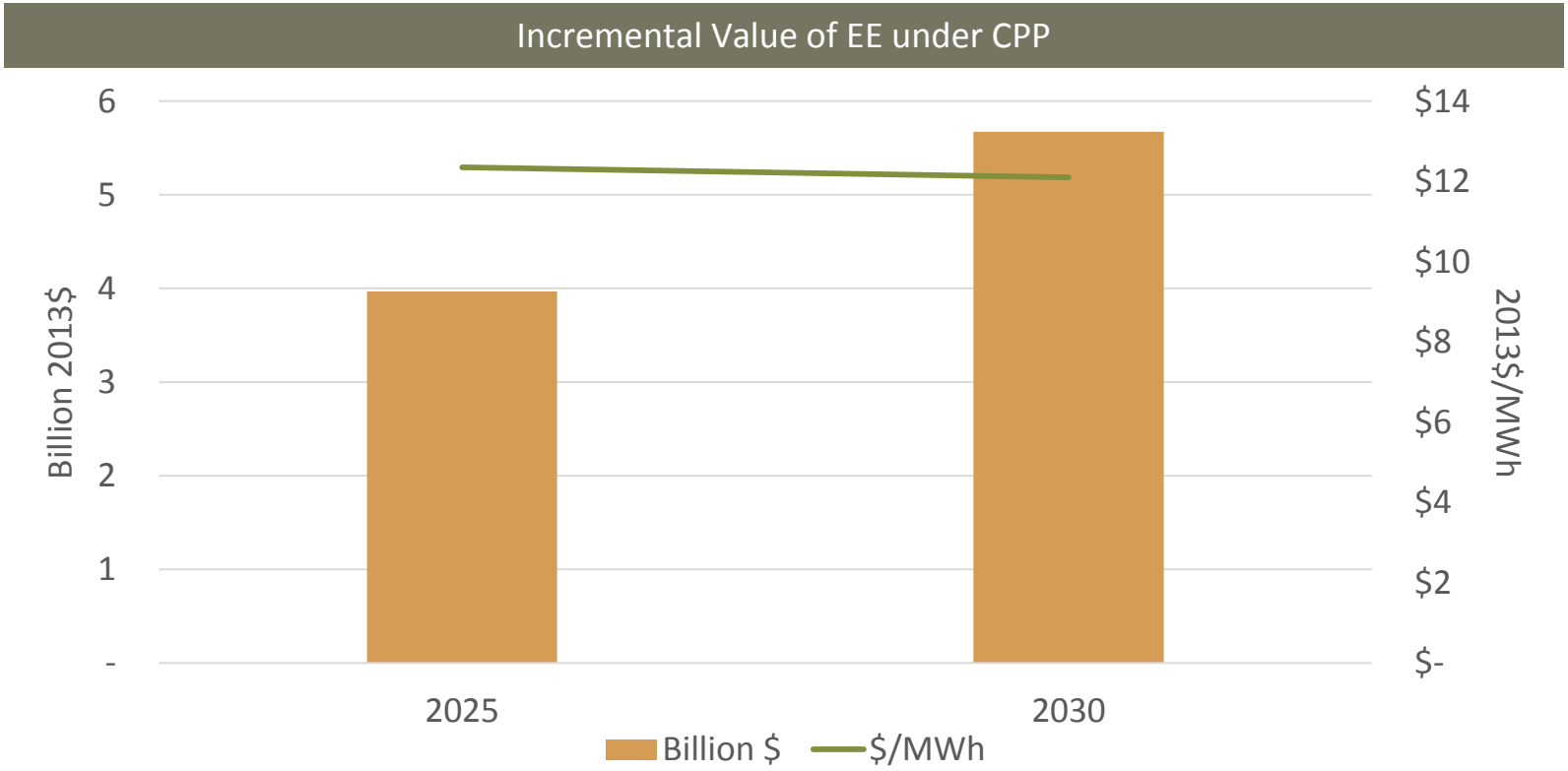
ICF's IPM modeling used ACEEE-developed EE potential to estimate effects on emissions, generation, wholesale prices, and allowance prices.

