RAP Energy solutions for a changing world

EPA's Clean Power Plan (CPP): Overview, Issues, & Opportunities

Market Transformation Through Leadership
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Introduction

- The Regulatory Assistance Project (RAP) is a global, non-profit team of energy experts, mostly veteran regulators, advising current regulators on the long-term economic and environmental sustainability of the power and natural gas sectors. (www.raponline.org)
  - *Foundation-funded; some contracts*
  - *Non-advocacy; no interventions*

- Ken Colburn is a Principal at RAP. His experience as an air quality regulator came as Air Director for the State of New Hampshire and as Executive Director of NESCAUM.

EPA's Final Clean Power Plan (CPP) Rule

- Signed August 3, 2015
- Not "final-final" until in Federal Register
  - Expected in September
  - Litigation will follow immediately
- Same general structure as, but significant changes from, June 2014 proposed rule
- *Remember: EPA sets standards; states determine pathways to meet them*

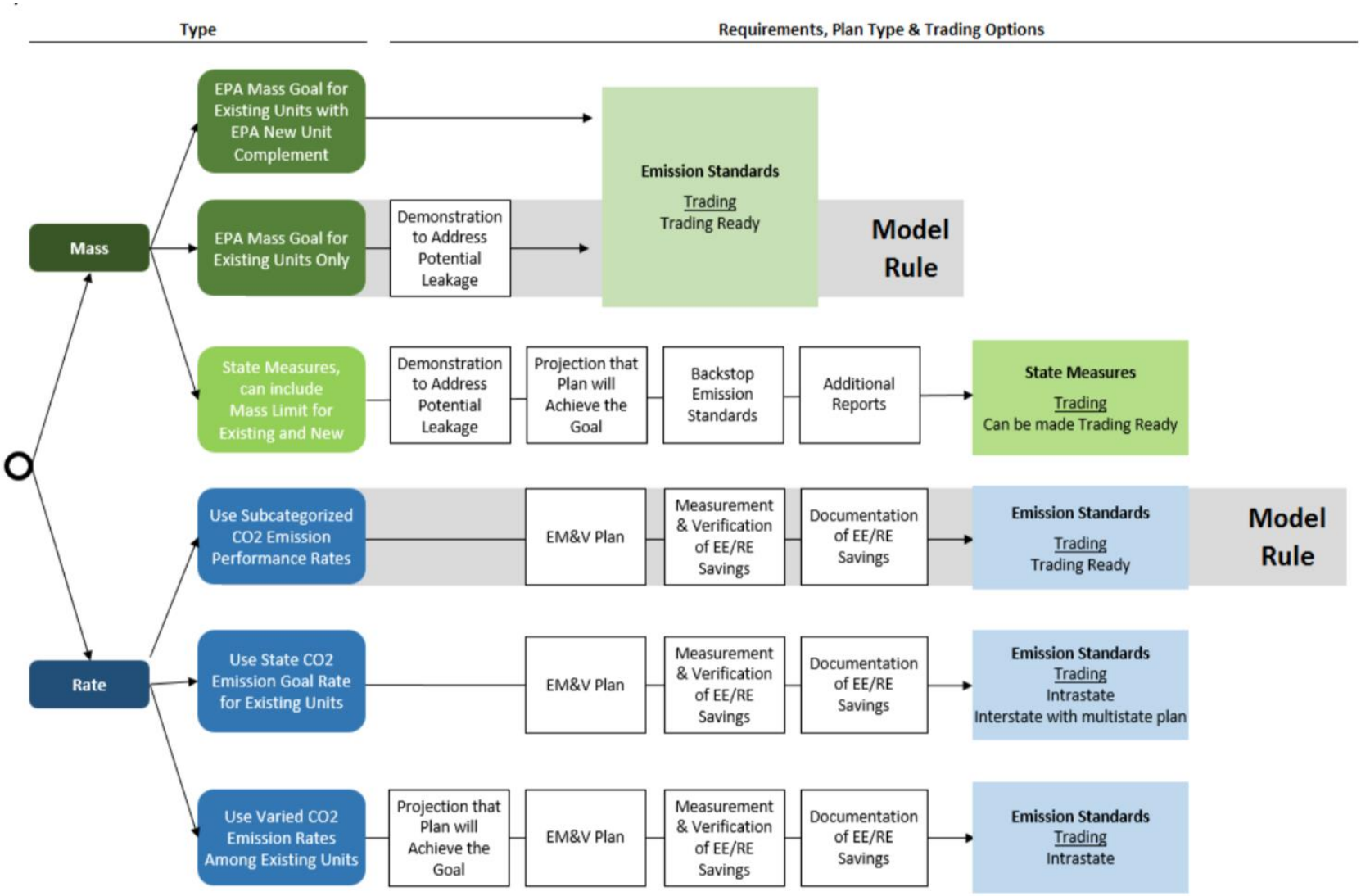
CPP Key Elements (1)

