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RE: State of Colorado Comments, Docket ID No. EPA-HQ-OAR-2013-0602

The State of Colorado submits the following comments on the U.S. Environmental Protection Agency's proposed "Carbon Pollution Guidelines for Existing Stationary Sources: Electric Utility Generating Units," published in the *Federal Register* on June 18, 2014. These proposed rules reflect EPA's first effort to directly regulate carbon emissions from existing, modified and reconstructed electric generating units (EGU's). We appreciate EPA's expanded outreach for this proposal. Further, we want to thank EPA for recognizing early concerns from stakeholders and providing additional information via the October 30, 2014 Notice of Data Availability (NODA) and the subsequent November 2014, "Translation of the Clean Power Plan Emission Rate-Based CO2 Goals to Mass-Based Equivalents" Technical Support Document (TSD). We welcome the opportunity to submit these comments.

Colorado's power generation portfolio is diverse and complex. Colorado has two investor-owned utilities (IOUs), regulated by the Public Utilities Commission (PUC), that provide service to approximately 60% of Coloradans. The balance of the State is served by 22 rural electric associations and 29 municipal utilities that are not regulated by the PUC. Colorado's energy fleet has been shaped in part by the state's varied natural resources, as well as forward-looking policies informed by economic and environmental considerations.

Colorado recognizes that reducing air emissions, including greenhouse gases, is important for our health, our environment, and our economy. Colorado is a national leader when it comes to environmental and energy policy. We were the first state to adopt a Renewable Energy Standard (RES) by a ballot initiative in 2004. Since then we have expanded the standard regularly to respond to technological advances. IOUs must achieve 30% renewable energy by 2020. Cooperative electric associations serving 100,000 meters or more must achieve 20% renewable energy by 2020, while cooperatives serving fewer than 100,000 meters must achieve 10% renewable energy. Municipally owned utilities with more than 40,000 meters must also achieve 10% renewable energy by the same year.

Additionally, Colorado's IOUs became subject to demand-side management (DSM) requirements in 2007. As a result, our IOUs must reduce their 2006 retail and peak demand by five percent by 2018. Additional energy and demand goals may be established, including natural gas DSM projects. Since 2007, the ratepayers of Colorado's largest IOU have paid more than $350 million for DSM programs that have led to energy savings of more than 1.7 million MWh, annually, as of 2012. Regardless of a mandate, all Colorado EGUs (including cooperative electric associations and municipally owned utilities) have been and are currently actively implementing DSM projects, meaning that Colorado's total investments and energy savings are even higher.

Moreover, Colorado continues to implement the 2010 the Clean Air Clean Jobs Act (CACJA). This landmark legislation will secure significant emission retirements and conversion to natural gas of coal-fired EGUs. The CACJA demonstrated the value of environmental regulators, utility regulators, utilities, energy producers, non-governmental organizations and legislators working together. In addition to

dramatically reducing conventional pollutants such as nitrogen oxides and mercury, the CACJA alone will result in our largest utility reducing its carbon dioxide (CO2) emissions by 28%, or 3.6 million tons of CO2 per year. As part of the CACJA, Colorado determined which coal units should be retired and which should be retrofitted with expensive emission reduction controls. It is important to understand that Colorado ratepayers were asked to fund more than $1 billion for CACJA, which included retrofitting coal units, with the understanding that the life of the units would be extended, affecting the remaining useful life of those units.

Finally, earlier this year, Colorado adopted oil and gas regulations that will significantly reduce emissions of methane, a potent greenhouse gas. We also recently expanded the definition of eligible resources to include pyrolysis of municipal solid waste and generating electricity from coal mine methane. These technologies show great promise to reduce greenhouse gas emissions and should be eligible as Best System of Emission Reduction (BSER).

Individually, each of the foregoing initiatives secures greenhouse gas reductions well before any federal requirement to do so. Colorado's IOU ratepayers have already invested more than $4 billion for cleaner electric energy, avoiding more than 5.5 million tons of CO2 emissions in 2012 alone, as a result of Colorado's RES, DSM mandate and CACJA, combined. Total investments and total CO2 emission reductions for all Colorado EGUs are even higher. Collectively, these efforts highlight the priority Colorado has placed on securing early and cost-effective emission reductions that protect public health and environment, while ensuring reliable and affordable electric generation. Colorado will continue to explore options for reducing emissions and generating energy in ways that make sense for Colorado.

