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August 22, 2018

RE: CenterPoint Energy's Comments on Fuel Switching Technologies and Use Cases

Dear Mr. Burr:

CenterPoint Energy (or the "Company"), respectfully submits the following Comments in response to the Department of Commerce Division of Energy Resources ("DER") email on July 30, 2017.

The Company appreciates the opportunity to offer these Comments to help inform stakeholder discussion on September 11, 2019.

General Consideration for Incorporating Fuel Switching Measures into CIP

CenterPoint Energy believes that any fuel switching that might be allowed in the Conservation Improvement Program (CIP) must align with the purposes of CIP and advance the state's policy goals. As articulated in the Company's prior comments on the topic, this is only possible if, at minimum, fuel switching policies ensure reductions in source energy use, customer costs, and greenhouse gas emissions. Other parties have advocated for different or additional criteria (e.g., including an additional requirement that peak energy demand not be increased).

An important consideration for designing policy for incorporating fuel switching measures into CIP is the uncertainty associated with whether a specific measure meets whatever the criteria for inclusion might be. The benefits of fuel switching for some end uses may depend on factors such as the direction of fuel switching and the location of the installation. Moving from electric water heating to natural gas water heating (for example) might make sense in one electric utility's service area but not another's, depending on the utilities' respective emissions profiles.

Such uncertainties will necessitate a more involved technical process to establish reasonable assumptions for use across geographies and potentially across time. Some stakeholders have voiced an interest in factoring in the long-term emissions profile of a utility into determining acceptable fuel switching for a utility. This introduces temporal variability, in addition to the spatial variability discussed above, in reductions of energy use and emissions depending on the utility. Stakeholders should consider and discuss what the scope and level of this process would be under fuel switching.

In CenterPoint Energy's view, discussion should focus on establishing objective, technology-neutral criteria for inclusion of a given fuel-switching measure in CIP and establishing a means to determine whether a given measure meets those criteria, before focusing on specific technologies or use cases.

1. ***During Meeting #1, several stakeholders discussed the need for a deeper analysis of various use cases and technology solutions that may result in utility fuel switching activity (between natural gas and electric utilities) that is prohibited for CIP incentives. Please describe:***
 - a. ***Potential energy-saving measures that could result in fuel switching, and that you believe should be made eligible for CIP incentives;***
 - b. ***Noteworthy benefits, factors, and considerations involving these use cases and technologies; and***
 - c. ***Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.***

As noted above, CenterPoint Energy believes policies permitting fuel switching should be fuel neutral and technology agnostic. Therefore, the Company believes it would be premature to offer recommendations for measures that should be made eligible for CIP incentives before establishing the criteria for eligibility. That said, the Company believes that there are several measures that are likely to be part of the stakeholder discussion, and which may meet the three criteria proposed above. These measures include:

- Air-Source heat pumps in space heating applications (with a furnace back-up or an electric resistance back-up);
- Electric and gas heat pump water heaters; and
- Off-peak electric water heaters.

Associated with these technologies and use cases, CenterPoint Energy foresees several noteworthy challenges that must be considered and addressed.

Some Technology Specific Considerations for Incorporating Fuel Switching Measures into CIP

CenterPoint Energy expects future stakeholder discussion to focus on fuel switching that involves using air source heat pumps for building heating and cooling. CenterPoint Energy believes it is important for stakeholders to consider and discuss the numerous complexities associated with incorporating cold climate air-source heat pumps (ccASHP) into CIP. These complexities include:

- 1) the difference in performance characteristics of ccASHPs between lab (AHRI) and field studies;
- 2) the declining coefficient of performance with declining outside air temperature;
- 3) the declining load served with declining outside air temperature;
- 4) the choice of auxiliary heating source;
- 5) the emissions profile of the electric utility in question (now and in the future);
- 6) the source heat rate of the electric utility in question (now and in the future);
- 7) electric and natural gas prices (now and in the future);
- 8) the installed costs of the various ccASHPs and auxiliary permutations; and
- 9) the appropriate method of allocating CIP savings between the two utilities.

The above list is not intended to be exhaustive, but it should give some context for the time and energy that will be necessary to formulate a useful ccASHP fuel-switching algorithm that can accurately calculate the source energy, emissions, and cost implications for the various ccASHP scenarios.

Moreover, CenterPoint Energy notes that the continued reliance of ccASHPs on an auxiliary heating source suggests that a distinction within the category of “fuel-switching” may be needed in order to distinguish between technologies that entirely remove a fuel from serving a given application and technologies such as ccASHPs that only reduce another fuel’s usage. Note that even this distinction may not be clear-cut, as a ccASHP with electric resistance backup could be installed to replace a gas furnace – but such an installation may not meet the cost, emissions, or total energy criteria to be considered eligible for CIP.

CenterPoint Energy also expects future stakeholder discussion to focus on fuel switching that involves water heaters, including heat pump water heaters. The Company requests that gas heat pump water heaters also be discussed along with electric water heaters. This technology could be commercially available within the next few years.¹ Specifically, the Company believes that in the future it will likely be necessary to provide policy guidance on when fuel switching is permissible as compared to upgrading a customer’s equipment to a new more-efficient technology that would use the same fuel.

