

AQCC Briefing: EPA's Proposed Carbon Pollution Standards

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Presentation by Dena Wojtach,
Air Pollution Control Division



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BACKGROUND

- **Terminology/Concepts**
 - Greenhouse gas (GHG)
 - New, Modified, Reconstructed and Existing Units
- **History**
 - *Massachusetts v. EPA* (4/2/07)
 - Vehicle Emission Standards (model year 2012)
 - Tailoring Rule (1/2/11)
 - Settlement Agreements



CAA § 111 - Standards of Performance for New Stationary Sources (NSPS)

111(b)

- New, Modified, Reconstructed Stationary Sources from Listed Categories
- Establishes
 - Best System of Emission Reduction (BSER)
 - Cost
 - Technical feasibility
 - Non-air quality health/environmental impacts
 - Energy requirements
 - Emission Standards (criteria pollutants)
- Applies Directly to Sources

111(d)

- Existing Stationary Sources from Listed Categories (a.k.a. ESPS)
- Addresses Any Air Pollutant:
 - No National Ambient Air Quality Standard (NAAQS)/air quality criteria
 - Not regulated under CAA §112
 - New unit NSPS promulgated for that pollutant for that source category
- Applies Directly to Agency
 - State Plan
 - Federal Plan
- Requires establishment of
 - BSER, considering remaining useful life
 - Emission standards

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Proposals Address

- NSPS Da – fossil-fuel fired electric steam generating units
 - Large Boilers
 - Combined Cycle Turbines & Duct Burners
 - Emission Standards:
 - PM
 - SO₂
 - NO_x
 - Hg
- NSPS KKKK – natural gas fired stationary combustion turbines
 - Large turbines, excluding duct burners & heat recovery steam generators
 - Emission Standards:
 - SO₂
 - NO_x
- NSPS TTTT – GHG for Electric Generating Units
 - Steam generating unit, Integrated Gasification Combined Cycle Unit, Stationary Combustion Turbines
 - Emission Standard: CO₂
- NSPS UUUU – Emission Guidelines for GHG Emissions and Compliance Times for Electric Generating Units
 - State Plan
 - Emission Standard: CO₂



2012 Proposal

- **Applied to:**
 - **New, Modified, Reconstructed electric generating units (EGU) >4/30/12**
 - **Exempted transitional sources**
 - **Base load rating >73 MW fossil fuel; and**
 - **Permitted <4/30/12**
 - **Exempted simple cycle combustion turbines**
- **NSPS TTTT**
- **Established:**
 - **CO2 emission standards**
 - **1,000 lb/MWh gross 12 mo rolling avg; or**
 - **w/Carbon Capture & Storage (CCS)**
 - **1,800 lb/MWh gross (1st 10 yrs) 12 mo rolling avg;**
 - **600 lb/MWh (11 yr +) 12 mo rolling avg; and**
 - **1,000 lb/MWh 30 mo rolling avg**

2014 Proposals

- **Withdraw 4/13/12 proposal**
- **Re-propose**
 - **New Units (1/8/14)**
 - 6/12/14 comments due
 - <6/1/15 or “timely” finalization of rule
 - **Mod/Reconstructed Units (6/18/14)**
 - 10/16/14 comments due
 - 6/1/15 final rule released
 - **Existing Units (6/18/14)**
 - 10/16/14 comments due
 - 6/1/15 final rule released
 - 6/30/16 implement rule

2014 Re-proposal: New Units

- **Applies to**
 - **Affected facilities: fossil fuel fired steam generating units, integrated gasification combined cycle (IGCC), and stationary combustion turbines**
 - Constructed on or after 1/8/14 (w/ some exceptions)
 - Fossil fuel fired >10.0 % of heat input during any 3 years;
 - Constructed for the purpose of
 - supplying >1/3 of potential electric output capacity, and
 - more than 219,000 MWh as net-electric sales on an annual basis; and
 - Supplies a utility power distribution system for sale on an annual basis
 - >1/3 of potential electric output, and
 - > 219,000 MWh net-electric output.
- NSPS Da, KKKK and TTTT
- **Establishes**
 - **BSER**
 - **CO2 emission standards**
 - **Proposal:**
 - 1,100 lb/MWh gross 12 mo rolling avg; or
 - 1,050 lb/MWh gross 84 mo rolling avg
- **Potentially part of State Plan to address existing units**

2014 Re-proposal: Modified/Reconstructed Units

- **Applies to:**
 - **Affected facilities:** fossil fuel fired steam generating units, integrated gasification combined cycle (IGCC), and stationary combustion turbines
 - **Modification/reconstruction commenced after 6/18/14, and**
 - **Constructed for the purpose of**
 - **supplying >1/3 of potential electric output capacity, and**
 - **supplying more than 219,000 MWh as net-electric sales on an annual basis.**
 - **May simultaneously apply to existing units (severable)**
- **NSPS Da, KKKK & TTTT**
- **Establishes**
 - **BSER**
 - **CO2 emission standards**
- **Potentially part of State Plan to address existing units**

