



Summary Report - Stakeholder Written Comments
Minnesota Department of Commerce 2019 Fuel-Switching Stakeholder Process
Revised Sept. 15, 2019

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Background

The Minnesota Department of Commerce, Division of Energy Resources (hereafter the "Department") convened a stakeholder engagement process with a meeting on June 26, 2019, to facilitate discussion and gather inputs concerning utility Conservation Improvement Programs (CIP) that incentivize the switching of end-use fuel type. Following the June 26 meeting, the Department requested written comments from stakeholders to address a series of questions related to use cases and criteria that should be considered and prioritized in policy review processes. Specifically, the Department asked stakeholders to address the following questions:

- 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.
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.

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.

The following entities submitted written Comments within the comment period (7/31/2019 through 8/22/2019):

- Beneficial Electrification League (BEL)
- Center for Energy and Environment (CEE)
- CenterPoint Energy
- City of Minneapolis
- Fresh Energy
- Great River Energy (GRE)
- Minnesota Center for Environmental Advocacy (MCEA)
- Minnesota Chamber of Commerce
- Minnesota Energy Resources Corp. (MERC)
- Minnesota Municipal Utility Association (MMUA)
- Minnesota Petroleum Marketers Association (MPMA)
- Minnesota Power (MN Power)
- Minnesota Rural Electric Association (MREA)
- Missouri River Energy Services (MRES)
- Otter Tail Power (OTP)
- Rochester Public Utilities (RPU)
- Southern Minnesota Municipal Power Agency (SMMPA)
- Xcel Energy

Burr Energy LLC developed the following review summary of stakeholder responses to the Department's July 30, 2019 solicitation for written comments on CIP policy on incentives for fuel-switching systems. This document addresses a range of perspectives among stakeholders. Full contents of stakeholders' written submissions are available for review at the Burr Energy LLC website here:

<http://www.burrenergy.com/mnfuelswitching.html>

General Comments

Many stakeholders' written submissions included general comments for consideration.

Several written comment submissions encourage the Department to consider revising CIP policy and amending the Technical Reference Manual (TRM) to apply a fuel-neutral approach to calculating energy savings, and many also expressed support for fuel-switching related language that was considered in the Minnesota House of Representatives and Senate for the HF 2208 and SF 211 bills, respectively, during the 2019 legislative session.

Xcel Energy commented that "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... [S]ignificant consideration should be given to updating

current fuel switching policy and allowing those technologies that reduce overall energy use, regardless of fuel.”

Many commenters expressed support for expanding CIP to address transportation electrification. SMMPA for example recommended “Including utility programs that encourage electrification and fuel switching improvements under CIP” and “an all-encompassing process that includes the energy efficiency benefits of electric vehicles.”

GRE echoed these perspectives, stating that “Technologies that move consumers from gasoline to electricity, or propane to electricity, or wood to electricity, can all meet the objectives of the Energy Savings Policy Goal if we view energy more broadly. By looking at all of Minnesota’s policy through the lens of energy, and not just electricity or natural gas, there appears to be ample room for the Department to broadly permit cost effective fuel switching.”

Specifically, GRE suggested that the Department should take a broad view of the term “equivalent” in the statutory language of 216B.241 Subdivision 1c. “Utility achievements that increase electricity use but result in a reduction in total energy could be calculated on an equivalent basis with existing efficiency measures,” GRE stated. “Such activities are consistent with Minnesota Energy Policy Goals and allow for greater utilization of renewable energy while reducing costs and improving productivity for Minnesota consumers.”

MREA noted “While it is true that certain assumptions would have to be made to define new ‘equivalent’ metrics, assumptions are already made in the current TRM for measuring CIP compliance efforts. Similar inferences could be made to establish new CIP metrics, and the [Department] could and should lead the process by working with industry leaders to define new metrics.”

