Energy Efficiency Workshop

Oct. 23, 2015 at the National Renewable Energy Laboratory

Agenda

- 9:00-9:30 a.m. Registration
- 9:30-9:45 a.m. Welcoming Remarks
- 9:45-10:30 a.m. EPA's Clean Power Plan (CPP) Overview & Timeline
- 10:30-12:30 p.m. Colorado's Current Energy Efficiency Program Panels
  - 10:30-11:00 a.m. Investor-owned Utility Programs
  - 11:00-11:30 a.m. Municipal & Cooperative Utility Programs
- 11:30-11:45 a.m. Break
  - 11:45-12:00 a.m. Colorado Energy Office (CEO) Programs
  - 12:00 -12:15 p.m. Local Government & Non-profit Programs
  - 12:15-12:30 p.m. Private Sector & Other Opportunities
- 12:30-1:15 p.m. Lunch Break
- 1:15-3:00 p.m. How can energy efficiency fit into a compliance plan?
- 3:00-3:15 p.m. Wrap up & next steps

Goals and Purpose

- Work toward a common understanding of:
  - What we mean by energy efficiency (EE).
  - EE programs that exist in Colorado today.
  - How electricity savings could fit into a CPP compliance strategy.
  - Opportunities and challenges when incorporating EE into a CPP compliance strategy.
- Help provide feedback to the Colorado Energy Office on EE in the CPP.
- Help stakeholders begin to frame their formal feedback on EE in the CPP to the CDPHE.

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Q&A Summary

Disclaimer: The following summary constitutes CEO's understanding of the questions asked and answers provided during the workshop. The answers have not been independently verified by CEO or another third party. The intent of this summary is to generally reflect the content of the discussion following the presentations.

EPA's Clean Power Plan Overview and Timeline

Q: Clarify the difference between new sources and existing sources.
A: Existing electric generating units (EGUs) and EGUs under construction in 2014 are considered "existing sources." EGUs built after 2014 are considered "new sources."

Q: Can new sources be considered along with existing sources under a mass-based state plan?
A: Yes. Under a mass-based plan, states can choose a compliance plan that has a "new source component." That component adjusts the emissions limit to allow additional headroom for new sources to be treated as existing sources under a 111(d) emissions limit.

Q: How can energy efficiency play a role in a mass-based approach? Is it the same as a rate-based approach?
A: Question was deferred until later in the presentation.

Q: Does a mass-based approach favor importing electricity from states around Colorado?
A: No. Colorado's goal is for EGUs operating in Colorado alone. A plan could be developed that would allow interstate trading of emission allowances or a multi-state plan could be developed. Under a multi-state plan, the mass-based emissions limit would be combined with the other state's emissions limits under the plan. For a single state plan with interstate trading, once the allowances are allocated or auctioned, the allowance could be traded in another state with a mass-based trading plan.

Q: What is the baseline for EE improvements?
A: EE measures installed after 2013 can be used to show compliance if their savings can be demonstrated during the compliance period. Also, EE measures installed in low-income communities after the plan is finalized are eligible for the optional Clean Energy Incentive Program (CEIP) in 2020 and 2021.

Q: What will drive the value of allowances under a mass-based plan?
A: The value of the allowances will be driven by the structure of the plan. It is possible for the state to allocate allowances based on a number of factors, including historical emissions, set-asides for certain measures, or auction of the allowances.

Q: Please explain the federally enforceable backstop required under a state measures approach.
A: Under a state measures approach, the state is the compliance entity. EPA requires an alternative emissions-based plan in case the identified state measures do not result in a state meeting the mass-based goal.

Colorado's Current Energy Efficiency Programs

Investor-owned Utility Programs

Q: What is the cost of prematurely pushing demand-side management (DSM) technologies before they are cost-effective? When is the right time to introduce new technologies?
A: Investor-owned utilities use a total resource cost (TRC) test to determine measure cost-effectiveness. Energy efficiency programs should be more economical than producing energy. Some technologies may not be cost-effective today, but by adding them to the DSM portfolio and allowing customers to adopt them, they can become cost-effective within the plan deadlines. If technologies continue to fail cost-effectiveness tests, utilities will evaluate whether to remove the technology from the program.

