414 Nicollet Mall
Minneapolis, Minnesota 55401

PUBLIC DOCUMENT

August 22, 2019

Mr. Anthony Fryer
Minnesota Department of Commerce
85 7th Place East, Suite 280
St. Paul, MN 55101-2198

RE: REQUEST FOR WRITTEN COMMENTS:
MINNESOTA DEPARTMENT OF COMMERCE FUEL SWITCHING POLICY

Dear Mr. Fryer:

Northern States Power Company, doing business as Xcel Energy, submits these Comments in response to the Department's request for comments on Minnesota's policy on electric and gas utility fuel-switching programs and the Minnesota Conservation Improvement Program (CIP). The Company greatly appreciates the opportunity to offer comments on this important topic.

As highlighted in the fuel switching stakeholder meeting held on June 26, 2019, Minnesota's energy savings policy goal states that energy savings are the preferred energy resource and should be aggressively pursued before any other energy resource. As §216B.2401 specifically states: "The legislature finds that energy savings are an energy resource, and that cost-effective energy savings are preferred over all other energy resources."[1] Furthermore, "The legislature further finds that cost-effective energy savings should be procured systematically and aggressively…"[2]

As a policy that prevents customers from realizing energy savings, the current prohibition on fuel switching projects within CIP stands in contradiction of Minnesota's energy savings policy goal and the purpose of CIP. While this topic can sometimes be complex and involve strong responses from various interest groups, certain types and applications of fuel switching are proven to offer significant savings benefits to customers when implemented with existing customer protections (e.g.

[1] Minnesota Statute §216B.2401.
[2] Ibid.

cost-effectiveness screening and the CIP energy savings requirement). As the Department, utilities and other stakeholders continue to explore innovative approaches and technologies that can potentially help ensure the continued success and long-term viability of CIP, we believe significant consideration should be given to updating current fuel switching policy and allowing those technologies that reduce overall energy use, regardless of fuel.

Per the Department's request, we provide details on the important benefits, factors and considerations of certain technologies and end uses in the following responses:

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;**

There are a number of energy-saving measures that offer significant benefits to customers as a fuel switching application. Additional benefits are discussed further in the answer to 1b. The definition of energy-saving measures can be defined three distinct ways:

1. Source energy savings on a British Thermal Units (Btu) basis at the generator, using the current policy for measures that impact more than one fuel at the customer meter. This policy, detailed in Reply Comments from the Department in MN DOC No. G008/CIP-00-864.07 of May 23, 2003, recommended that "Calculating the net impact of a project that has impacts on more than one fuel requires the calculation of the Btu content of the fuel at the source."[3] For electric consumption, comments recommended "..using the efficiency of the next unit to be added in its latest integrated resource plan as a way to estimate the increase or decrease in electric source Btu's."[4]

   In practice for the Company, the policy used assumed a natural gas-fired combined-cycle generation plant as the electric generation source for determining electric source Btu. Electric end-use options must have efficiencies that exceed the natural gas end-use options by a sufficient amount to overcome the loss in efficiency at the electric generation source. Example measures that meet this criteria include both residential and commercial applications:

[3] Reply Comments from the Department in MN DOC No. G008/CIP-00-864.07 of May 23, 2003, page 3.
[4] Ibid., page 4.

- An electric heat pump water heater replacing a gas water heater;
- Air-source heat pump space heating replacing a gas furnace; and
- Electric heat pump clothes dryers replacing gas dryers.

Examples in industrial applications include:

- Technologies that replace thermal pasteurization processes, including ultrasonic processing, infrared, filtration, radiation, and various magnetic field technologies; and
- Space consolidation during process improvements.

2. Source energy savings at the generator on a Btu basis using the hourly marginal energy source. Many measures may be optimized to minimize the consumption of fuels with Btu content by maximizing the electricity consumed form renewable energy sources of solar and wind generation. These measures have historically not been allowed in CIP as they have not demonstrated savings in electricity consumption at the meter, but may result in energy savings at the generator on a source Btu basis. Examples for residential and commercial applications may include those listed above in part 1 as well as:
    - Load shifting of the charging of electric vehicles;
    - Thermal energy storage for space cooling applications;
    - Load shifting strategies for space cooling applications;
    - Thermal energy storage for water heating applications; and
    - Load shifting strategies for water heating applications.