Some commenters noted that under current policies, transportation electrification serves to raise utilities’ goals for conservation improvement. MREA commented that “Increased [electric vehicle (EV)] loads make it harder for utilities to achieve their CIP goals because EVs increase a utility’s total electric sales and cause them to spend more to reach that goal. CIP should be modernized to emphasize end-use total energy efficiency rather than narrowly focusing on reducing electricity use, and that can be done only by allowing fuel switching.”

Some stakeholders expressed strong disagreement with the decision by the Department to focus the discussion on fuel switching among utility fuels and among utility and delivered fuels. For example, MMUA asked “Who has determined that [transportation electrification] fuel-switching is so different from other types that a separate process for presumably these same people is necessary? Should we refer to the current stakeholder process as the space heating stakeholder group?” The association added, “A separate stakeholder process for transportation electrification is unnecessary and the subject should be dealt with in this stakeholder process. It is a major reason why the people involved have taken time away from their duties to travel and participate in this process.”

Some other stakeholders, however, expressed contrasting perspectives. CEE, for example, noted that a legislative solution is preferable to Department policy revisions only, especially if such changes are to provide conservation incentives supporting transportation electrification. “Extending CIP beyond the built environment to include other sectors of the economy – strategic electrification of the transportation sector, for example – is a very significant expansion of CIP beyond its current boundaries, and should be authorized by legislation, as contemplated by the [2019 Minnesota] legislative initiative.”

The City of Minneapolis expressed the view that gas-to-electric fuel switching under CIP “should only be permitted to enable beneficial electrification, and when the new electric load is on a load management program.”

The Minnesota Petroleum Marketers Association urged a comprehensive approach with effective and empirically accurate criteria. “A good holistic energy policy doesn’t limit energy choices for Minnesota consumers. The interference of fuel switching in the energy marketplace will create unintended winners and losers.” The association added “All aspects of ‘savings’ should be measured related to a fuel-neutral basis such as total customer costs, infrastructure effects, accurate Btu calculations, and costs associated with increases to peak load demands.”

The Minnesota Chamber of Commerce expressed concern about shifting the intent of CIP toward the goal of “efficient electrification,” and subsidizing utility expansion in a way that constrains free-market competition and increases administrative complexity. “[T]he state’s current regulatory processes ... are not clear, timely, predictable, and accountable. We are concerned the changes and expansions contemplated by the Department will exacerbate these issues for ratepayers.”

CenterPoint Energy cautioned that benefits from fuel switching for some end uses can vary depending on the service territory and specific application, and also will change along with market conditions. “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.”

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:

1a. Potential energy-saving measures that could result in fuel switching, and that you believe should be made eligible for CIP incentives;

Many stakeholders identified electric heat pumps for multiple applications – space heating, domestic hot water, and thermal processes – as a priority use case for CIP consideration. As stated by the City of Minneapolis, “We see the most opportunity under an updated fuel switching policy for GHG emissions reductions, energy savings, and cost savings associated with heat pump technologies.” Other priority use cases include electric storage water heaters, especially when combined with renewable electric generation; electric technologies that replace thermal pasteurization processes; ultraviolet curing and radiant electric heating to replace natural gas dryers; combined heat and power (CHP) systems; and, in the near future, natural gas-fueled heat pumps.

Xcel Energy separated various use cases into three categories (each of which include both residential and industrial applications): 1) Btu savings at the generator, defined as a gas-fired combined cycle power plant; 2) Btu savings at generator based on hourly marginal energy source, using load-shifting to maximize consumption of electricity from wind and solar generation; and 3) Energy savings at the customer meter.

CenterPoint categorized fuel-switching use cases in terms of the direction and magnitude of changes as well as the suppliers involved, e.g.: “Away from [a supplier’s] fuel entirely for a given end use; To the use of [the supplier’s] 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; Toward a hybrid system using two fuels, one of which the utility supplies, in a manner that decreases the utility’s sales; or Toward a hybrid system using two fuels, one of which the utility supplies, in a manner that increases the utility’s sales.”

Several commenters urged the Department to prioritize (as stated by CenterPoint) “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.”

