To: Minnesota Department of Commerce

From: The Beneficial Electrification League

Subject: Minnesota's policy on electric and gas utility fuel-switching programs and the Minnesota Conservation Improvement Program (CIP)

Date: August 22, 2019

Submitted via email to mtburr@burrenergy.com

Dear MN Department of Commerce:

The Beneficial Electrification League and our stakeholders are pleased to provide comments to the Department of Commerce on Minnesota's policy on electric and gas utility fuel-switching programs and the Minnesota Conservation Improvement Program (CIP). The Beneficial Electrification League is a non-profit organization founded in 2018 with the support of the Natural Resource Defense Council (NRDC) and National Rural Electric Cooperative Association (NRECA). Our supporters include a wide variety of interests ranging from service and technology providers, environmental advocacy groups, and electric utilities.

Beneficial Electrification League (BEL) is focused on promoting market acceptance for Beneficial Electrification concepts, policies, practices, technologies and business models. **BEL**'s vision is to initiate collaborative information sharing and coordinated market development efforts in support of wide-scale implementation of Beneficial Electrification (BE) technologies. The League believes that Beneficial Electrification is critical to meeting our nation's and the world's economic and environmental goals. We believe that Beneficial Electrification is the single most effective and inclusive carbon reduction strategy available moving forward. We believe that the multi-stakeholder process that MN has initiated and is implementing through this comment process is a demonstration of national leadership in ensuring the energy efficiency and conservation programs that have been so successful in the past continue to evolve and provide continued benefit into the future.

With regards to the specific questions:

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 many opportunities to reduce direct combustion of fossil fuel through use of electricity that currently may not be eligible under CIP that should be. These are programs that meet the intent of CIP by saving consumers money, improving overall efficiency of the energy system, and providing environmental benefits. Examples include the use of **electric storage water heaters** as flexible energy resources or the use of electric heat pump or **dual fuel heating** systems to heat homes or upgrades from diesel to **electric school buses** to get children to school. One perfect example of this type of project is occurring at Lake Region Electric Cooperative.

The Lake Region project in Trondhjem Township near the town of Erhard in Otter Tail County uses water heaters as "community storage" to optimize the electricity generated by solar and wind energy to avoid renewable energy resource curtailment and reduce the potential for back feeding renewable energy onto distribution circuits. The Lake Region Community Storage project is made up of a wind turbine with a maximum output capacity of 2.0 MW, connected as an inverter for 650 kw of solar photovoltaic panels. LREC is managing end use energy load in water heaters by using Grid Interactive Electric Thermal Storage (GETS) for the benefits of other consumer-members as a whole. Depending on how the energy consumption is measured, this project could theoretically be viewed as not "saving" any energy, despite clear consumer, environmental, and system-wide efficiency benefits. The CIP program is not currently adapted to fully measure and reward for benefits that changing the time that energy is used or the fuel source to electricity brings to the project. "Fuel equivalency" or "source energy" calculations tend to favor direct combustion of fossil fuel for a whole host of reasons. One major problem with these calculations is that the energy landscape is changing, and the metrics simply are not keeping up with the changes.

The Lake Region Electric Cooperative project is supported by Great River Energy, National Rural Electric Cooperative Association, Natural Resources Defense Council, and Steffes Corporation. We believe this type of project, whether it uses water heaters, electric vehicles, fork lifts, or other energy storage, should be allowed under CIP as long as there are demonstrated consumer benefits.

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

One great benefit of water heater programs, such as the one at Lake Region, is that it helps to control for grid flexibility. By controlling when water heaters are used, utilities/cooperatives can manage the shape of the load curve and shift demand. Since water heaters can store thermal energy for up to about

a day, the hot water can be used anytime during the day but can be heated up at a different time when there is less electricity demand. The load can be shifted away from peak times that are more expensive and generally more often supplied by fossil-fuel energy, towards times with less demand that are cheaper and generally supplied by cleaner energy.

Another benefit to consider is that water heater programs help to promote renewable energy integration, since water heaters can store the thermal energy derived from the electricity that arrives intermittently from wind and solar energy. Wind energy is more prevalent at night, and by shifting load towards the night when demand is lower, more wind energy can be captured and stored as thermal energy in water heaters. This can lead to lower greenhouse gas emissions.

Rocky Mountain Institute analysis shows that switching from gas to electricity can help consumers save money. For example, this can be done in all new construction, in lieu of propane or heating oil, or when they are trying to upgrade heat and AC at the same time (https://rmi.org/insight/the-economics-of-electrifying-buildings/). Many studies have identified the significant greenhouse gas benefits of using electricity as a fuel source, as well as the opportunity to improve both indoor air quality and local outdoor air quality.

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

A concern often raised around the topic of fuel switching is that the electrification activity will not be "beneficial" to consumers and the society. This is not the case. There is a strong consensus that the great majority of end-uses must be electrified if the state is to meet its greenhouse gas emissions goals. Finding ways to make this happen through programs like CIP are essential to ensuring the transition is done in a way that benefits consumers. As long as electrification of water heaters or other electric devices either save consumers money over time, reduces greenhouse gas emissions, improves the consumer quality of life, or helps to create a more resilient grid, without adversely affecting the others, then the electrification will be beneficial.

