

OPTIONS FOR STATES IMPLEMENTING CARBON STANDARDS FOR POWER PLANTS

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Great Plains Institute's Approach

CONVENE

- Gather key energy stakeholders with diverse views

INFORM

- Use transparent research and analysis to inform discussions and decisions

AGREE

- Develop solutions through consensus

ACT

- Change policy, speed technology adoption, and practice innovation.



PART II: Potential Pathways for States

- EPA's "Instructions" under 111(d)
- The State's Role
- State 111(d) Plans: What Might they Look Like?
- Regional Considerations



What will be in EPA's Guidelines?

- EPA's own rules specify the contents of section 111(d) guidelines to the states:
 - Description of system(s) of emissions reductions EPA considers adequately demonstrated;
 - Degree of emissions limitation achievable, costs, and environmental impacts;
 - Time periods for compliance; and
 - Other helpful information. (40 CFR §60.22).



EPA Guidelines = Instructions

- EPA's 111(d) guidelines are like instructions to the states:
 - Stringency:
 - rate of emissions per unit of electricity production; or
 - mass-based emissions “budget”; and
 - Timeline for compliance; and
 - Some sense of what states can do in an approvable 111(d) plan.



Clean Air Act on State's Role

- Section 111(d) calls for a state plan to be developed in a “process” similar to the way a state develops state implementation plans under Section 110 of CAA.
- State plan must establish “standards of performance” for “any existing source”.
- States can take into account “remaining useful life” of its power plants.



“Standard of Performance” Defined

The term “standard of performance” means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated. §111(a)(1).



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What Can States Do?

- EPA and experts agree that states have broad flexibility in 111(d) planning:
 - Get reductions at the plants or on the system?
 - Mass-based vs. rate-based?
 - Cooperate with neighboring states?



Some Key Things to Bear in Mind

- Section 111(d) plans cover existing power plants—so the plans must ultimately apply standards to these plants even if they are system-based.
- Plan must be implementable and enforceable.
- Stringency must be equivalent to federal guideline.
- Must determine what “remaining useful life” means.



Possible Approaches States May Take

- Approaches under consideration to date include:
 - ① Traditional plant-level performance standards;
 - ② Mass-based utility portfolio approach with an emissions budget;
 - ③ Rate-based standard with trading;
 - ④ Mass-based emissions budget with trading; or
 - ⑤ Carbon value or carbon “adder” approach.



Traditional plant-level performance standards

- A traditional plant-level performance standard would impose a strict emissions limitation (i.e. a cap) or a strict emissions rate limitation (i.e. a rate of emissions per unit of power produced) on each plant.
- No flexibility.
- This approach does not seem to have many adherents at the state level, though some have suggested EPA's federal stringency should be based only on what can be done at the plant to get reductions.



Mass-based utility portfolio approach

- The utility is given an emissions budget, i.e. the total number of tons of CO₂ that can be emitted by the utility across its portfolio in a year.
- The utility must not exceed its emissions budget, and to stay under this budget it can:
 - Plant-level heat-rate improvements;
 - Fuel switching;
 - Retirements;
 - End-use energy efficiency; or
 - Renewables.
- Because compliance is determined at the aggregate level—the emissions coming from the plants—precise measurement of each reduction measure not needed