Proactive efforts such as Colorado's should serve as a foundation for federal efforts to address greenhouse gas emissions. We are pleased that EPA has highlighted Colorado as an example of early and effective emission reductions in its preamble to the proposed rule. However, it is critically important that EPA's final rule provide proper *credit* for early emission reductions. EPA should recognize and defer to state expertise in addressing CO2 emissions and reward early adopters. Failure to give appropriate early action credit penalizes states that have been proactive.

Against this backdrop, EPA should set equitable and realistic emission reduction targets for individual states. More specific comments on potential ways to achieve these policy objectives are set forth below.

EPA Must Recognize Early Reductions

Colorado appreciates EPA's efforts to develop a proposal that considers state-specific information. EPA has gone to great lengths to analyze power generation issues in a multitude of states. In doing so, however, it appears that EPA now proposes to require states that have realized early emission reductions to do more than states that have not. In other words, for states that have done comparatively less, it appears that EPA is expecting them to do less. This raises equity issues, including cost and reliability concerns.

In implementing Colorado's forward-looking policies, Colorado EGUs and ratepayers have made, and continue to make, significant financial investments. Requiring more reductions in states that have already made significant carbon reduction investments may not be as cost effective as EPA projects. As proposed, the state goal is derived from extremely complex calculations that are based on numerous technical details and long-range projections that confer a high degree of uncertainty in determining whether the state goal is appropriate, realistic and attainable.

EPA's goal for Colorado must be adjusted. In establishing each state's 2012 "baseline," EPA first calculated the 2012 emissions rate without renewable energy sources (1959 lb/MWh for Colorado) and then reduced that amount by adding in renewables that were utilized in 2012 (resulting in 1714 lb/MWh for Colorado). This means that states such as Colorado essentially receive reduced or little credit for early investments in renewable energy, as the reduced baseline was then used to calculate a more stringent 2030 goal. EPA should allow states to use an alternative approach in addition to the proposed BSER, whereby a state's baseline is not impacted by pre-2012 renewables.

There are several methods that EPA could employ to correct Colorado's goal. To establish BSER, EPA attempts to account for the make-up and capacity of every individual state's energy generation fleet, which results in an extremely complex calculation methodology to derive state goals. EPA weighed the following criteria in determining BSER: 1) technical feasibility; 2) emissions reductions; 3) reasonable costs; 4) current and emerging technologies; and 5) energy impacts. Early investments in renewable energy and demand side management projects must be factored in to any determination of reasonable costs, as significant additional investments will be needed to secure reductions on top of those reductions which states such as Colorado have already paid. EPA should not set up a structure whereby ratepayers in early action states might bear a proportionally greater burden in reducing carbon pollution than ratepayers in states that have done much less.

Accordingly, in addition to the proposed BSER, Colorado recommends that EPA consider more straight-forward options that states could choose as an alternative. Several options for EPA's consideration in this regard are set forth below.

One approach would be to eliminate the renewable energy "penalty" for early (pre-2012) movers that EPA effectively uses when calculating states' 2012 emissions rates. In this scenario, Colorado's baseline would be 1959 lb/MWh, and the final goal would be revised by subtracting 2012's renewable energy generation from the Building Block 3 calculation. Under this approach, early moving states would receive appropriate credit for renewable energy sources installed before 2012, and would not have their early actions drive final goals that require them to do comparatively more than other states.