Methodology for ICF's 2014 analysis

- Used EPA draft-rule assumption of EE potential at 1.5% of power sales
- Used IPM® to estimate U.S. costs of electricity production under 4 scenarios that varied by:
  - Policy: With and without CPP draft rule, modeled as state-specific tradable rate standard similar to EPA's Option 1 State Case
  - EE level: No incremental ("Frozen") and EPA BSER ("Additional"), consistent with penetration assumed in EPA draft rule Regulatory Impact Analysis
- Used the "difference of differences" to estimate the incremental value of EE as a compliance mechanism under the draft CPP rule

Key Findings of the 2014 Analysis

- Under CPP, EE reduces system costs $32B-$44B in 2025-2030
- EE cost reductions are $4-6B greater under CPP than without it
- CPP increases EE value by 14-15%, or about $.012/kWh

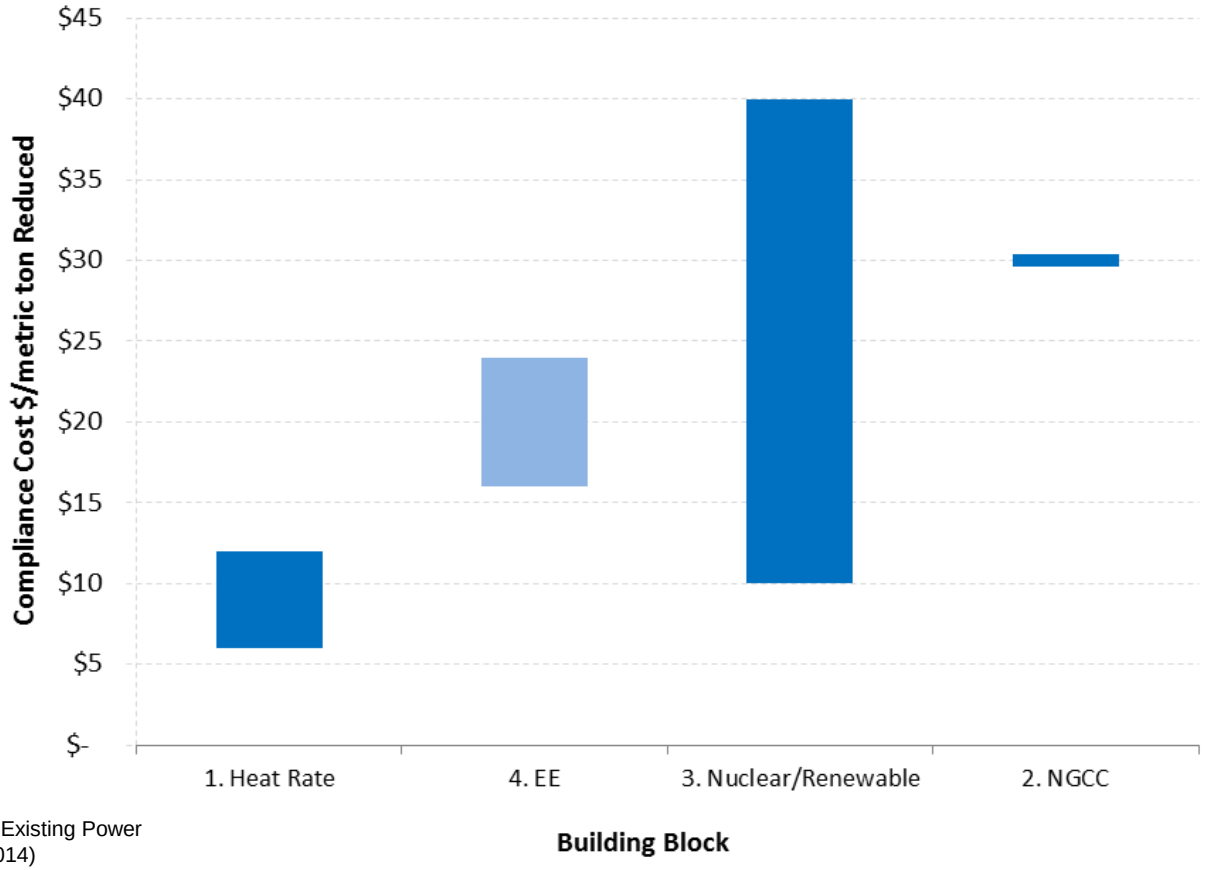


Source: ICF

EE Economics under the CPP

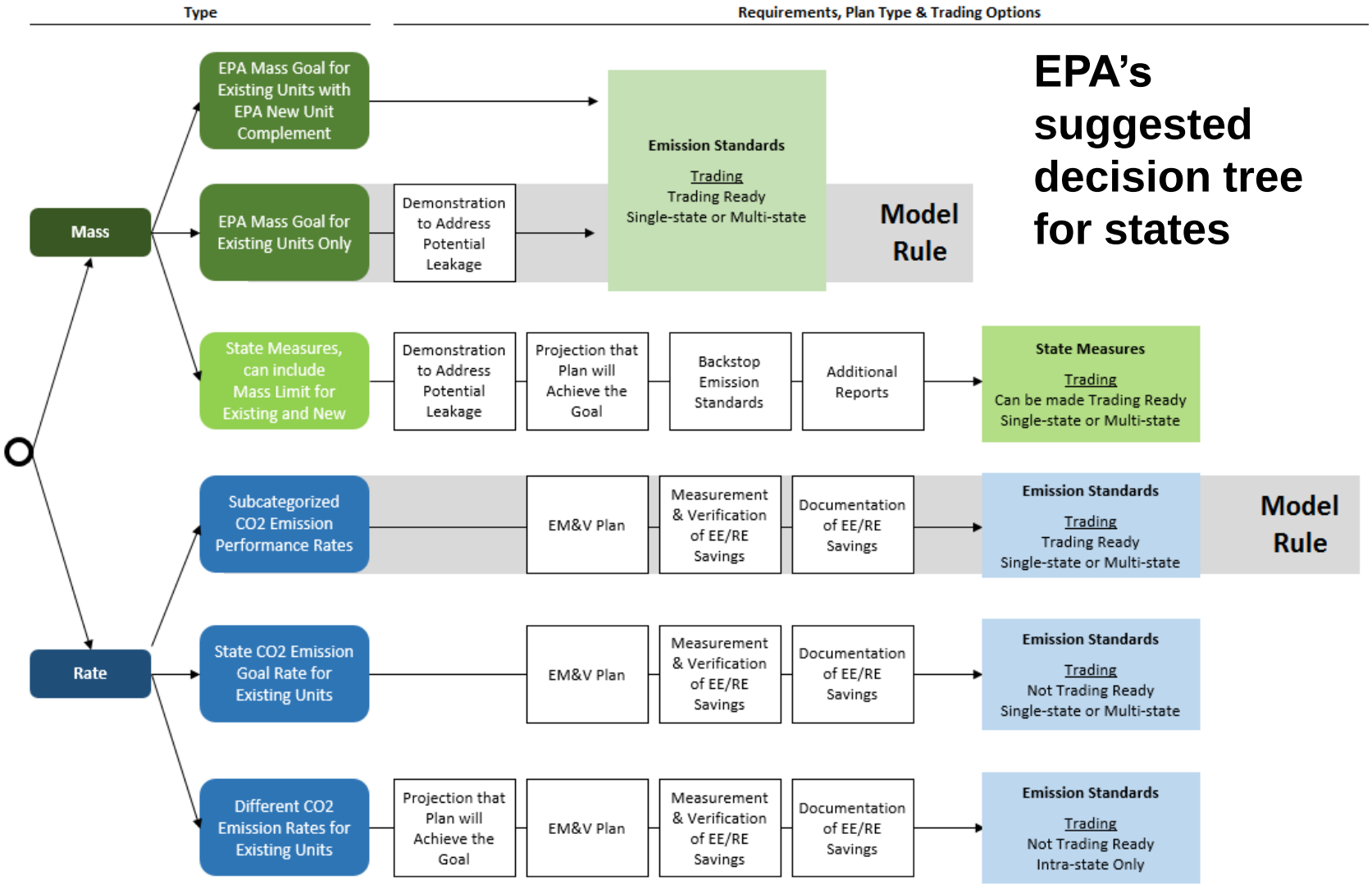
- The CPP could change the game on EE cost-effectiveness … from an avoided-cost-basis to a cost-of-compliance basis

Building Block Compliance Costs (EPA estimates)



Source: Carbon Pollution Guidelines for Existing Power Plants, 79 Fed. Reg. 34829 (June 18, 2014)

