



Calculating Oklahoma's Proposed State Goal

- Proposed goals are based on a consistent national formula, calculated with state and regional specific information.
- The result of the equation is the state goal *(for OK, the state's ultimate 2030 goal under the proposed rule is 895 lbs/MWh).*
- Each state goal is a rate – a statewide number for the future carbon intensity of covered existing fossil-fuel-fired power plants in a state.
 - Encompasses the dynamic variables that ultimately determine how much carbon pollution is emitted by fossil fuel power plants.
 - Accommodates the fact that CO₂ emissions from fossil fuel-fired power plants are influenced by how efficiently they operate and by how much they operate.
- The state goal rate is calculated to account for the mix of power sources in each state and the application of the “building blocks” that make up the best system of emission reduction.
 - EPA Region 6 has developed a “Calculations Walkthrough” document and corresponding spreadsheet to illustrate the process for calculating Oklahoma's proposed goal using the equation.
 - Form of goal: States can use either a rate-based or mass-based goal.

Details on Calculated State Goals

State CO₂ emissions from covered fossil fuel fired power plants (lbs)

State electricity generation from covered fossil plants + RE + nuclear_{ar&UC} + EE (MWh)

Basic formula
for state goal

- The numerator is the sum of CO₂ emissions at covered fossil fuel fired power plants in that state .
- The denominator is electricity generation in the state, factoring in megawatt hours from fossil fuel power plants plus other types of power generation like renewables and nuclear, as well as megawatt hour savings from energy efficiency in the state.
 - More specifically -- this includes covered fossil sources, existing and new renewable energy (but excluding existing hydro), 6% of the nuclear fleet's generation, and EE accounted for as zero emitting MWh.
- No individual fossil-fired unit has to meet any of these goals.

State Goals – Why They Are Different?

- State goals are unique to each state factoring in the amount of reductions that can be achieved through the 4 building blocks:
 - Efficiency improvements at existing coal plants
 - Substituting generation from coal/oil/gas steam fired boilers with generation from existing natural gas-fired combined cycle units
 - Substituting generation from existing fossil-fuel-fired generation with renewable generation
 - Substituting generation from existing fossil-fuel-fired generation with energy efficiency
- Key factors that influence an individual state goal include:
 - The ratio of coal to existing natural gas combined cycle units
 - Magnitude of state RPS's within region
 - Energy demand (which impacts the potential for reductions from energy efficiency)
- Because the key factors that influence individual state goals are different for every state, each state's goal (and reduction percentage) is different.
- The percentage reduction in emission rate implied by the 2012 actual rate (adjusted for RE) and the targets in other years is not the same as a required percentage reduction in mass emissions
 - Increases in EE and RE can be accompanied by varying decreases in mass reductions
 - Overall, the 2012 rate to 2030 State goal comparison suggest a 33% reduction between the adjusted emission rate and the state goals, but this is achieved via a 17% reduction in actual emissions over that same time period.



Supporting documents used in the state goal calculations

- Goal Computation Technical Support Document (TSD)
 - Provides information that supports the EPA's determination of state emission rate goals under the Clean Power Plan Proposed Rule
 - Includes:
 - BSER Factors Informing State Emission Rate Goals
 - Data Used
 - Example of State Goal Calculation and Discussion
 - Appendices
 - [Technical Support Document: Goal Computation \(PDF\)](#)



Supporting documents used in the state goal calculations

- GHG Abatement Measures TSD
 - Describes EPA's evaluation of all adequately demonstrated greenhouse gas (GHG) abatement measures.
 - While evaluating each measure, the EPA considered its technical feasibility, applicability and use, application level appropriate for the Best System of Emission Reduction (BSER), and cost effectiveness associated with reducing GHG emissions at electric generating units.
 - [Technical Support Document: GHG Abatement Measures \(PDF\)](#)



Supporting documents used in the state goal calculations

- Projecting EGU CO₂ Emission Performance in State Plans TSD
 - Discusses:
 - Possible analytic approaches for translating from a rate-based CO₂ emission performance goal to a mass-based goal, and projecting the CO₂ emission performance that will be achieved through a state plan.
 - Both modeling and non-modeling approaches, such as:
 - electricity sector capacity expansion and dispatch planning models,
 - dispatch simulation models, and
 - growth tools that base projections on historical data and algorithms.
 - Possible approaches for developing inputs that are used for emission projections and applied considerations for different types of state plans.
 - Topics addressed include:
 - Analytic approaches for projecting CO₂ emissions from affected EGUs
 - The concept and suggested methodology for translating from a rate-based CO₂ emission performance goal to a mass-based CO₂ emission performance goal
 - Projecting EGU CO₂ emission performance under a state plan
 - Applied considerations for projecting EGU CO₂ emission performance under different types of state plans
 - Process considerations for conducting EGU CO₂ emission projections for state plans
 - [Technical Support Document: Projecting EGU CO₂ Emission Performance in State Plans \(PDF\)](#)



Questions regarding calculations?

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