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);

Fuel switching from propane or fuel oil space heating to heat pump space heating, including dual fuel space heating should be addressed by CIP. The idea is similar to water heater programs, where switching these technologies can provide cost savings for consumers, reduce greenhouse gas emissions, improve the consumer quality of life, and help create a more resilient grid.

There is also a whole range of other opportunities with different technologies, such as fork lifts, and transportation like electric vehicles, school buses, heavy duty trucks and vehicles. Industrial processes and cooking equipment also offer important opportunities. These technologies are not replaced very often, so the sooner people can buy new electric technologies when their old gas or propane-fueled technology breaks down, the sooner the beneficial impact can begin.

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

Many of the benefits of these use case technologies are similar to those of the electric water heater programs. These benefits focus on being able to manage load, promoting renewable energy integration, reducing carbon emissions, and saving costs for consumers.

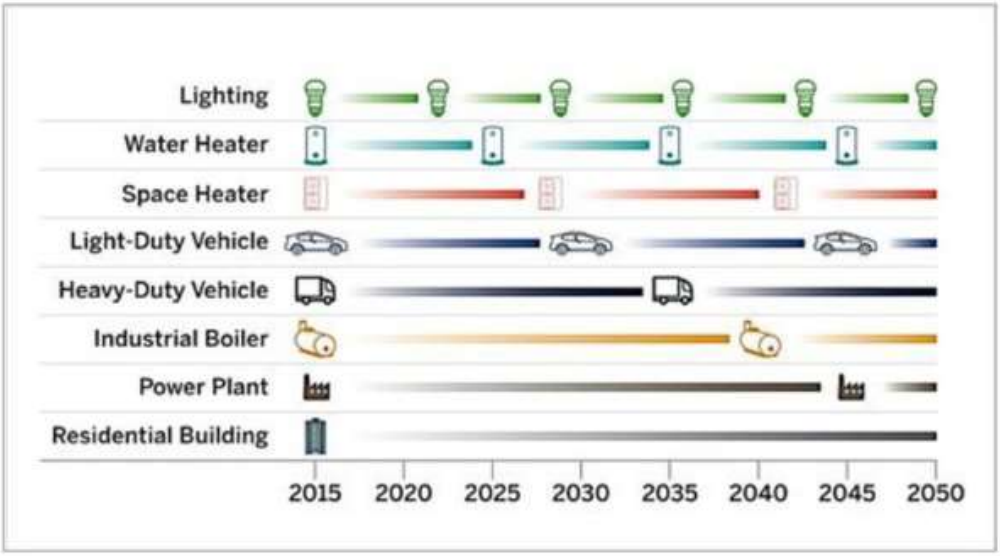
Forklifts have many applications, such as materials handling, food trans-shipment, and smaller retail operations. There are, therefore, many opportunities to help businesses by having them switch over to electric forklifts. Electric vehicles are becoming increasingly popular and are close to having the same or lower total cost of ownership over time as internal combustion vehicles due to their low maintenance costs and lower fuel costs. Electric cooking equipment can have wide applications to both residential and commercial sectors, so the impact of changing to electric can be very widespread. When switched to electric, these technologies can improve quality of life by removing the exhaust emitted and making indoor air quality generally cleaner to breathe.

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

It is important to keep in mind that the electrification of these various technologies should be overall beneficial in order for them to take place. Technologies should only be replaced when cost-effective and not forced upon consumers otherwise.

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.**

Space and water heating equipment generally last a long time. They are normally only replaced when equipment breaks and in most cases the equipment must be replaced quickly. This makes it difficult to make a lot of progress in residential electrification quickly. The issue of electrification of water and space heating equipment needs to be addressed aggressively and as early as possible – i.e. now. The sooner we begin to electrify water heaters and space heaters in homes, the sooner the progress can start. See Figure 1 below from the Regulatory Assistance Project's Beneficial Electrification Framework illustrates that the lifespan of space, water heaters and building products are over a decade. It is important to encourage the correct choices when the opportunity for replacement exists. Starting changes now will have an impact for decades to come. Likewise, switching to electric stoves, whether those are resistance, induction, or another technology, can help improve indoor air quality. By supporting whole building electrification, CIP can help consumers.



In conclusion – There is a lot of opportunity to electrify our economy and advance our economic and environmental goals. In a variety of states, regulators are moving away from fuel-switching prohibitions as the need for electrification grows in order to fulfill carbon emissions reduction goals. The consensus towards electrification as a necessary part of the future continues to grow. We are proud of our partnerships and work in MN and we commend DOC for your leadership in this area as we work to promote electrification that is beneficial to our local communities, the state, and beyond our service territory and state borders.

The Beneficial Electrification League believes there is a great opportunity to include beneficial electrification of a variety of end-uses into the CIP program and commends MN's leadership on this issue. Please do not hesitate to reach out to us for additional information at: www.beneficialelectricrification.com.com or Steven Koep at skoep@beneficialelectrificatoin.com.

Best Regards,

Steven Koep, General Manager, Beneficial Electrification League (BEL)