    Examples in industrial applications include those listed above in part 1 as well as:

    - Load-shifted strategies for process heating.

3. Energy savings at the customer meter. A Btu basis may be used to determine energy savings given the efficiency of the end-use technology options and the Btu content of fuels, including electricity. In general, electric measures have nearly 100 percent efficiency, while measures relying on combustion of a fuel have less than 100 percent efficiency. Examples for both residential and commercial applications that produce energy savings at the customer meter on a Btu basis include those listed in part 1 as well as:
    - Electric-resistance water heater replacing a gas water heater;
    - Electric resistance space heating replacing a gas furnace; and
    - Electric resistance clothes dryers replacing gas dryers.

    Examples in industrial applications include those listed above as well as:

- Switching from gas to electric radiant heating for materials curing/drying; and
- Melting projects that sometimes result in tradeoffs between either electric or natural gas usage.

While not exhaustive, these lists highlight some of the potential energy savings opportunities for residential, commercial and industrial customers. With the current limitations on fuel switching, utilities are unable to incentivize customers to switch from their current fuel to adopt these beneficial applications and technologies.

b. Noteworthy benefits, factors, and considerations involving these use cases and technologies; and

The aforementioned use cases and technologies stand to offer significant benefits for customers. Apart from the standard cost and energy savings benefits posed by traditional DSM offerings, many of them also offer emissions benefits, which is an important benefit when considering the State of Minnesota's goal of reducing greenhouse gas emissions 30 percent by 2025 and 80 percent by 2050.[5] Thus, we believe that it is in the interest of all Minnesotans that CIP stakeholders re-examine the alignment of current fuel switching policies with both the purpose of the CIP Statute and other statutory targets that encourage utilities to leverage low-emission energy sources throughout our economy.

It varies on a case-by-case basis, but other benefits include: reduced installation costs, enhanced customer satisfaction, and a reduction in overall utility system energy usage. A deeper analysis should provide a comprehensive look at the benefits and costs in addition to customer energy savings for each use case or technologies. This will help identify additional implications from fuel switching.

c. Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.

While there are uncertainties and unintended consequences with some of the use cases and technologies, CIP stakeholders should be able to mitigate any negative or unintended consequences with the right controls in place.

The most significant unintended consequence is a product of the current limitations on fuel switching in CIP: lost energy savings. The past decisions do not align with the

[5] Minnesota Pollution Control Agency, "State and regional initiatives," https://www.pca.state.mn.us/air/state-and-regional-initiatives.

spirit and purpose of CIP Statute and have prevented customers from realizing energy savings.

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);**

To ensure forward-looking flexibility, we believe that CIP and other state energy policies should steer clear of prescribing specific technologies or end uses that fit within CIP. CIP policy should require that fuel switching applications and technologies demonstrate energy, cost and emissions savings, rather than dictate which technologies or applications are allowable.

Here are some examples of technologies and strategies that could be unlocked within the CIP framework:

- State policy for new construction housing that requires wiring for electric options and piping for natural gas options for all applicable technologies (space heating, water heating, clothes drying) will provide residents with the option to install the most energy efficient technology without significant retrofit costs that may be prohibitive.
- Electric vehicles.
- Electric space and water heating replacements of delivered fuel heating and water heating systems, provided that the electric equipment meets state energy, cost, and emissions savings thresholds versus the delivered fuel alternative.
- Load Shifting Measures.
    - Optimized EV charging, pre-cooling of homes, pre-heating of water heaters, and thermostat optimization, provided that these solutions result in overall electric system energy, cost, and emissions savings when compared with a delivered fuel alternative. These involve using installed technologies in a different way, not directly replacing delivered fuel equipment. What makes these use cases relevant to fuel switching is that they can and should be coupled with fuel switching technologies to unlock additional benefits. For example, allowing delivered fuel water heaters to be replaced with electric water heaters that are pre-heated

provides additional grid flexibility and emissions reductions benefits, as opposed to an electric water heater without this flexibility.