Q: What initial thoughts do the investor-owned utilities have on the CEIP?
A: The life spans of savings from energy efficiency measures have a wide range with an average of 14 years. Given the long life spans of many of these measures, utilities

want them to count fully under the Clean Power Plan. The utilities are interested in exploring how the state can take advantage of the CEIP.

Q: Do we have a sense of estimates on the emissions reductions from different types of energy efficiency programs?
A: Yes, Some utilities do track and report on emissions savings by program in their demand-side management annual reports.

Q: Will existing measurement and verification (M&V) protocols be strict enough for EPA's requirements?
A: M&V is an established practice with industry standards for a wide variety of programming, but there should be further discussion on this issue. EPA has released a guidance document on M&V for the CPP.

Municipal and Cooperative Utility Programs

Q: Will the energy efficiency programs expand in the future?
A: Yes. Programs are likely to expand; however the increasing building code baselines make expansion challenging. This shift in the baseline limits a utility's ability to claim energy savings. Some programs in the state will need to stabilize funding through tariffs or other means in order to improve program outcomes. Some utilities also are planning to conduct DSM potential studies in future years.

Colorado Energy Office Programs

Q: To what extent do EPC projects use utility rebates? What measures do EPC projects install that are not within existing utility programs?
A: EPC requires projects to leverage utility incentives where available. However, it's likely that measures will be included that are not rebated. For example, building automation systems have a very high return on investment and usually are not rebated by utilities. Further, discussion is needed on how to parse out different measures to ensure that the state can receive credit for all of the energy efficiency measures installed within EPC projects.

Q: Has there been any consideration of incorporating solar into CEO's schools program?
A: The Energy Savings for Schools program provides a renewable energy assessment as well as the energy audit, and helps schools connect to funding sources to implement those measures.

Local Government & Non-profit Programs / Private Sector & Other Opportunities

Q: How could an entity, other than an EGU owner, receive credit for energy efficiency measures? Some utilities, for example, do not own/operate EGUs covered by the rule, but may offer energy efficiency programs.
A: The question was deferred until later in the presentation when tradable ERCs and allowances would be discussed.

Q: Are some DSM programs easier to evaluate than others?
A: Industrial and commercial programs are often more complex and more difficult in terms of evaluation, measurement and verification (EM&V). Custom measures are also more difficult to measure than prescriptive/deemed measures.

Comment: Some behavioral programs can produce very reliable energy savings.

How can energy efficiency fit into a compliance plan?

Q: What are the different ways allowances could be administered to EE providers?
A: Under a mass-based approach, EPA allows for the auctioning or allocation of allowances to entities, including energy efficiency providers. Allowances could be allocated through a set-aside or purchased through an auction. Under a set-aside allocation model, the energy efficiency provider would need to demonstrate through EM&V that a ton of carbon has been saved or avoided.

Q: Is it a concern that some states may not have the authority to allow an auction?
A: About 10 states already have that authority and probably don't need new authority to auction allowances under the CPP. They will submit their existing programs as part or all of their compliance plans. In all the other states, or nearly all of them, I would expect that legislation would be needed to auction CPP allowances because state air

agencies wouldn't have authority to decide unilaterally on what to do with the auction revenues. Almost all states do have experience with writing acid rain trading provisions into air permits, and some have experience with other state or regional trading programs, but auctioning (instead of free allocation) means money and money means some kind of legislative authority is necessary.

Q: Would free allocation of allowances under a mass-based trading system be less expensive than auctioning or selling allowances? Is there the potential for an auction of allowances to increase the value of the allowances, decreasing benefits to customers?
A: Not necessarily. Tradable allowances have a market value even if you give them away for free, so the opportunity costs can be built into electricity costs. This is especially true in organized wholesale markets. However, Colorado is not part of an organized wholesale market. What is true across the board is that when a state auctions or sells allowances, it can decide what to do with the revenues. One option could be to refund the revenues to ratepayers; generators pay for allowances and pass the costs through to ratepayers, but ratepayers get rebated the cost of the allowances, so it all ends up a zero sum game. Another option is to invest allowance auction or sales revenues in programs that benefit ratepayers, like EE programs. If done correctly, you can acquire more than $1 of ratepayer benefit from $1 of allowance revenues. Therefore, conceivably, ratepayers could end up better off through an auction than free allocation of allowances. It's also the case that free allocation can be divisive among the recipients since the state is distributing something with real value to entities driving a difficult conversation about allocation amounts.