Modified/Reconstructed Unit CO₂ Emission Standards

Alternative 1

- **Modified**
 - **Boiler/IGCC: best historical emission rate + 2% reduction, w/ floor**
 - 1,900 lb/MWh net; or
 - 2,100 lb/MWh net
 - **Natural Gas Combined Cycle (NGCC) Turbine:**
 - 1,000 lb/MWh gross
 - 1,100 lb/MWh gross
- **Reconstructed**
 - **Boiler/IGCC:**
 - 1,900 lb/MWh net; or
 - 2,100 lb/MWh net
 - **NGCC Turbine:**
 - 1,000 lb/MWh gross
 - 1,100 lb/MWh gross

Alternative 2

- **Modified boiler/IGCC:**
 - **Before State Plan**
 - best historical emission rate + 2%, w/ floor
 - 1,900 lb/MWh net; or
 - 2,100 lb/MWh net
 - **After State Plan**
 - Unit-specific standard developed based on Energy Efficiency Improvement Audit

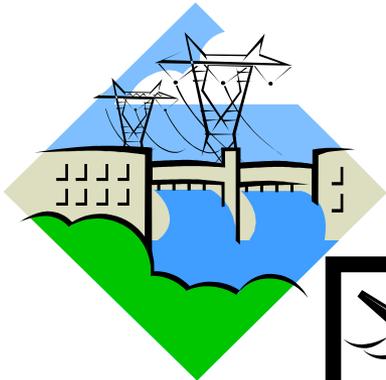
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CO2 Emission Standards Comparison

	2012	2014
New	<p>1,000 lb/MWh (12 mo); or</p> <p>1,800 lb/MWh (12 mo 1st 10 yr); 600 lb/MWh (12 mo, 11+ yr); and 1,000 lb/MWh (30 mo)</p>	<p>1,100 lb/MWh (12 mo); and 1,050 lb/MWh (84 mo)</p>
Modified/ Reconstructed	<p>Same</p>	<p>best historical annual CO2 emissions + 2% reduction, w/ floor:</p> <p>1,900 lb/MWh (12 mo if >2,000 MMBtu/hr)</p> <p>2,100 lb/MWh (12 mo, if \leq2,000 MMBtu/hr)</p>

2014 Proposal: Existing Units

- Applies to
 - States
 - Affected units
 - Other affected entities
- NSPS UUUU
- Establishes
 - State CO₂ Emission Goals
 - Mass vs. Rate Based
 - 4 Building Blocks
 - Heat rate improvement
 - Dispatch changes
 - Renewable Energy (RE)/Energy Efficiency (EE)
 - Demand Side Management (DSM)
 - Interim vs. Final
 - Alternative
 - State Plan Requirements
 - Meet state CO₂ goal
 - Annual Reporting



Existing Units: Colorado Affected Facilities

- **Total facilities: 36**
- **Total units: 99**
 - **Coal-fired: 23**
 - **Natural gas combined cycle turbines: 37**
 - **OG steam: 1**
 - **Other: 38**

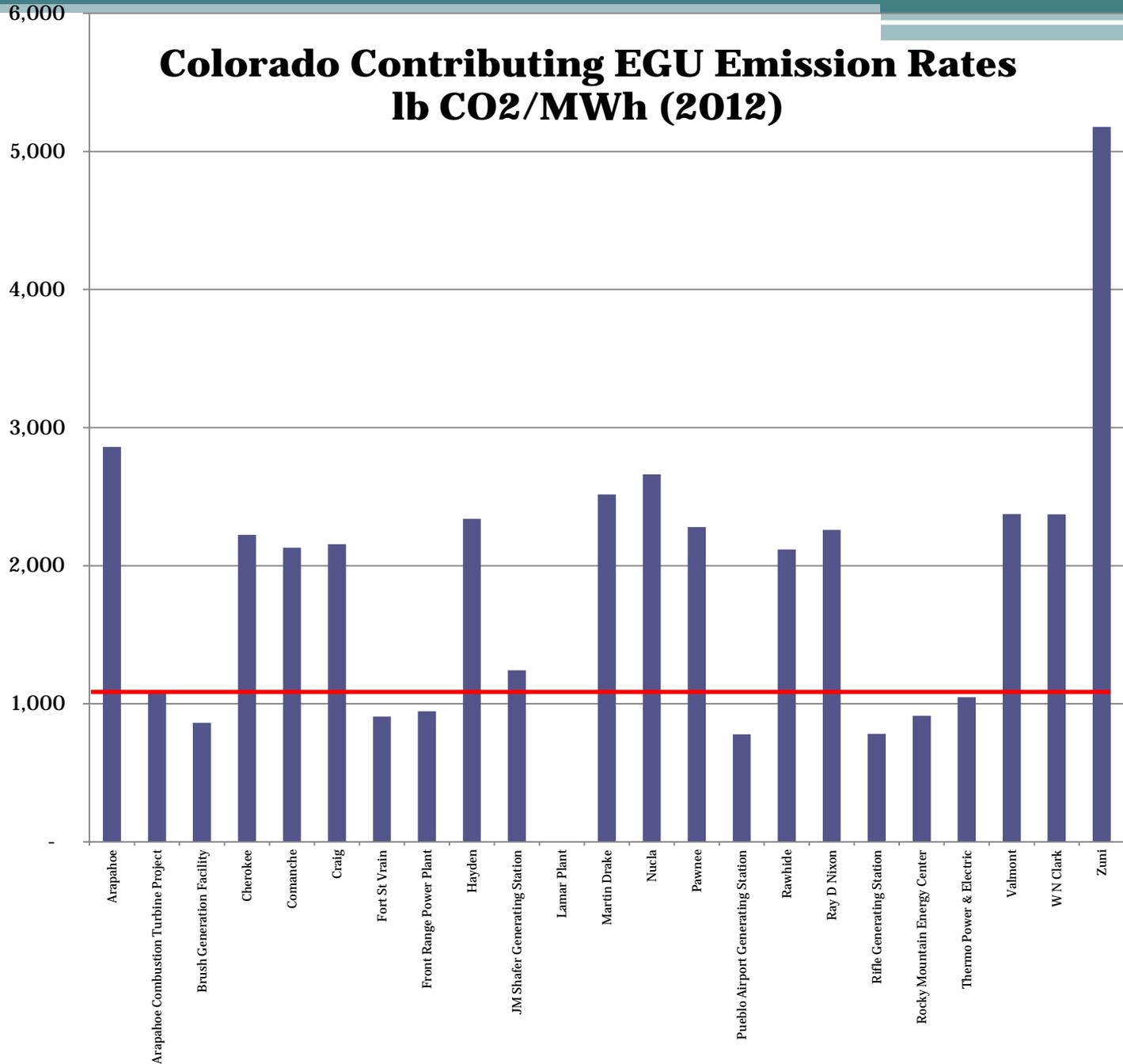
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Proposed Colorado State Goals for Existing Units