Another approach would be to allow states to meet an alternative goal that reflects significant investments in renewable energy, which could be voluntarily utilized in lieu of the cited BSER. Again, it is obvious to look at renewable energy, as these sources are truly carbon neutral, and investments in these sources result in significant carbon reductions. This compliance option could be based on the idea that a certain percent of the electric generating fleet must be carbon neutral. This simple alternative emissions cap would reward early actions by setting a reasonable carbon pollution standard that broadly requires a percentage of renewable generation based on a baseline year; for example, 25% from 2012 baseline levels by 2030. Unlike the complicated multi-building block BSER approach, this simple approach would focus exclusively on zero carbon resources and allow states to simply and efficiently meet their goal by demonstrating a certain percentage of renewable energy. And, because natural gas combined cycle turbines are needed to support high penetrations of variable renewable sources, such an approach would have the added effect of automatically promoting re-dispatch to natural gas, and other efforts that reflect the state's commitment to addressing greenhouse gases. In Colorado's experience, efforts that willingly and intentionally go beyond federal regulatory requirements are often more likely to succeed, achieve real reductions and do so earlier than mandated requirements. Ultimately, such efforts can be more beneficial for the environment and public health.

EPA's final rule should appropriately include an alternative compliance demonstration that is simpler than the proposed BSER, while still arriving at the policy goals set forth in EPA's proposal. Colorado

believes that such alternatives could provide flexibility and simplicity, reward early movers, level the playing field, and address technical feasibility and cost issues, all while signaling support for other early emission reduction efforts.

EPA Must Provide Flexibility for the States in the Final Rule

Colorado appreciates EPA's efforts to incorporate state flexibility to secure carbon pollution reductions, by providing four different building blocks and by indicating that approaches outside of the specified building blocks may be utilized. EPA appropriately proposes that the calculations and goals associated with each of the building blocks are not themselves enforceable, and that states maintain flexibility to choose from a suite of strategies to ultimately meet their 2030 goal. It is critical that a final rule maintain and not further dilute state flexibility. Among other considerations, uncertainties associated with the calculations utilized to derive the proposed goals, and ambiguity surrounding the distinctions between these plans and traditional State Implementation Plans (SIPs), support affording states maximum flexibility in plan development and implementation.

In establishing the four building blocks, EPA recognized the operational differences between EGUs and explained that while states may not be able to achieve projected reductions in any given building block, states may be able to make up that difference by securing more reductions in another building block. On the surface that approach seems logical and rational. Accordingly, Colorado closely evaluated the state goal calculation methodology and the reductions that would be needed for Colorado to meet its proposed 2030 goal. As a result of that analysis, Colorado is concerned that there may be less flexibility for Colorado than EPA believes. For example, increasing performance in one building block may have the unintended consequence of decreasing performance in another building block.

Under Building Block 1 - Coal-Fired Steam EGUs' Heat Rate Improvement (HRI), EPA sets a national average of 6% efficiency improvements, and cites technologies and work practices that can be used to realize this goal. On the whole, Colorado coal-fired EGUs have already implemented a number of these technologies and work practices to realize energy efficiency. For example, our largest IOU's fleet includes a relatively new state of the art supercritical unit (Comanche 3) that is already highly efficient. While there may be additional projects to pursue, these would likely occur at some of our smaller units. The implication is that the larger units cannot secure 6% reductions on top of those already implemented prior to 2012, and any projects at smaller units would not be enough to achieve an overall average of 6%. Considering the drive to re-dispatch to lower carbon intensity generation by 2020 (or even 2030), coal-fired EGUs may not realize a reasonable return on such investments. This would make it difficult to financially justify additional HRI investments. Further, several coal EGUs will be installing additional pollution controls associated with the CACJA and Regional Haze requirements. This will increase the parasitic load that reduces net generation at the EGU, which will work against HRI efforts.

The PUC has exclusive statutory authority to evaluate and approve additional generation and decommissioning of existing power plants through the resource planning process for Colorado's two investor-owned utilities, or about 60% of our state's electricity load. The PUC also has authority over demand side management (DSM), renewable energy standard (RES), transmission, and distribution. Decisions regarding additional resources through the interim goal of 2020 have already been made. In the recently completed Electric Resource Plan (ERP), the PUC approved an additional 450 megawatts of wind and 170 megawatts of utility scale solar to the existing generation of the state's largest investor owned utility, and established DSM goals through 2020. Therefore, decisions about acquisition of zero-carbon sources, decommissioning of coal units, use of natural gas units, and energy efficiency for as the majority of resources have been made through 2020. However, Blocks 2, 3, and 4 could interfere with PUC authority and interrupt the carefully constructed CO2 reduction trajectory of Colorado's IOUs.

