

Affordable Clean Energy Rule

Overview and Plan Development

ARKANSAS
ENERGY & ENVIRONMENT

Clean Air Act § 111(d)

- For existing sources
- EPA sets guidelines
- States adopt standards and submit state plans
- EPA may approve or disapprove states plans
 - EPA promulgates a federal plan for states that fail to submit approvable plans

ACE Rule

- Promulgated July 8, 2019
- Addresses CO₂ emissions from existing coal-fired power plants
- Replaces Clean Power Plan (CPP)
- Included revisions to 111(d) framework rules

Comparing the CPP & ACE

CPP

- Power plant efficiency & generation shifting-based guidelines
- Standards:
 - Rate (lb/MWh) or mass (tons)
 - Statewide goals
- Variety of compliance options:
 - Inter- or intra-state trading
 - Energy efficiency
 - Biomass

ACE

- Power plant efficiency-based guidelines
- Standards:
 - Rate (lb/MWh)
 - Unit-specific
- Unit-level compliance

EPA Rationale for Replacing CPP with ACE

- Exceeds EPA's authority:
 - Requires generation shifting
 - Outside-the-fenceline measures used for guidelines and allowed for compliance
- Stayed by Supreme Court
- Many states, including Arkansas, opposed to CPP

ACE Guidelines

- Efficiency Gains (heat rate improvement) from:
 - 6 candidate technologies
 - Neural network/intelligent sootblower
 - Rebuild/replace boiler feed pumps
 - Air heater and duct leakage control
 - Variable frequency drives
 - Steam turbine blade path upgrades
 - Redesign/replace economizer
 - Best operating and maintenance practices

Ranges of Efficiency Gains

HRI Measure	< 200 MW		200 - 500 MW		> 500 MW	
	Min	Max	Min	Max	Min	Max
Neural Network/Intelligent Sootblowers	0.5	1.4	0.3	1.0	0.3	0.9
Boiler Feed Pumps	0.2	0.5	0.2	0.5	0.2	0.5
Air Heater & Duct Leakage Control	0.1	0.4	0.1	0.4	0.1	0.4
Variable Frequency Drives	0.2	0.9	0.2	1.0	0.2	1.0
Blade Path Upgrade (Steam Turbine)	0.9	2.7	1.0	2.9	1.0	2.9
Redesign/Replace Economizer	0.5	0.9	0.5	1.0	0.5	1.0
Improved Operating and Maintenance (O&M) Practices	Can range from 0 to > 2.0 % depending on the unit's historical O&M practices.					

Requirements for State Plans

- Unit-specific evaluation of candidate technologies/practices
- Adopt standards, monitoring, recordkeeping, and reporting requirements
- Project future operating characteristics of each unit through 2035
- Submit plan for EPA approval/enforceability by July 8, 2022

Factors in Evaluation

- Feasibility of each technology/practice at the unit
- Recent, independent installation of candidate technologies
- Interactions that reduce efficiency gains from candidate technologies
- Variable emission performance
- Remaining useful life of unit
- Unreasonable cost resulting from plant age, location, or design

Standards Setting

- Based on cumulative impact of all applicable technologies/practices
- Unit-specific and rate-based
- Adequate monitoring, recordkeeping and reporting to ensure compliance
- Compliance within two years after state plan submission
 - Increments of progress required if two years not feasible

Unit Future Operating Characteristics

- Projections through 2035
 - Annual generation
 - CO₂ emissions
 - Fuel use, fuel prices, fuel carbon content
 - Fixed and variable operations and maintenance costs
 - Heat rates
 - Electric generation capacity and capacity factors

Changes to 111(d) Framework

- 3 years for states to submit plan
- 6 months for EPA to determine completeness
- 1 year after completeness determination for EPA to approve or disapprove plan
- 2 years after state fails to submit plan or EPA disapproves plan to promulgate a federal plan

Arkansas Plan Development General Process Overview

Subject unit identification , technical information collection and assessment



Proposal of plan/enforceable measures with Governor approval



Public comment/hearing



Legislative review of enforceable measures (if rulemaking)



Adoption of enforceable measures/plan



Submission to EPA

Additional Requirements

Ark. Code Ann. § 8-3-201 *et seq.*

- Only applies to power plant CO₂ plans
- Legislative Council
 - Reports/review/approval prior to rulemaking
 - Review/approval of final plan
- Option to waive additional requirements

Power Sector Impact Report

- Reliability
- Generation Mix
- Stranded Investment

Rate Impact Report

- Affordability of Electricity
- Impacts on low and middle class households

Economic Impact Report

- Employment
- Economic Development
- Competition
- Tax Revenue

Waiver Granted

- DEQ requested waiver from additional requirements on the basis that ACE does not:
 - Require generation shifting
 - Close any power plant
 - Impose a statewide greenhouse gas goal or limit
- Legislative Council granted waiver on 9/20/19

