EPA 111(D) STAFF ANALYSIS #4: RENEWABLE ENERGY

TO: Commissioners

FROM: Public Policy Bureau (Robin Arnold, Bob Decker, Margo Schurman)

SUBJECT: EPA 111(d)—Staff Analysis #4: Renewable Energy

DATE: August 31, 2015

CC: PSC Electric

This is the fourth in a series of staff reports to the Commission on EPA's 111(d) Final Rule, which seeks to reduce carbon dioxide emissions from electric power plants. Each staff report addresses a particular and significant element of the Final Rule.

The purpose of this series is not to provide details of EPA's methodologies or to suggest a specific compliance strategy for the rule; rather, our objective is to introduce the Commission to the framework of the rule and assist the Commission in understanding the scope of Montana's challenge in complying with it.

This report addresses renewable energy generation, which is one of the three "building blocks" used by EPA to arrive at states' emission goals. Renewable energy was a building block in the Proposed Rule, but EPA considers it differently in the Final Rule and presumes that its role in a state's compliance plan will be greater than it was in the Proposed Rule.

Here are the central elements of EPA's treatment of renewable energy in the Final Rule:

- Renewable energy is defined to include onshore wind, utility-scale solar, concentrated solar, geothermal, and hydropower;

- Existing renewable energy (built before and during 2012) cannot be used for compliance;

- Projected renewable quantities are based on historical development levels and economic modeling (in the Proposed Rule, renewable portfolio standards were used to project achievable renewable energy potential);

- Achievable renewable energy estimates are higher than in the Proposed Rule, based on data from the National Renewable Energy Laboratory depicting lower costs and higher operational efficiencies;

- Renewable energy potential is calculated at the interconnection level (Eastern, Western, and ERCOT);

- Compliance-eligible renewable energy is calculated incrementally; in 2021-22, the projection is based on average annual renewable capacity added in 2010-14, and in 2023-2030, the projection is based on the maximum annual renewable capacity addition in the 2010-14 period;

- Achievable renewable projections are adjusted downward through consideration of various constraints, including terrain variability, transmission limits, turndown limits on fossil fuel units, and a 30% limit of net energy for load of renewables.

The table below illustrates the relative power of specific resource decisions to effect emission reduction in Montana. The table reflects EPA datasets, rounded figures, the presumption of a mass-based (as opposed to rate-based) compliance approach, and the exclusion of numerous potential factors, including energy incentive credits, market trading possibilities, and the impacts of other potential compliance resources. The table is not intended to include all possibilities of rule compliance or to suggest a compliance strategy; it is intended to foster generalized comparisons between the listed resources and to contemplate how difference mixes of resource actions would collectively reduce emissions.

CO2 Reduction Contributions From Various Sources

Source	CO2 Reduction (M tons)
Heat Rate Improvements	0.4
Retire: Corette	0.8
Retire: Colstrip 1	1.6
Retire: Colstrip 3	5.4
Energy Efficiency (1%)	1.6
New Wind: 100 MW	0.4
New Wind: 500 MW	2.0
New Wind: 1000 MW	4.0
Montana Reduction Target (2030, Mass-Based)	6.6

We would be happy to discuss the presumptions and calculations behind the figures in the table. In forthcoming reports to the Commission, we will address other important aspects of the Final Rule, including rate-based and mass-based compliance methods, the Clean Energy Incentive Program, and the potential of market-based utilization of credits and allowances.