Additionally, CEE suggested that any CIP changes should focus on policy priorities rather than on use cases. The organization offered three priorities for consideration: “1) offering energy efficiency opportunities to increase the efficiency of homes and businesses of Minnesotans who do not currently have access to the state’s CIP, for space heating or other key energy services in the built environment; 2) ensuring quality installation and efficient operation of emerging, efficient fuel switching technologies; and 3) providing opportunities for utilities to encourage greater energy efficiency between the two fuel types currently covered by CIP within the built environment, electricity and natural gas.”

1b. Noteworthy benefits, factors, and considerations involving these use cases and technologies;

Several commenters recommended adopting the criteria drafted in recent Minnesota legislative proposals, e.g., any fuel-switching measures eligible for CIP incentives must:

- Result in a net reduction in the cost and amount of source energy consumed for a particular use, measured on a fuel-neutral basis;
- Result in a net reduction of statewide greenhouse gas emissions as defined in section 216H.01, subdivision 2 over the lifetime of the improvement. For an efficient fuel-switching improvement that affects the customer’s use of electricity, the change in emissions should be measured based on the hourly emission profile of the utility or the utility’s wholesale provider on whose system the electric technology is installed. Where applicable, the hourly emission profile used should be the most recent resource plan accepted by the Minnesota Public Utilities Commission under section 216B.2422;
- Be cost-effective from a societal perspective, considering the costs associated with both the fuel that was used and the fuel that will be used; and
- Be installed and operated so as to not unduly increase the utility’s system peak demand or require significant new investment in utility infrastructure.

Fresh Energy referred to the cost-effectiveness testing methodology developed by the California Public Utilities Commission (CPUC) in its recent policy revisions.¹ The organization noted that the California approach would help “ensure that new clean electric technologies that are not yet cost effective can receive early support to increase their market share and bring costs down.”

Otter Tail Power identified fuel security as a benefit for customers who adopt fuel-switching measures that reduce their exposure to fluctuating fuel prices, and stated that electric rates historically have been more stable than prices for fossil fuels. OTP also noted that installing a heat pump as part of a dual-fuel system would allow a customer to participate in cost-saving dual-fuel rate programs.

CenterPoint observed that fuel-switching policy revisions may need to “distinguish between technologies that entirely remove a fuel from serving a given application and technologies such as [cold-climate air-source heat pumps] that only reduce another fuel’s usage.”

MMUA expressed doubt that municipal utilities would benefit from CHP or air-source heat pump incentives through fuel switching because, the association stated, “a) economical CHP potential is limited almost exclusively to Xcel service areas, and b) [air-source heat pumps] are not as cost-

¹ “Decision Modifying the Energy Efficiency Three-Prong Test Related to Fuel Substitution,” California Public Utilities Commission (Aug. 1, 2019), <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M310/K053/310053527.PDF>

competitive in electric service areas that have natural gas service, as most municipal electric service areas do.”

Several commenters identified environmental benefits associated with fuel switching use cases. MRES noted that realizing potential for reductions in greenhouse gases (GHG) would require statutory changes “to specifically recognize carbon reductions as a metric of performance for CIP expenditures.”

The City of Minneapolis suggested that in order to align CIP policies with science-based reduction in GHGs, the Department should prioritize life-cycle emissions reductions. “We believe it is within Commerce’s authority to revise the fuel switching rules adopted in 2005 in a manner that aligns with the goals of the Next Generation Energy Act so as not to exacerbate the emissions trending issue that Minneapolis is experiencing (*e.g.*, GHG emissions attributable to natural gas use are increasing).”

Xcel noted that potential benefits from fuel switching vary from case to case, but identified reduced installation costs, greater customer satisfaction, and overall utility system usage reductions as potential benefits, and suggested that a comprehensive study of benefits and costs would “help identify additional implications from fuel switching.”

1c. Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.

Stakeholders identified multiple possible unintended outcomes that should be considered and addressed in any fuel-switching policy changes.