b. Noteworthy factors and considerations involving these use cases and technologies; and

Certain cities, states, and utilities have begun to drive efforts to switch from delivered fuels to electricity, citing the cost and emissions benefits. Recently, the mayor of Seattle proposed a tax on heating oil providers to help transition the city's homes from delivered fuels to electric heat.[6] The proposal estimates that if 18,000 homes converted from heating oil to electric heat, carbon emissions would be cut by 433,000 metric tons over 10 years.[7]

While there is certainly debate over the current cost benefits of such a proposal and fuel conversion, a 2018 Rocky Mountain Institute report argued that certain end uses provide clear benefits: "Electrification of space and water heating and air conditioning reduces the homeowner's costs over the lifetime of the appliances when compared with performing the same functions with fossil fuels."[8]

State energy policies should neither require fuel switching or dictate permissible end uses or technologies for fuel switching; rather, state energy policy should simply allow for the flexibility to pursue fuel switching projects if they meet existing statutory requirements (e.g. energy savings, cost effectiveness, etc.).

c. Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.

While there is always the potential for unintended consequences with DSM use cases and technologies, with the right controls in place, CIP stakeholders should be able to gradually adopt and mitigate any negative or unintended consequences.

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.

---

[6] Utility Dive, "Seattle mayor proposes heating oil tax to push electrification," https://www.utilitydive.com/news/seattle-mayor-proposes-heating-oil-tax-to-push-electrification/560618/.
[7] Ibid.
[8] Rocky Mountain Institute, "The Economics of Electrifying Buildings," https://rmi.org/insight/the-economics-of-electrifying-buildings/.

Across electrification and fuel switching literature, a core set of advanced technologies are routinely mentioned as beneficial solutions. Northeast Energy Efficiency Partnership's (NEEP) recent electrification action plan is one such example, specifically identifying a core set of technologies that includes electric space heating (including cold climate air-source heat pumps), electric vehicles and electric water heating technology (heat pump water heaters).[9]

Beyond the growing body of analytical work, utilities and regulators in many locations are already beginning to incorporate electrification in structured ways that benefit customers and society and allow for policy goals to be attained. As part of the Rhode Island Power Sector Transformation, Rhode Island Public Utilities Commission staff indicated that beneficial electrification provides the opportunity to "reduce electric sector emissions and electric system costs while lowering individual Rhode Islanders' energy burden." They further indicate that "For these Reasons, as well as Rhode Island state policy, it is appropriate to consider proposals from electric distribution utilities to advance the adoption of beneficial electrification."[10] In order to ensure beneficial electrification proposals produce net benefits and "are consistent with relevant state policy goals," they also recommend that utility proposals meet a fixed set of program criteria also published in the same report.

As a growing number of states and utilities continue to recognize the benefits presented by fuel switching, it is important that Minnesota does not continue to fall behind other states already making strides. We thank the Department for initiating this stakeholder process, allowing for the opportunity to share these comments, and hope that these responses offer additional insight into the challenges and opportunities related to fuel switching in Minnesota's Conservation Improvement Program.

If you have any questions regarding this response, please contact Aaron Tinjum at aaron.j.tinjum@xcelenergy.com or (612) 342-8967.

Sincerely,

/s/

---

[9] Northeast Energy Efficiency Partnerships, "Action Plan to Accelerate Strategic Electrification in the Northeast," Slide 14, May 2018, http://neep.org/sites/default/files/resources/Action%20Plan%20To%20Accelerate%20Strategic%20Electrification%20in%20the%20Northeast%20FINAL.pdf.

[10] Rhode Island Power Sector Transformation. Phase One Report to Governor Gina Raimondo. An Inter-Agency Report of the Division of Public Utilities & Carriers, Office of Energy Resources, and Public Utilities Commission. Pages 56-57, November 2017.

SHAWN WHITE
MANAGER
DSM REGULATORY STRATEGY & PLANNING