- Compliance period 2022-2030 (+2 years)
- Smoother "glide path" in 3 phases
- 3 "building blocks" (***EE dropped***)
  - Inside-the-fence: 2.1%-4.3% vs. 6%
  - Redispatch to gas: 75% summer net vs. 70% nameplate
  - RE: More new renewables, no existing/nukes
- Uniform national emission rates applied
  - Worse for "more coal" or "less action" states
- Reliability "Safety Valve" added

CPP Key Elements (2)

- 2 approaches (mass-based or rate-based)
- 2 options for state pathways:
  - EGU standards or "state measures"
- "Trading ready" facilitates multi-state
  - By using common metrics and accounting
- Clean Energy Incentive Program (CEIP)
- Timelines – States must submit:
  - Initial plan September 6, 2016
  - Final/full plan by September 6, 2018

Clean Power Plan Compliance Pathways



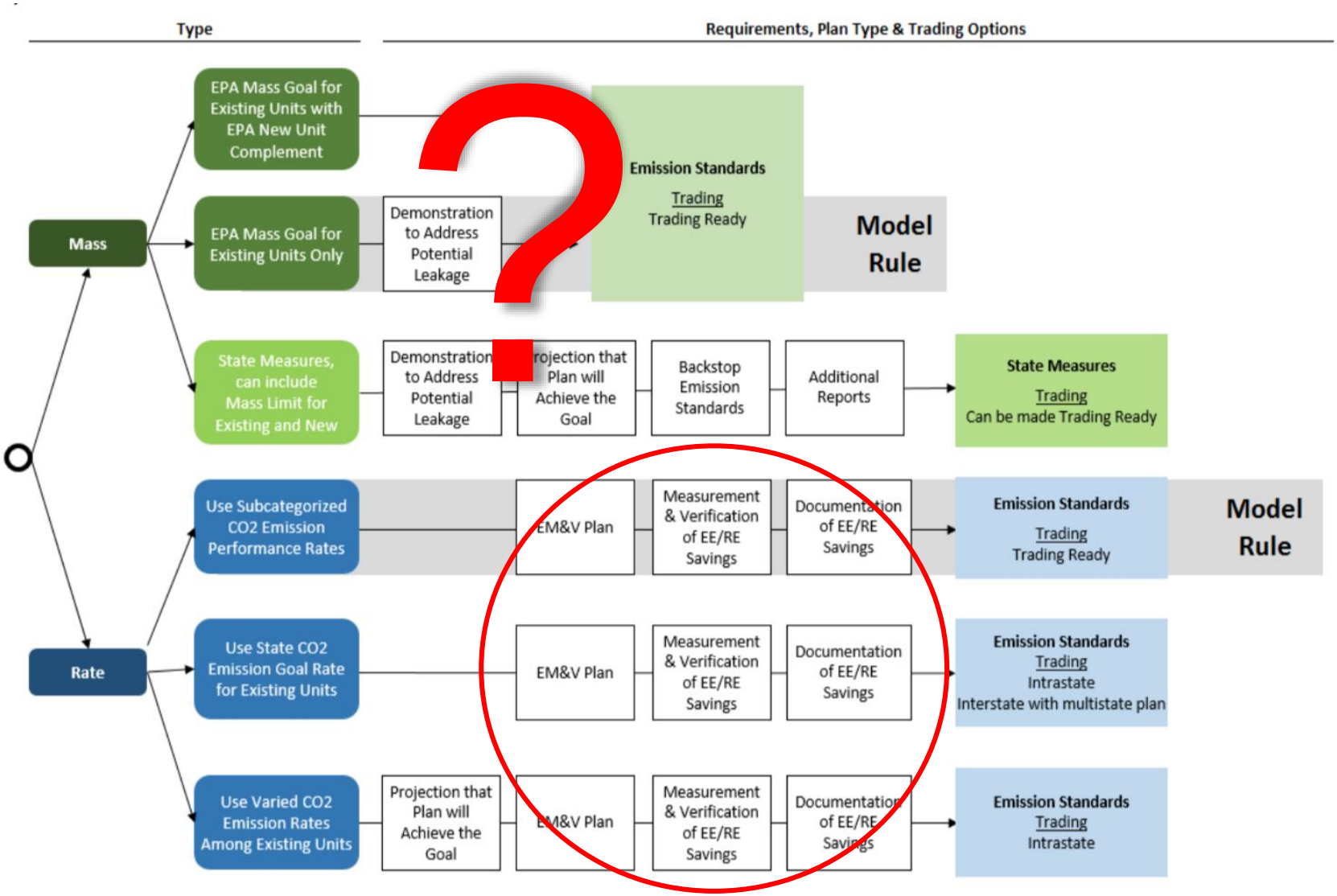
EPA Simultaneously Proposed

- "Federal Plan" for no/inadequate states
  - Doubles as guidance for all states
  - Includes rate- and mass-based; likely only one
- Model Trading Rules
- CEIP implementation
  - 2020-2021 and after state submits plan
- EE EM&V Guidance