Stakeholders should consider what technologies should not be permissible fuel switching under CIP due to increased net energy use. Another water heater technology that might be discussed in the stakeholder group is off-peak electric water heaters. CenterPoint Energy does not believe that off-peak electric water heaters should qualify as permissible under CIP because they increase net energy use. This type of water heater over-heats the water at night, and then tempers it at discharge. By the function of the technology, the source energy usage is higher (i.e., via the overheating) than other water heaters. Although there may be desirable benefits to this mode of operation such as reducing peak usage, this does not meet the statutory definition of either “energy efficiency” or “energy conservation”² and should thus not be eligible for inclusion in CIP.

Other Policy Considerations to Avoid Unintended Consequences from Fuel Switching

Common to all the technologies mentioned above, and the central challenge in crafting fuel-switching policies, is the fact that while fuel switching may result in a decrease in net energy consumption, the consumption of a specific *form* of energy necessarily increases. It is critical

¹ Northwest Energy Efficiency Alliance. Working Together to Accelerate Natural Gas Efficiency – 2018 Success Stories. Retrieved Aug. 22, 2019 from: <https://neea.org/annual-report/2018/2018-natural-gas-hpwh>

² Minn. Stat. 216B.241, subd. 1. Note that the definition of “energy conservation” specifies a net reduction in energy use, suggesting that fuel switching could be considered energy conservation if the net effect is to reduce energy use.

that, if fuel-switching measures are allowed in CIP (and count towards a utility's energy savings goals), clear policy is established as to which utility may claim the savings. There is not currently a framework for determining what utility may claim what energy savings (or how) in the following circumstances where a utility helps a customer transition:

- Away from its fuel entirely for a given end use;
- To the use of its fuel, where that fuel was not previously used to meet the end use;
- Between two fuels neither of which the utility supplies;
- Between two fuels both of which the utility supplies;
- Towards a hybrid system using two fuels, one of which the utility supplies, in a manner that decreases the utility's sales; or
- Towards a hybrid system using two fuels, one of which the utility supplies, in a manner that increases the utility's sales.

CenterPoint Energy notes that the situations in which the utility encourages the customer to use a different fuel from the one it provides in order to reduce the overall consumption of energy is the use case that seems to fit most neatly into the traditional ratepayer-funded energy efficiency paradigm. Minnesota has spent a significant amount of effort developing policies that create a business model for utilities to work to decrease their own sales. It is reasonable to leverage that existing model where it can be applied by providing utilities whose sales will decline a "right of first refusal" for promoting the fuel switching measure and claiming the associated energy savings.

A related question is whether the promotion of fuel-switching using ratepayer funds should be permitted for utilities without fully decoupled rates. If a utility's sales will increase from the promotion of a given measure, there is a significant risk of load-building in the guise of energy efficiency. To counter this risk, CenterPoint Energy recommends the Department only permit such activities for utilities with fully decoupled rates. For a utility that is not decoupled, this type of load building activity is directly to the utility's benefit and should not require the use of ratepayer funds intended to be used towards reducing energy use to achieve cost savings for customers. Furthermore, permitting load-increasing measures could also potentially cause non-decoupled utilities to emphasize load building measures (such as switching the primary heating fuel) at the expense of load-reducing measures (such as weatherization). In the Company's view, fuel-switching that results in the need for significant utility investment (e.g., by requiring additional electric generation capacity) should also bring with it equally significant utility savings elsewhere in the state's energy system if customer CIP funds are used to support the measure.

- 2. *Not all fuel-switching use cases involve switching between utility energy supplies. For example, implementing some energy-conservation measures can lead to increased utility sales and decreased sales of non-utility delivered propane and fuel oil. Please describe:***
 - a. *Use cases and technologies exemplifying potential energy-saving measures that you believe should be addressed in State energy policies (within CIP or otherwise);***

- b. Noteworthy factors and considerations involving these use cases and technologies; and**
- c. Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.**

CenterPoint Energy does not have new comments on energy-conservation measures that could lead to increased utility sales and decreased sales on non-utility delivered propane and fuel oil. Many of the technologies the Company highlights in response to DER's first question would also apply to fuel switching from delivered fuels. As mentioned above, including fuel switching in CIP could advance policy goals under the right circumstances, namely with a policy framework that aligns with broader policy goals. To the extent policy changes would allow fuel switching from delivered fuels, the policy framework should establish criteria for permissible fuel switching and be neutral regarding the specific fuel.

- 3. Criteria for allowing fuel-switching in CIP may be influenced by requirements and factors affecting specific high-impact use cases. Please comment on which fuel-switching use cases you believe will have the greatest beneficial impact on the State of Minnesota, and therefore should merit the highest priority in policymaking.**

CenterPoint Energy interprets this question to be asking about which fuel-switching use cases should be a priority for policy-making, based on their impact, for the purposes of informing priorities for identifying criteria for acceptable fuel switching.

A theoretical policy that allows fuel switching and supports state policy goals is technology agnostic. The Company does not believe there are any clear priorities for criteria that can be established based on prioritizing specific measures or use cases; rather criteria should be established prior to the assessment of individual measures. The Company has offered several such criteria in previous comments and again here. That said, fuel switching in the transportation sector from petroleum to electricity use is likely to be the most high-impact on energy use and greenhouse gas emissions. However, DER stated in the June 26, 2019 stakeholder meeting that those use cases are beyond the scope of this stakeholder process. If constrained to the building sector, then implementing fuel switching measures related to the heating ventilating and cooling system will be most impactful on energy use and greenhouse gases followed by measures related to water heating.

Please contact me at (612) 321-4324 or ethan.warner@centerpointenergy.com with any questions.

Sincerely,

/s/ Ethan S. Warner
Ethan S. Warner
Regulatory Analyst, Conservation Improvement Program