EPA 111(D) FINAL RULE—STAFF ANALYSIS #3: ENERGY EFFICIENCY

TO: Commissioners
FROM: Public Policy Bureau (Robin Arnold, Bob Decker, Margo Schurman)
SUBJECT: EPA 111(d)—Staff Analysis #3: Energy Efficiency
DATE: August 18, 2015
CC: PSC Electric

Montana's Goal:

- **Rate-based**
  - **Interim (2022-2029) = 1,534 lb CO_2/MWh**
  - **Final (2030) = 1,305 lb CO_2/MWh (a 47% reduction from 2012 baseline)**

or ….

- **Mass-based**
  - **Interim (2022-2029) = 12,791,330 tons CO_2**
  - **Final (2030) = 11,303,107 tons CO_2 (a 37% reduction from 2012 baseline)**

Demand-Side Energy Efficiency:

In the Final Rule, *Demand-side energy efficiency* is defined as "an installed piece of equipment or system, a modification of existing equipment or system, or a strategy intended to affect consumer electricity-use behavior, that results in a reduction in electricity use (in MWh) at an end-use facility, premises, or equipment connected to the electricity grid."

For PSC-regulated utilities in Montana, traditional demand-side energy efficiency (EE) programs are ratepayer funded and administered through the utility.[1] EE measures include energy audits, weatherization, rebates for high-efficiency residential furnaces, rebates for high-efficiency commercial refrigeration, etc. In the Final Rule, other eligible EE programs include state building efficiency codes, state appliance standards, energy service performance contracting (financing projects through a third-party, to be repaid by the building owner/operator in their energy costs), and volt/VAR optimization (smart-grid technologies that reduce line-loss).

Eligible EE measures must be quantifiable and verifiable under a rate-based plan, be implemented in 2013 or later, and still producing savings in the year 2022 or later.[2] The use of EE measures in a state plan is not federally enforceable and is not included in the federal plan. EE measures can be utilized in a state measures plan and must be state enforceable (in Montana, this might require legislation to implement a program, such as an energy efficiency resource standard).

The EPA estimates that all states can reach an EE rate of 1% of previous year's electricity sales.[3] For Montana, which currently has EE savings of .54% (including EE savings from co-ops), if the plan starts with .54% in 2020 and ramps up .2% each year until 1% is reached and maintained each year through 2030, the net cumulative savings would be 1,274,000 MWh by 2030. The savings can be credited to electric generating units (EGUs) in the form of emission reduction credits (ERCs) under a rate-based plan, or allowances under a mass-based plan.[4]

For the rate-based plan, ERCs are added to the denominator of the lb/MWh equation to determine the CO_2 rate. ERCs equal to 1,274,000 MWh would decrease CO_2 emissions from 2,481 lb/MWh to 2,280 lb/MWh, or 8.1%.[5]

Under a mass-based plan, EE measures reduce reported CO_2 emissions from affected EGUs by avoiding the need for generation from those EGUs. The reduction of 1,274,000 MWh in sales from the 2012 baseline (14,447,403 MWh) would be equivalent to a reduction in CO_2 emissions of 16,341,606 tons, a decrease of 8.8% from the 2012 baseline of 17,924,353 tons. The savings from EE measures would be slightly less than the savings from retiring Colstrip 1.

Generator	**2012 Energy (MWh)**	**CO_2 Emissions (tons)**	**CO_2 emissions (% of total)**
Corette	718,795	864,369	5%
Colstrip 1	1,297,572	1,626,704	9%
Colstrip 2	1,339,921	1,720,254	10%
EE savings	1,274,000	1,582,747	8.8%

Important: Our purpose in presenting the emission reduction values of potential EE savings in the context of emission quantities from specific coal plants is not to suggest a compliance strategy for Montana, but to illustrate the contributions toward CO_2 emission reduction from EPA-suggested methods and to provide an analytical process that commissioners may use to make general calculations and comparisons. Note that one of EPA's building blocks—renewable energy—is not included in the above table or the scenario analysis below. The role of renewable energy in Montana's 111(d) compliance will be examined in an upcoming staff analysis.