The Minnesota Petroleum Marketers Association stated that incentives for fuel switching would reduce the number of fuel oil and propane customers in Minnesota, forcing fuel suppliers to reduce their delivery assets and employees. “This loss of delivery infrastructure will negatively impact the distribution system, jeopardizing deliveries and increasing costs to the remaining rural Minnesota residential fuel oil customers who have no options for natural gas or electric solutions,” the association stated.

The City of Minneapolis observed that “uncontrolled new electric heating loads could add to system peak demand and require infrastructure upgrades,” and suggested that effective load-management programs could mitigate these effects.

Minnesota Power warned that a significant amount of load shifting as a result of fuel switching incentives eventually could result in stranded assets, particularly for natural gas distribution. It also could create need for new electric infrastructure investments. The utility also observed that GHG reductions from fuel switching vary depending on the electric generation source, and as a result environmental benefit metrics must account for locations and times of use. “Despite the complicated nature of quantifying the value of carbon reduction, a reasonable approximation can be made for the purpose of conservation program filings and benefit calculations,” Minnesota Power stated.

CenterPoint noted that using thermal energy storage for load shifting diminishes net efficiency, as stored hot water loses heat before it is used, and as a result, off-peak water heaters should be ineligible for CIP incentives.

Several commenters urged caution to protect the energy savings potential of traditional CIP solutions. As CEE stated, “Though fuel switching can create important benefits, we must ensure that utilities continue to invest aggressively in traditional energy efficiency, Minnesota’s preferred energy resource.”

Fresh Energy suggested that a separate energy savings portfolio for fuel-switching measures may be needed to avoid such unintended consequences. “[A]ny fuel-switching activities allowed within the CIP

regulatory framework [should] be tracked and reported separately from the energy efficiency activities that are fundamental to CIP.”

Xcel suggested that “CIP stakeholders should be able to mitigate any negative or unintended consequences with the right controls in place.”

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 nonutility delivered propane and fuel oil. Please describe:

2a. Use cases and technologies exemplifying potential energy-saving measures that you believe should be addressed in State energy policies (within CIP or otherwise);

Several commenters urged the Department to prioritize fuel switching to encourage electrification of loads served by delivered fuels (fuel oil and propane) as well as gasoline and diesel. OTP identified a list of such potential applications that the utility suggests would merit incentives under CIP: “Heat pumps for space heating; Heat pump water heaters; Electric vehicles; Electric lawn mowers and other power tools; Industrial processing applications; Forklifts, golf carts, Zambonis, etc.”

Several stakeholders also reiterated that CIP policy changes should focus on objectives and criteria rather than specific technologies or use cases.

Xcel suggested that load-shifting measures such as EV smart charging and pre-cooling/pre-heating support grid flexibility and emissions reductions, and therefore should be eligible for CIP incentives “provided that these solutions result in overall electric system energy, cost, and emissions savings when compared with a delivered fuel alternative.”

Minnesota Power notes that the same measures, benefits, and considerations involving natural gas-to-electricity switching can apply to propane and fuel oil with the difference that propane and fuel oil are more expensive than natural gas. “This makes them a prime target for immediate replacement since it advances Minnesota’s environmental goals while also providing financial benefits for customers,” the utility stated.

MERC noted that a gas utility would be most likely to experience the delivered fuels-to-gas situation when gas service is extended to new areas. “In those cases, a customer’s decision to switch to natural gas could allow the use of CIP incentives to encourage the installation of natural gas equipment exceeding gas baseline standards,” MERC stated.

2b. Noteworthy factors and considerations involving these use cases and technologies;

Several commenters noted that fuel-switching policy could address inequities in customers’ access to CIP incentives. Minnesota Power noted that many propane and fuel-oil customers currently cannot access CIP incentives, and the City of Minneapolis suggested that “Fuel switching from delivered fuels to energy saving electric heating applications would help correct the issue that customers who pay into the electric efficiency funds have not historically been eligible for electric CIP funds for heating.”