Comment: There are other approaches to driving EE too. For example, under a mass-based trading approach, one could envision the cost-effectiveness test of a DSM measure including the value of allowances/ERCs. Therefore, compliance costs are naturally included into the current programming.

Q: If a state does go with the mass-based approach and wants to continue and expand EE efforts, should it put EE into the plan? What are the consequences of that? Would it

have to evaluate savings? Should EE be left outside the plan to avoid evaluation? What do you suggest if a state wants to go mass-based and do EE?
A: Generally, states should not put anything into the plan that they do not need in order to get approval of the plan. However, if a state wants to take advantage of CEIP (or use an EE set aside), they will need to have EM&V. Otherwise, states would not need to include energy efficiency programs in the plan. Treating energy efficiency as complementary under a mass-based approach would administratively be the easiest.

Q: If there was an allocation approach, would it be possible for the state to assign a fee for allowances and use funding from the fee to develop EE programs (a stable funding source)?
A: It would be hard to find examples of that. Some have been proposed but not implemented. There is an example in the Midwest where a state designed a carbon trading program that was never implemented. The design was to assign a nominal price for allowances that were allocated to the generators. This would have resulted in a very predictable revenue stream.

Q: Since the purpose of the CPP is to address climate change, it seems like, from a climate perspective, a mass-based approach makes more sense. Under a rate-based approach, a state could increase generation from renewable energy and fossil fuels while still being compliant.
A: While possible, this would depend on a state's energy mix. EPA used the rate-based approach to develop the Best System Emission Reduction (BSER) building blocks. Those were then used to develop the mass-based goals, so EPA intends them to be equivalent based on the underlying assumptions. Therefore, it's possible that the renewable energy building block assumptions or load growth assumptions could prove to be incorrect. Any of those assumptions could impact whether a rate-based plan would allow higher emissions.

Q: If you have more renewable generation on the grid, then EPA assumes you will have reduced the fossil fuel production; is that correct? Especially since you would have the same load requirements.

A: This may not be an issue across the board for each state. Under a rate-based plan, renewable generation would be added to the denominator thereby improving the rate.

Q: Under a rate-based approach, there is no limit to carbon emissions. One could envision that adding new natural gas generation would lower the state average emission rate while still allowing new source generation to be built.
A: 111(d) is EPA's new source generation rule. A rate-based plan may provide more flexibility in terms of potentially increasing natural gas generation, but it would depend on the specific state's emissions portfolio.

Q: Has there been any consideration to conditioning the ERCs? Is there any requirement for least-cost ERCs or measures?
A: A state could do that. There is nothing that is in the final rules or model rules that would direct a state in one direction or another. However, states can use set-asides or the CEIP, which could be a way of showing compliance preference.

Clean Energy Incentive Program

Comment: Twenty-five to thirty percent of Colorado is low-income. It is important that they have access to programs. This suggests that the state focus on this area while operating through existing infrastructure.

Comment: If allowances are sold at auction, it could impact rates. The state needs to avoid cross-subsidies where low-income ratepayers are disproportionately affected.

Comment: Low-income energy efficiency programs are cost-effective, and we should avoid mischaracterizing serving those clients as not being cost-effective. For investor-owned utility DSM programs, the state could also consider whether to give credit for energy savings over the life of the measure rather than in the year it is installed.

Q: I know "low-income community" is not fully defined. Is it feasible to have a community solar program that's only available to low-income customers, or would it have to be energy saved at the premise of the low-income customers?

A: On the renewables side for CEIP, the incentives are not limited to low-income customers. It is just the energy efficiency incentives that apply specifically to low-income.

Q: Under CEIP, does a state get twice the credit for emissions reductions than they are actually achieving? Is there some taking away of allowances later with CEIP?
A: If a state chooses to use CEIP, a state would issue allowances/ERCs to qualifying projects for early action. Those would be borrowed from the state's pool of allowances/ERCs for later compliance years. EPA then provides additional matching allowances/ERCs to that project.