In our second staff analysis, "111(d) Staff Analysis #2: Montana Big Picture," we presented two scenarios for emission reduction in Montana. Scenario A was still 2.1M tons short of its goal when combining heat rate improvements, retiring Corette, and retiring Colstrip Units 1&2. Adding EE savings to that scenario would leave Montana .5M tons short of its CO_2 reduction mass goal.

Scenario A

- CO2 reduction required =6.6 M tons
  - ─ heat rate improvement -.4 M tons (EPA value of 2.1%)
    = 6.2 M tons
  - ─ Corette retirement -.8 M tons (already in effect)
    = 5.4 M tons
  - ─ Colstrip 1 retirement -1.6 M tons (for illustrative purposes; not planned)
    = 3.8 M tons
  - – Colstrip 2 retirement -1.7 M tons (for illustrative purposes; not planned)
    = 2.1 M tons
  - – EE savings -1.6 M tons
    = .5 M tons (target not reached)

The EPA estimates that EE programs would cost a total of $70 million in the first year (the EPA also assumes a 50/50 split between the program cost and the participant cost, which would be $35 million for the program cost, $35 million for the participant cost). Annual total costs increase

to $122 million in 2022, and remain steady at $97 million from 2023-2030. The average program cost for Montana in the years 2020-2030 using the EPA's assumptions is $41.84/MWh.

Savings that occur from EE measures may be banked and applied in future years between the interim date (2022) and the final date (2030).

The EPA has created an optional Clean Energy Incentive Program (CEIP) that will match credits for certain EE measures or renewable energy projects that generate or reduce MWh in 2020 and 2021, the "early action period." States must establish a CO_2 emissions budget and may set aside allowances for the interim plan period (mass-based) or generate early action ERCs (rate-based) to allocate to eligible projects. The EPA will match ERCs or allowances during the early action period from a pool of 300 M tons of CO_2 emissions, with some reserved for eligible wind and solar projects and a portion reserved for low-income EE projects. Any amount unallocated from the 300 M tons would be redistributed among states participating in the program.

In order for EE projects to qualify for matching allowances or ERCs, the measures must be located in or benefit Montana after a final state plan is submitted (or a federal plan is implemented), and result in quantified and verified electricity savings in low-income communities. There is no definition for what qualifies as a "low-income community"; as of August the EPA is looking for input. (Note that the low-income requirement is only for the CEIP programs receiving matching credits; other non-low-income EE can still be used to meet a state's overall emissions goal.) The CEIP design and implementation details will be determined by the EPA in a future action. While the details of the CEIP are not clear at this time, in order for a state to participate in the CEIP, it must include in its initial plan submittal a non-binding statement of intent to participate in the program. The CEIP part of the plan may be revised by a state with supporting documentation after the initial plan is submitted.

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[1] Electric cooperatives in Montana are not regulated by the PSC. Some of them administer EE programs, although details and data for those programs are not available in PSC documents. Estimates of EE potential made by the EPA include regulated, cooperative, and municipal distributors of retail electricity.
[2] Generally, under a mass-based plan it is not necessary to quantify or verify EE programs.
[3] Ranges for achievable EE potential vary by study and region. The Northwest Power & Conservation Council estimates EE potential for the Pacific Northwest to be 1.1%, and the Lawrence Berkeley National Laboratory estimates the EE potential for WECC to be in a range from .8%-1.6%.
[4] ERCs are not the same as Renewable Energy Certificates (RECs). 1 ERC=1 MWh, and 1 allowance=1 ton of CO_2.
[5] Calculations for the rate-based and mass-based plans are simplified, and assume there is no growth in CO_2 emissions between 2012 and 2030, and that all EE savings are applied to fossil-fuel EGUs.

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