	Dates	Colorado CO2 Standard (lb/MWh)	2012 Colorado CO2 Emissions (lb/MWh) ¹	Difference From CO2 Standard (lb/MWh)	Reduction From CO2 Standard (%)
Proposal	2020-2029	1,159	1,714	555	32
	2030+	1,108		606	35
Alternative Proposal	2020-2024	1,265		449	26
	2025+	1,227		487	28

¹ Taken from EPA's "Goal Computation Technical Support Document, Appendix 5's 2012 Emission Rate and Building Block Application for Proposed Final State Goal (2030) Table, Column C.

Colorado Contributing EGU Emission Rates lb CO₂/MWh (2012)



Colorado's 2030 Goal:
1,108 lb/MWh

Timing

New

- 7/29/14 EPA Public Hearing (Denver)
- 6/12/14 Comments Due
- <6/1/15 Final Rule released

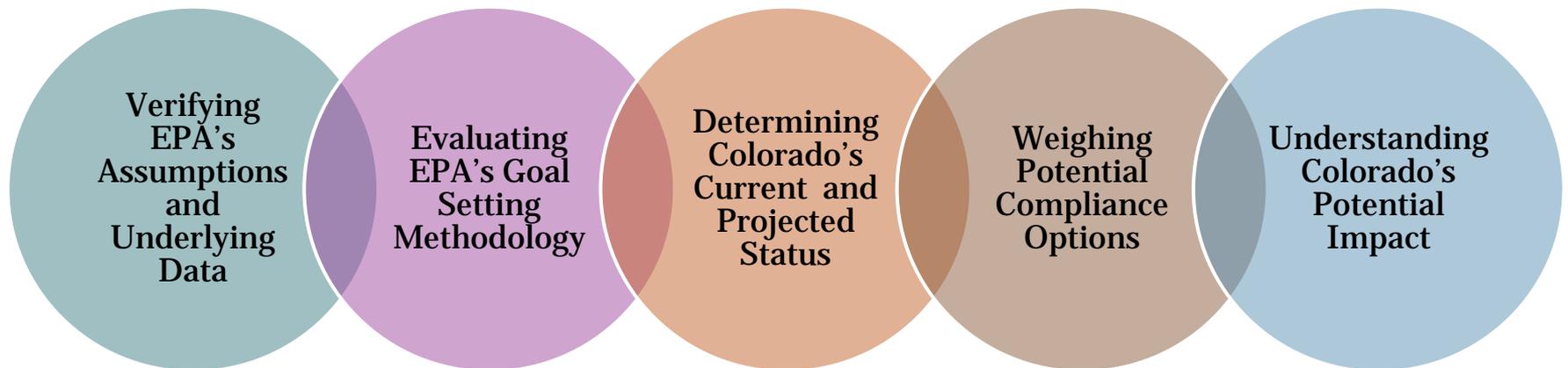
Mod/Recons

- 7/29/14 EPA Public Hearing (Denver)
- 10/16/14 Comments Due
- 6/1/15 Unofficial Final Rule released

Existing

- 7/29/14 EPA Public Hearing (Denver)
- 10/16/14 Comments Due
- 6/1/15 Unofficial Final Rule released
- 6/30/16 State Plans Due (possible 1 and 2 yr extensions)

Current Activities



Next Steps



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