Fresh Energy encouraged the Department to prioritize equity issues in any fuel-switching policy review. “Low-income and under-resourced customers have the most to gain from deeper investments in energy efficiency and fuel-switching, since those families often spend up to five times more of their income on energy compared to the average household and are disproportionately impacted by poor indoor and outdoor air quality associated with the combustion of fossil fuels.”

OTP observed that EVs support greater fuel diversity and cost stability for customers, and incentives for transportation electrification also would give the State additional tools for reducing energy consumption

and GHG emissions. The utility added that fuel-switching measures that reduce onsite consumption of fossil fuels would reduce GHGs attributable to fugitive methane and fuel evaporation.

Finally, OPT noted that “Any electrification that is capable of being managed through a utility demand response program allows for more efficient use of the utility’s facilities and puts downward pressure on all rates.”

2c. Uncertainties and unintended consequences related to these use cases or technologies that should be addressed in the policy process.

Several commenters noted that in the absence of CIP incentives for transportation electrification, utilities effectively are penalized for supporting EV-charging loads, because this load growth increases the magnitude of the utility’s energy sales reduction goal under CIP.

RPU stated, “Energy sold for efficient electrification should be exempt from the annual retail sales used to calculate the 1.5% savings goal since the newly added equipment is at the beginning of its useful life.”

The City of Minneapolis suggested that although fuel-switching could yield greater equity in access to CIP incentives, fuel switching from delivered fuels to natural gas “could put pressure on funding by customers who have not contributed to CIP gas programs. This can create an issue with fairness.”

OTP added that while calculating source energy metrics for electricity is relatively simple, doing so for natural gas may be more complex, given substantial uncertainty and disagreement about the magnitude of emissions attributable to flaring as well as fugitive methane across the natural gas supply chain.

The utility adds that the attributes of electricity in the state continue changing, and assumptions about heat rates and emissions will change with growth in cleaner fossil-fueled generation and renewables. OTP notes that “Illinois avoided this challenge of calculating source energy by adopting site or ‘premise’ energy in their statutes. Illinois simply converts site energy to an equivalent Btu.”

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.

Several commenters suggested that priorities should include electric transportation as well as space and water heating applications, especially those that displace consumption of propane and fuel oil.

BEL encouraged rapid action to support electrification of water and space heating equipment, due to the long-lived nature of related capital assets, and the related opportunity to reduce life-cycle energy consumption, cost, and emissions through fuel-switching incentives.

Xcel commented that energy policies should neither require fuel switching nor 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.)”

Xcel referred to the Northeast Energy Efficiency Partnership’s (NEEP) recent electrification action plan,² which identifies a core set of technologies including electric space and water heating and EVs.

² *Action Plan to Accelerate Strategic Electrification in the Northeast*, Slide 14, Northeast Energy Efficiency Partnerships, (May 2018), <http://neep.org/sites/default/files/resources/Action%20Plan%20To%20Accelerate%20Strategic%20Electrification%20in%20the%20Northeast%20FINAL.pdf>

Xcel added that building codes and standards should require new construction to support all applicable options to ensure that homes and businesses can take advantage of the most energy efficient technologies without facing prohibitive retrofit costs.

MERC urged policymakers to carefully consider the electric generation fuel mix in attributing energy savings and other fuel-switching impacts. “Because the grid is highly interconnected, fuel mix should be considered beyond individual utility service territories and possibly beyond the state’s boundaries at the operating area or interconnection levels,” MERC stated. “Other impacts, especially for the electrification of space heating, should include consideration of weather-related peaks and how these could affect infrastructure.”

Fresh Energy identified fuel switching in the buildings sector as “the most significant near-term opportunity to reduce total energy consumption while equitably advancing the state’s policy climate and energy goals.” Additionally, Fresh Energy encourages the Department to consider establishing a program specifically to encourage transportation fuel switching.

-END SUMMARY-