Compliance Paths: The Final Frontier

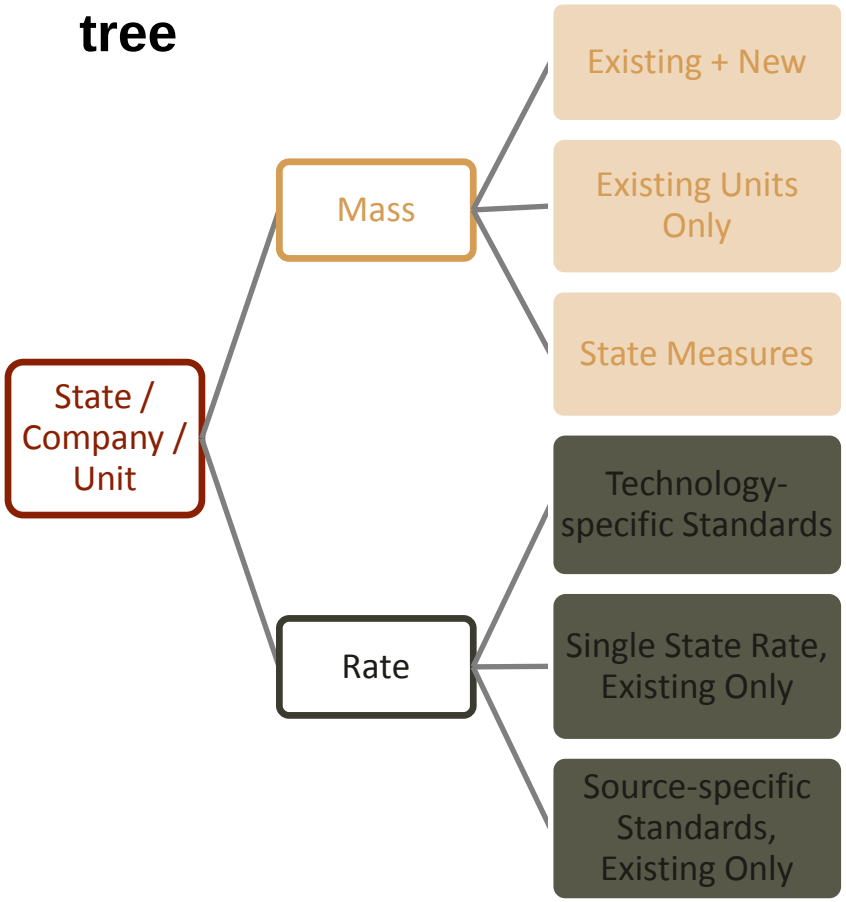


EPA's suggested decision tree for states

Source: U.S. EPA

Key Questions Along the Compliance Path

ICF's take on the decision tree



STEAM	NGCC	RE/EE/NE
Does new source complement allow for sufficient demand growth?		
How do you address leakage from affected to unaffected new sources?		**EE policies and programs aid compliance**
How do affected source components interact with backstop?		
Does gas-shift cause different CO2 prices for steam & NGCC?		**How does EE fit into the target rate? What EM&V is needed? Who plays under what rules?**
Relative dispatch impacts	Relative dispatch impacts	
Designing approach to set standards		

EE and the CPP Final Rule: Key Takes

- EE was removed from the "building blocks" of the final rule emissions targets; ***but EE remains a compliance strategy***.
  - Confirmed by EPA documents and EPA & White House officials
- The final rule proposes a Clean Energy Incentive Program to give early compliance credit for RE and low-income EE in 2020-21.
  - Proposed in EPA's federal implementation plan, still subject to comment and finalization.
- How EE plays in CPP compliance depends on how states structure their compliance strategies.
  - Two main compliance paths are "rate-based" and "mass-based"
  - Rate-based path would subject EE to hard-number calcs and rigorous EM&V
  - Mass-based path makes EE an indirect/complementary option, so much less burden for quantification/EM&V
  - RGGI uses mass-based methods, funds EE via allowance auctions

Key Questions for EE in CPP Plans

- Will the state choose emission-rate or mass-based compliance?
  - Emission-rate compliance will require rigorous EM&V for EE, could make it tougher for states to include
- How will EE play into DSM program planning?
  - Initial state plans due 2016, finals 2018, but litigation could slow down the process; 16 states have already requested a stay of the rule
  - State air agencies may ask PUCs to handle utility DSM, so some PUCS may ask utilities to submit EE plans as early as 2016
- How will the CEIP be implemented?
  - In rate-based compliance plans only?
  - EPA/WH officials say it may cover any EE in “low-income communities.”
- What will EM&V requirements be?
  - EPA guidance applies only to rate-based compliance
  - Guidance points toward current best practices, not new layers of EM&V

Considerations for State EE-CPP Analyses

- What's the compliance path—mass vs. rate?
- Is the state going solo or jointly, or with trading?
- What are the costs of compliance options—capital, fuel, O&M?
- What are the applicable EE measures?
- What forms of EE will be enabled?
  - Traditional DSM, ESCO bidding, tradable credits, energy codes?
- How will EE measures be constrained?
  - Traditional cost-effectiveness?
    - Traditional avoided costs?
    - Comparative cost of compliance?
  - Full economic potential, or achievable?
  - Will rate impacts be considered?
    - If so, are they weighed against total plan costs over the compliance period?

Examples of EE Deployment in CPP Plans

1. **Emission-rate compliance: Business As Usual**
   - Air agency assigns credits for PUC-regulated DSM credits along with generation options
   - PUC following established planning, cost recovery, and EM&V
2. **Emissions-rate compliance: Innovative**
   - Tradable-credit system set up; utilities, ESCOs, large customers bid
   - Generators buy credits on white certificates market along with RECs
   - Multistate trading reduces/levels out allowance prices
3. **Mass-based compliance: Business As Usual**
   - Air agency collaborates with PUC to sustain/expand DSM
   - Compliance plan contains generation-only elements
4. **Mass-based compliance: Innovative**
   - Air agency participates in multistate cap and trade system
   - Emission allowances auctioned, most $ go to EE
   - EE administered competitively by utilities, third parties, local governments

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