Under Building Block 2 - Re-Dispatch to Lower Carbon Intensity Generation, EPA applies a national average capacity factor of 70%, to realize a shift from more carbon intensive coal-fired generation to less carbon intensive natural gas-generation. Colorado has concerns relating to both the nameplate capacities used to determine the actual generation capacity, and the 70% capacity factor itself.

First, the capacity factors reported via the Energy Information Agency's Form 860 with respect to natural gas combined cycle turbines may not be representative of their actual operating capacity. The instructions for this form apparently require the reporting of the *highest nameplate* capacity, and not the *maximum operating* capacity given operational limiting factors, such as the maximum output of equipment feeding steam turbines. It also appears that EGU's may have inconsistently reported these numbers to the EIA. This leads to an overestimation of the potential generating capacity from the start. To address this issue and ensure that more realistic and accurate information is used, Colorado suggests that EPA use the average of the reported summer and winter generation reported on the same Form 860 to determine *actual* generating capacity.

Second, 70% re-dispatch may be overly ambitious and not be technically feasible. The growth of natural gas capacity has been necessitated in part by the growth of renewable energy. Many existing turbines operate in standby mode to backup intermittent renewable energy sources when the wind dies down, or the sun is obscured. These turbines are critical to electric reliability. Many existing turbines were never designed to operate continuously under load, as proposed in EPA's rule. This directly affects the remaining useful life of those existing turbines. In Colorado, many of these turbines were generally installed in proximity to current transmission lines. However, there are transmission line capacity limitations that may not support the power generated simultaneously from efforts to re-dispatch to natural gas turbines and increase renewable energy generation. This may be an issue in supporting re-dispatch from existing units as well as transmission needs for new units post 2020. Installing additional transmission lines is a resource intensive process that involves getting approval from multiple authorities and can take years. Further, recent efforts to expand transmission in the West have been limited by Endangered Species Act requirements. Without the proper transmission lines, increased operation of turbines could cause reliability issues.

Additionally, many of Colorado's existing turbines are located in an 8-hour Ozone Nonattainment Area, and as such have accepted operational limits far below the maximum generating capacity. Renegotiating those permit limits or installing new turbines to increase operating limits may not be feasible. These challenges will only increase if, as expected, EPA lowers the ozone standard. And, in those cases where the operator was able to renegotiate the permit limits, the modified permit would likely have to demonstrate compliance with the recent 1-hour NOx standard, which could involve complex and stringent modeling. For all of these reasons, it appears that it is not technically feasible for all existing turbines to be ramped up to 70% capacity factor, or to be significantly ramped up by 2020. To help address these concerns, Colorado supports the glide path approach discussed in EPA's NODA to phase in dispatch changes over time, including those that occur prior to 2020. Colorado could also support a reasonable, "minimum floor" for natural gas dispatch as proposed in the NODA, in order to address equity issues amongst the states.

If Colorado cannot meet the proposed national average of 6% heat rate improvement and 70% re-dispatch to natural gas turbines, it becomes more difficult to make up those differences by means of Building Block 3 - Re-Dispatch to Renewable Sources, and Building Block 4 - DSM/Energy Efficiency.

Under Building Block 3 - Colorado implemented a RES beginning in 2005, which increased Colorado's annual generation from non-hydropower renewable sources from 811,000 MWh to 6,192,082 MWh in 2012. Renewable energy has grown in Colorado at a faster rate than many other states in the region. In terms of capacity, Colorado increased utility-scale renewable generation from 250 MW to 2,415 MW during that period. However, Colorado is precluded from taking full credit for these reductions under the proposal. EPA has stated that

those reductions that have already or will occur prior to 2020 have been factored into the state goal computation. However, EPA uses a regional average of renewable generation in the West (a region already high in renewable generation) to arrive at an elevated renewable generation goal for western states. Again, this approach effectively requires states that have already made significant investments in renewable generation to invest more. Moreover, the significant CO2 emission reductions Colorado has realized through renewable sources may not be enough to offset the very real limitations of meeting other building blocks.