Effects

- Overall slightly ***less*** stringent (mass)
  - 32% reduction from 2005, off higher baseline
  - Some states "done" with what's on-the-books
- Greatly improved legal defensibility
  - Actions done "by" vs. "at" EGUs
- Possible "dash to RE" instead of "dash to gas"?
- Credit for EE could be harder to obtain
  - How: State allowance set-asides? EGU DSM?
  - How can private EE (ESCOs) get credit?
- EE EM&V remains unnecessarily complex

Clean Power Plan Compliance Pathways



Recommendations

- Engage with your states ASAP to push EE
  - Pathway choices, EE opportunity & how, etc.
  - EPA Regional Offices, trade associations too
- Comment on proposed rules and EM&V
  - ~60 days left
  - RAP's "Mobile Source Analogy": www.raponline.org/document/download/id/7501
- Elevate multi-pollutant/water solutions
  - New ozone standards coming soon
  - RAP's "IMPEAQ": www.raponline.org/document/download/id/6440

Thank You for Your Time and Attention

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts focused on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies to:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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Additional Slides

Not Easy: Quantifying Avoided Emissions from EE Policies and Programs

1. Develop a **baseline** forecast of energy consumption and associated emissions
2. Determine which EE policies and programs are already **embedded** in the baseline forecast
3. Quantify the expected **energy savings** from incremental [illegible]
   - EM&V?
   - Net vs. Gross?
   - Free Riders?
4. Quantify the expected **avoided emissions** from increm[illegible]
   - Marginal Plant?
   - Time of Day?
   - In-State or Out?

Very Short Compliance Window!

Ways Around the "EM&V Problem"

- Apply a "***Mobile Source Analogy***" to EE
  - RAP Paper: *Driving Energy Efficiency (www.raponline.org/document/download/id/7501)*
- Deemed Energy Savings" for good EE programs…
  - Why not "**Deemed *Emission Reductions***" too?
- "**AP-42 *Emission Factors***" hierarchy approach…
  - Why not apply to EE emissions reductions?
- ***Modeling***: EPA provides the MOVES model for states to assess vehicle emissions…
  - Why not a similar model for EE (AVERT?)
- "**Rule Effectiveness**" imposes conservative results

Table 1

Similarities Between Mobile Source and Energy Efficiency Programs

Attribute	Commonality	Mobile Sources	Energy Efficiency
Source Characteristics	Sources are numerous, dispersed, and decentralized	Thousands or millions of vehicles operate in major metropolitan areas and statewide	Thousands or millions of light bulbs, appliances, and motors are installed in metropolitan areas and statewide
Program Characteristics	Programs may be concentrated or dispersed	Programs may be concentrated or dispersed (e.g., requirements for the entire vehicle fleet, corporate vehicle fleet requirements, or individual buyer choices)	Installations may be concentrated or dispersed (e.g., statewide building codes, multiple property or whole building retrofits, or single family home retrofits)
Program Benefits	Aggregation of improvements over numerous small sources can yield large emissions reductions	Improvements in vehicle operation (through lower evaporative, combustion, and tailpipe emissions) and fewer vehicle miles traveled result in reduced emissions	Reduced electricity demand on the grid results in less power production and reduced EGU emissions
Emissions Reductions Quantification	Algorithms are based on statistical sampling and performance data	Emissions reductions are determined using EPA-approved modeling and guidance, based on field-test data and state-specific inputs	Energy savings are determined by field tests for devices and aggregated using technical reference manuals (TRMs) and Evaluation, Measurement, and Verification (EM&V) protocols Emissions reductions can be derived from energy savings, given EPA-approved methods and guidance
Performance Assessment Data	Key variables include manufacturing parameters, vintage, persistence (the estimated lifetime of the units), and operating characteristics	Vehicle tailpipe and other field-testing occurs at approved laboratories (e.g., EPA Ann Arbor, California Air Resources Board, and South Coast); models and guidance are developed by EPA	Device-specific analytical and field-test data are provided by EPA- and state-approved sources (e.g., the Northwest Power & Conservation Council's Regional Technical Forum)
Compliance Assurance	Compliance is state-based (or shared within a regional, multi-state program)	State regulatory programs assure compliance	Routine, independent third-party EM&V and field audits assess installation rates, performance, and persistence against benchmarks from approved sources
Tools, Models, and Methods Used	Simplifying quantification to be workable requires readily available, approved (or readily approvable) tools	EPA-developed or approved mobile source models are used by federal, state, and local agencies for air quality planning purposes and assessing emissions benefits	For energy savings: best-practice EM&V; utility planning models; Independent System Operator/ Regional Transmission Operator models For avoided emissions calculations: EPA calculators and tools; EPA-approved estimation protocols; ISO-New England's evaluation of marginal emissions rates
Limitations	Locational and temporal uncertainty is associated with sources and uses	Regulators don't know where, how, or how much each vehicle is driven or at what time of day	Regulators don't know where each device is installed, how it is used, or its precise hours of operation

Driving Energy Efficiency: Applying a Mobile Source Analogy to Quantify Avoided Emissions (www.raponline.org/document/download/id/7501)