Q: Do Renewable Energy Standards (RES) qualify?
A: Building renewable energy (RE) generation to meet a state RES would count toward the CPP as long as it generates during the compliance period and was built after the baseline period. For CEIP, only wind and solar generation built after a plan is submitted and generating in 2020-2021 would count.

Wrap up and Next Steps

The following comments and Q and A provide a framework in moving forward.

Comment: A task in front of us is to understand the size of opportunity in the state. There are a lot of different numbers out there. This suggests that we have a working group that aggregates info and works to understand the size of the opportunity.

Comment: Since almost half of energy used comes from buildings, the state should incorporate EE.

Q: Does the EPA have a definition of EE?
A: They do define it but it is very general.

Q: What is the timeline on comments for this?
A: You can submit comments to CDPHE at any time over *(reference to CDPHE public process timeline slide)*. Now that the rule has been posted in the federal register, EPA is taking comments over the next 90 days on various aspects of the rule.

Q: It seems to me that knowing which way the state is leaning regarding mass- or rate-based would help focus stakeholders' efforts.
A: The state wants to make this process efficient, and eventually narrow the scope. CDPHE has a public process underway to take comment on these issues before we decide on any one compliance approach.

Comment: If we have to go down parallel paths, we might look at having certain folks look at energy efficiency under one approach and others look at the other so that the process is more organized.

Comment: What is the size of the opportunity; what is the size of the challenge? EE is going to be included, whether directly or indirectly. Including CEIP is something the state should decide sooner rather than later. We could have a work group that looks at CEIP specifically.

Additional Questions and Comments

- Will all energy efficiency measures need to meet the standard of quantifiable, verifiable, non-duplicative, permanent, and enforceable? If so, which programs will be easiest to "count" under those metrics?
- Can we assess the energy savings (and CO2 reduction) potential of the various non-DSM EE opportunities (quantitatively)? Also, can we assess (at least qualitatively) the ability to make each opportunity a viable compliance tool? Doing such will help determine where effort should be focused toward the objective of expanding EE compliance options beyond utility DSM.
- How will energy efficiency savings that overlap between various efficiency programming entities be tracked, verified, reported? Will there be gaps between what a utility claims through DSM programming and the total measurable savings from measures? How will the state determine attribution of savings among those entities? What entities will qualify for generating energy efficiency ERCs or allowances?

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- How does EM&V, as described in the final rule, model trading rule, and EPA's EM&V guidance compare with current utility program practices? Will the wide range of EM&V practices be acceptable for compliance?
- Is the current EM&V, as practiced by Colorado utilities for DSM, sufficient for projecting the future potential of EE activities, so that these activities can be factored into compliance planning?
- Thoughts regarding directly allocating allowances to EE (registered projects) first, then distribute remaining allowances as it sees fit?
- Has CEO discussed/spoken with Climate Registry regarding an EE registry to avoid double counting?
- If the state decides to go with a mass-based approach, how would the allowances be allocated? How would a municipal system be assured that it will receive that share of allowance? If a municipal system changes power supplier, will the allowances stay with the municipal?
- If the state has to reduce its carbon emission by 31% or 38% by 2030, EE/RE should be more cost-effective than other emission reduction alternatives. This should be a great opportunity for EE/RE measures.
- How can we make sure that low-income and other marginalized populations can benefit from the EE behaviors in a state compliance plan?
- How does energy efficiency play a role in a mass-based approach? Can it be used to demonstrate compliance with a mass-based approach? Can a mass-based approach include incentives or act like a rate plan? Option for ESCO and schools supporting distributed RE?
- Seems appropriate at this point to start thinking about a central entity to track energy data from all of our discrete programs. Everyone is doing great work, but potential for duplication with a lack of standardization is going to remain an issue.
- The state should consider the extent to which auctioning allowances would have TABOR implications.
- As local governments adopt and enact new/updated building codes that yield higher energy savings (which yield lower DSM savings since this is now "naturally occurring" EE), can these efforts still be used for CPP compliance?