Under Building Block 4 - Colorado's EGUs have been and will continue implementing energy efficiency and DSM projects that reduce electric demand. IOUs in Colorado have a statutory mandate through 2018 to conduct DSM with PUC oversight which has resulted in 1.7 million MWh of savings annually. However, EPA's calculations do not provide credit for DSM programs until 2014, even though IOUs began ramping up DSM programs as early as 2007. Moreover, early efforts securing demand reductions may establish a *de facto* standard by 2020. Colorado's IOUs have noted that energy efficiency programs implemented since 2007 are maturing such that the avoided energy per dollar appears to be declining. In response, the Colorado PUC recently flattened the energy efficiency targets for the state's largest IOU, establishing a 400 GWh per year goal for 2015 through 2018. And Colorado's IOUs are projecting lower retail sales growth than is assumed by EPA's model. By 2020, this may make it more difficult to achieve the projected 1.5% annual reduction.

Many of Colorado's municipal and electric coops have DSM programs that are not mandated by state statute. These programs, as well as other statewide offerings, provide significant reductions in energy usage while outside of the traditional regulatory structure. For example, Tri-State Generation and Transmission saved an estimated 580,174 MWh of energy in Colorado implementing DSM between 2005 and 2013. The Colorado Energy Office also offers statewide energy efficiency programs, including managing a portfolio of energy performance contracts that produce energy savings of 141,779 MWh/yr. Colorado encourages EPA to provide necessary flexibility to account for these and other voluntary DSM projects, including a broad range of efficiency mesures outside of traditional utility DSM projects, such as locally adopted building codes, federal appliance standards, demand response, and distribution system improvements.

Collectively, the foregoing issues call into question whether or not the state goals may be overly ambitious. Regardless, there are undeniable constraints on the flexibility afforded Colorado in meeting the state goal. Therefore, it is imperative that a final rule increase the flexibility afforded states in EPA's proposal.

States Must Have the Ability to Revise Their Plans

It is important that states have an opportunity to reassess and recalibrate their state plans over the multi-year timeframe set forth in the proposal. The state plans envisioned by EPA's proposal represent uncharted territory for both EPA and the states. EPA admits that while the Integrated Planning Model is the model of choice to project carbon reductions, there are limitations in applying this model to project reductions more than fifteen years into the future. Many state air regulators have not traditionally had direct involvement in RES programs (which may include tradable allowances and allow for cost off-ramps) and in DSM evaluation, measurement and verification. These responsibilities are outside the jurisdiction of the CDPHE. State plans will hinge upon many variables and assumptions, with very real limitations. Further, the previously mentioned issues in meeting individual building blocks illustrate the potential for creating unintended consequences between the building blocks, adding to the inherent uncertainty in projecting compliance with the state goal. As a result, state plans developed under the CAA § 111(d) should not be subject to the same resource-intensive process for changing more standard State Implementation Plans, and in fact should allow for changes that reflect current information and data.

EPA Should Consider Revising the Interim Goal Approach

State flexibility may also be constrained by the proposed interim goal. While EPA effectively seeks a 30% reduction in national carbon emissions by 2030, EPA also proposes an interim goal to ensure that states are on track to meet their targets. As reflected in Colorado's efforts to date, Colorado is committed to securing timely emission reductions and recognizes that earlier reductions have great benefit. However, the manner of demonstrating compliance with EPA's proposed interim goal, and the consequences of not meeting that goal, are not entirely clear. Colorado has already made binding resource decisions through 2020. Taken along with the timing issues for developing and submitting state plans (final rule expected in summer 2015 and state plans due in 2016, with one- or two-year extensions available), meeting the interim goal in 2020 is extremely ambitious. This is especially true given that the proposed emission reductions are front-loaded; for example, Colorado's interim goal is very close to the final goal (within 50 lbs/MWh).

Colorado appreciates EPA's efforts to address these issues in the NODA. The glide path alternative recognizing certain pre-2020 reductions is intriguing. However, more time is needed to fully review the alternatives. Colorado recommends that the final rule provide states with the flexibility to set their own glide paths that demonstrate how each state intends to meet its interim and final state goal.

Colorado also supports requiring regular reporting by states to measure progress in meeting the final goal. In contrast to the annual reporting proposed by EPA, Colorado suggests that reporting every two or three years may suffice, and would allow states, EPA and interested stakeholders to effectively measure progress without undue administrative burdens.