Rate-based standard with trading

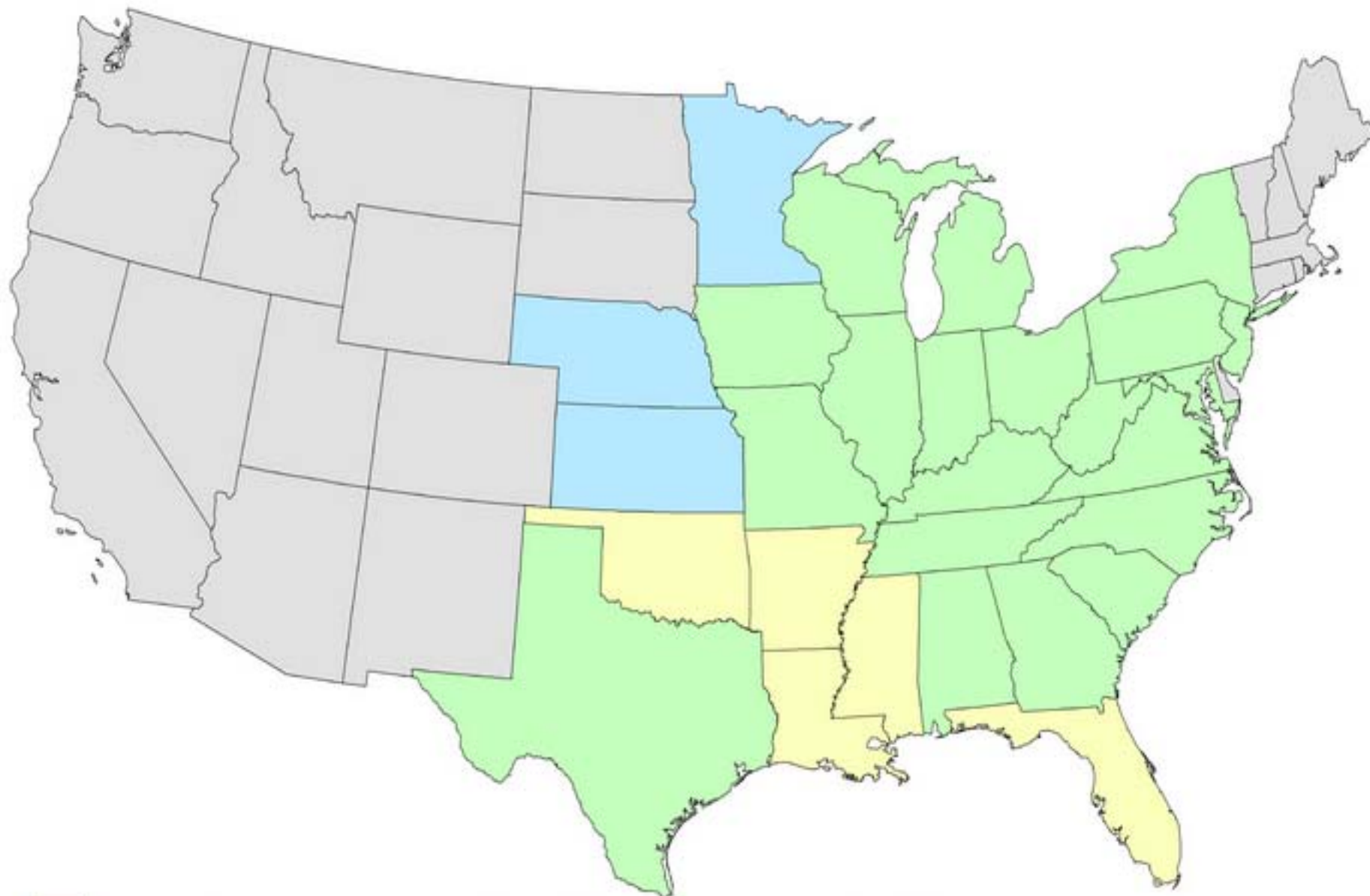
- One or more emissions rates imposed on existing power plants.
 - Plants that do better than the rate generate credits that can be sold to other plants; and
 - Plants that do worse than the rate must purchase credits to improve their emissions rate.
- If the program design allows it, energy efficiency projects, renewable energy and nuclear could receive credits. A crediting system must be developed and presumably approved by EPA.
- States have generally not embraced the rate-based approach, favoring the mass-based approaches.



Mass-based emissions budget with trading

- In a mass-based emissions budget with trading, a state gets an emissions budget and issues allowances (or permits) to emit.
- Power plant owners receive or purchase the allowances and must turn in enough allowances to “cover” all of the plant’s emissions on a set date.
- Emissions allowances have value and that value can be directed to fund energy efficiency programs or reward EE results.
- This is the approach used in most states in the eastern half of the country under CAIR, CSAPR





- States controlled for both fine particles (annual SO_2 and NO_x) and ozone (ozone season NO_x) (20 States)
- States controlled for fine particles only (annual SO_2 and NO_x) (3 States)
- States controlled for ozone only (ozone season NO_x) (5 States)
- States not covered by the Cross-State Air Pollution Rule

Carbon Value Approach

- Under this approach, states require each generator to pay a carbon charge for every ton of emissions associated with its generation.
- Sometimes referred to as the “carbon adder” approach because the charge becomes part of a generator’s bid into the wholesale electricity market (for those in such a market), affecting dispatch of plants.
- Revenue generated can be returned to the load serving entities or otherwise directed.
- Revenue can be used for EE investments that offset costs of program by reducing consumption and driving jobs.



Would it make sense to cooperate with other states?

Benefits of Regional Action

- Lower costs overall
- Consistency with regional electricity markets
- Fewer seams issues—where generation and consumption are in different states
- Reliability benefits—because reductions are spread over wider area.

Challenges of Regional Action

- Need time to organize
- Need to reach agreement/understanding with other states
- May need regional administrative system



Key Issues to Watch

- How does EPA set federal stringency for states to meet in 111(d) plans?
 - What role does flexibility play?
 - Is it system-based or unit-based?
- Under what circumstances may states diverge from the federal stringency?
 - How does “remaining useful life” figure into stringency in state plans?
 - What role does early action play?



Key Issues to Watch

- Will EPA offer a federal model rule for states?
- How will EPA address timing issues for states that want to develop creative plans and/or work regionally?
- Will states work together across RTOs/ISOs, recognizing the benefits of matching programs with electricity markets?



THANK YOU!

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