Subject Unit Identification

7
units
at 5
power
plants

Flint Creek

Independence 1

Independence 2

John W. Turk

Plum Point

White Bluff 1

White Bluff 2

Technical Information Collection

- Information collection request
 - Studies to assess feasibility, cost, and efficiency impacts of each candidate technology/practice
 - 120 days to respond
- Future operating characteristics – via information collection request or third-party study

Standards Determination

- Unit-specific cumulative efficiency gains from applicable technology/practices
- Form of standard
 - Rate net or gross generation
 - Single versus variable rate for idling, start-up, shut-down, baseload, and/or load-following operations
 - Averaging time

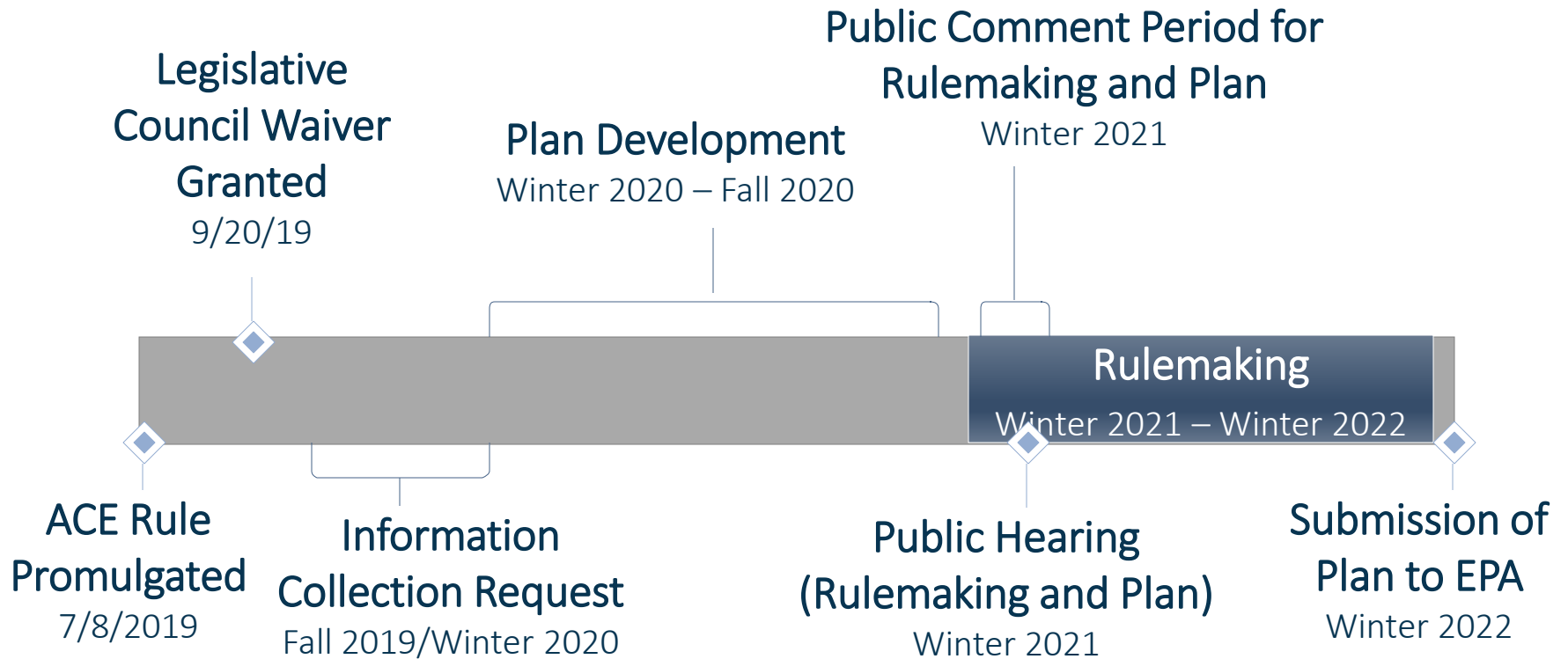
Adoption of Standards

- Enforceable Measures
 - Emission rates
 - Compliance times
 - Monitoring, recordkeeping, reporting
- Options (all require public notice):
 - Consent administrative order
 - Permit revision
 - Rulemaking through Arkansas Pollution Control and Ecology Commission

State Plan Proposal and Submission

- Propose concurrently with proposal of enforceable measures
- Subject to public comment & hearing
- Final plan submission by Governor

Anticipated Timeline





Questions

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