Timeframe for State Plan Submittal

Colorado appreciates that EPA recognizes the proposed timeframes for developing complex and novel state plans is tight, and has proposed one or two year extensions be available. The development of a state plan in Colorado will likely involve the Colorado Department of Public Health and Environment - Air Pollution Control Division (APCD), the Colorado Public Utilities Commission (PUC), the Colorado Energy Office, and numerous stakeholders, including the owners and operators of 36 different facilities, as well as environmental organizations and other groups. A number of different but related jurisdictions must be considered.

In Colorado, the PUC has exclusive statutory authority to regulate the IOUs and associated electric resource decisions. The PUC has established processes that carefully evaluate load forecasts and variations, system reliability and costs, while balancing consideration of the public health and welfare. EPA's proposal could directly impact Colorado's existing processes governing dispatch and transmission. While BSER is established through the four building blocks, the lack of flexibility (discussed above) may require more development of renewable energy and/or DSM than Colorado's existing processes would allow. For example, Colorado's RES includes a statutory rate cap (two percent on an individual ratepayer's bill), which could be impacted by higher renewable generation if that were a selected option in meeting the state goal.

Depending upon the plan elements proposed by Colorado, legislation may be needed to clarify or direct state agencies on their respective roles and authorities. Therefore, a one-year time frame would not be sufficient. Procedurally, Colorado's state legislature requires SIP submittal by no later than January of each year for review during that year's legislative session. The shortest scenario for Colorado's plan submittal to EPA would be summer 2017, assuming EPA finalizes the carbon pollution standards in June of 2015, Colorado takes only one year to formulate and adopt necessary rules, the state legislature reviews the plan in the 2017 Legislative Session, and the Governor submits a plan to EPA in summer 2017. In reality, the state plan may not be ready for legislative review until 2018. As a result, Colorado suggests that EPA make the two-year extension currently available for negotiating multi-state plans also available to states that are making good faith efforts to finalize single state plans.

Technical Corrections for Colorado's Proposed Goal

Colorado encourages EPA to review technical corrections submitted by Colorado EGUs, including Black Hills Energy and Public Service Company of Colorado. It appears that several units may have erroneously been included or excluded within the proposed rule.

EPA Should Continue to Provide Additional Clarity on a Mass-Based Standard

EPA has calculated a complex rate-based standard for each state, set forth in pounds per megawatt hour (lb/MWh). EPA's proposal properly allows states the option of using a mass-based standard (tons per year) to demonstrate compliance. Methods for converting the proposed rate to a mass standard have only recently been addressed via the November 2014 TSD. Colorado is in the process of fully evaluating the TSD and potential impacts, and looks forward to future discussions on this topic. A mass-based standard may have benefits over rate-based, including ease of compliance determinations and facilitating trading programs. The TSD will help Colorado in weighing the merits of rate- versus mass-based standards. The presumptive goal approach allows states to include a different goal in their plans with a demonstration on why their goal is more appropriate than EPA's. While Colorado will need more time to fully evaluate this information, Colorado appreciates EPA's ongoing effort to provide supporting information and options to states, and requests that the final rule continue to provide states with broad flexibility to develop mass-based standard conversion methodologies that consider state-specific needs.

CONCLUSION

Because the utility sector accounts for approximately 40% of U.S. CO2 emissions, it is appropriate for EPA to look for reductions from this sector when assessing carbon reduction strategies. Colorado remains committed to reducing emissions of CO2 and other pollutants in a timely, protective and cost-effective manner, while ensuring reliable and affordable electricity. There is tremendous value in allowing states to pursue strategies to address public health, environmental protection, and energy issues in ways that work best for their unique environments and economies. Colorado is already implementing many such strategies and they have produced significant emissions reductions. It is important for EPA to recognize Colorado's past progress as it considers finalization of rules designed to encourage future emission reductions. Such final rules must be fair, achievable, and based on accurate information and reasonable assumptions. Colorado also urges EPA to consider alternative, simpler approaches that could complement EPA's existing proposal and achieve the same goals.

Thank you for the opportunity to submit these comments.

Sincerely,

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