



Summary - Fuel Switching Meeting #2

Nov. 6, 2019

The Department of Commerce convened the second in a series of stakeholder meetings on Sept. 11, 2019, to address issues related to the prohibition on targeted fuel-switching in the Minnesota Conservation Improvement Program. This document summarizes the information presented at that meeting, and selected comments from meeting participants.

I. Introduction and Opening Remarks

A. Welcome and introduction by Michael Burr

The meeting was convened at 9:00 a.m. by the meeting facilitator, Michael Burr of Burr Energy LLC, who welcomed participants, summarized the meeting agenda, reviewed steps in the process to date including Meeting #1 and the written comment period, and introduced Anthony Fryer, Department of Commerce CIP Program Coordinator.

B. Remarks by Anthony Fryer

Anthony Fryer noted the 16¹ written submissions that were received during the written comment period and acknowledged questions and comments about whether transportation electrification is appropriate to include in the CIP Fuel-Switching stakeholder process. "The Department's preference is that transportation be discussed in the upcoming action plan development process, but with that said, we also don't want to cut off conversation prematurely in this process," Fryer said. "We would like to hear what stakeholders have to say about transportation within CIP and any future policy revisions."

Fryer reiterated the general purpose of the stakeholder engagement process – to learn stakeholders' perspectives on questions about "whether the current fuel-switching policy is consistent with the best CIP framework."

II. Presentation by Martin Kushler, ACEEE

Fryer introduced the morning presenter, Martin Kushler, senior fellow at the American Council for an Energy Efficient Economy. Kushler directs national energy efficiency studies and provides technical assistance to help advance energy efficiency policies in many states. Kushler's presentation substantially followed the content of the presentation posted in the Project document repository on the Burr Energy LLC website here:

http://www.burrenergy.com/uploads/1/8/9/9/18995065/mn_fuel-switching_2019_comment_summary-rev20190915.pdf

¹ Two additional comment submissions were found to have been timely submitted but not received. They were subsequently added to the other responsive comments and referenced in the comment summary report.

Kushler discussed the national context for the Department’s stakeholder discussion on fuel-switching. He noted that the concept of including fuel switching measures and electrification in utility energy efficiency (EE) and demand-side management (DSM) efforts is relatively new among state programs. He observed that while efficient fuel switching can yield benefits – economic, environmental, and equity or fairness for energy customers, it also risks undesirable effects such as incentives for utilities to build load inefficiently or neglect traditional energy-saving measures. As a result, he suggested that strong controls should be created to prevent unintended consequences and direct incentives where they can produce the greatest additional savings.

Kushler provided preliminary analysis from an ACEEE study in progress showing that among 27 state respondents, six do not allow fuel-switching in ratepayer-funded EE and DSM programs; four allow fuel switching, but savings of fossil fuels and GHGs do not count toward savings targets; and 10 states allow fuel switching in some form and recognize the savings in program goals. Kushler summarized fuel-switching policies in those 10 states (California, Connecticut, District of Columbia, Illinois, Maine, Massachusetts, New Jersey, Rhode Island, Vermont, and Wisconsin), and provided detailed discussion of policy trends in Massachusetts and California.

In Massachusetts, he explained, the Commonwealth established goals for several categories separately for electric and natural gas savings. Categories include net annual and lifetime energy savings, summer and winter peak (electric only), GHG reductions, and net benefits. The electric utility program targets 2.7% annual savings, while the gas program requires 1.25% annual savings. Fuel-switching solutions are eligible for program incentives if they reduce thermal energy consumption measured in MMBtu.

Kushler discussed California’s recent changes to its longstanding three-prong test for determining whether fuel-switching measures are eligible for energy savings program treatment. The three-prong test was changed to a “fuel substitution test,” in which resources “must offer resource value and environmental benefits,” or more precisely, must not produce detrimental effects – either increasing source energy consumption or environmental impacts. The new policy also requires that program costs must be funded by the ratepayers of the new fuel, not the one being substituted, and fuel-switching savings are accounted separately from other energy savings.

Finally, Kushler offered comments about proposed language that was debated during the most recent Minnesota legislative session as part of HF 2208. He observed that the Minnesota language, which proposed establishing four criteria for fuel-switching improvements and providing safeguards against undesired load building, is “some of the best thinking on this issue. Minnesota has a chance to be a real leader in establishing guidelines for doing this in a way that benefits ratepayers and society.”

III. Summary Review of Stakeholder Written Comments

The facilitator provided a summary of the numerous written comments received from stakeholders during the comment period convened from July 30 to August 22. The written comments are summarized in a separate report that was posted to the fuel-switching materials repository at the Burr Energy website.² That summary is incorporated by reference into this report. The original written comment submissions also were posted to the same repository.³

² http://www.burrenergy.com/uploads/1/8/9/9/18995065/mn_fuel-switching_2019_comment_summary-rev20190915.pdf

³ <http://www.burrenergy.com/mnfuelswitchingcomments.html>

IV. Panel Discussion

Following a 15-minute break, the meeting re-convened with a panel discussion that included the following participants: Katie Frye, Supervisor, Customer Programs and Services, Minnesota Power; Mike Bull, Director, Policy and External Affairs, Center for Energy and Environment; Jeff Haase, Manager, Member Services and End Use Strategy, Great River Energy; Roger Leider, Executive Director, Minnesota Propane Association; and Nick Mark, Manager, Conservation and Renewable Energy Policy, CenterPoint Energy. Edited excerpts from their prepared remarks are provided below.

FRYE, MN Power: If properly implemented, fuel-switching policies could support CIP objectives, achieving environmental benefits while also reducing customer costs. The plain reading of the CIP statute does not distinguish between fuel types. All energy sources should be considered, assuming a net reduction of energy use.

Fuel switching could enable significant environmental and customer benefits that are unattainable under the current policy. Addressing conservation programs holistically regardless of fuel types would allow for a better customer experience by filling gaps in the current policy. Legislative changes might be needed in the future to handle the broad changes that are needed in CIP, but the Department could make improvements to the current CIP policy by eliminating fuel-switching prohibitions. While those prohibitions made sense at the time they were implemented, the policy now is outdated and in some cases prevents us from providing meaningful rebates to customers who fund CIP.

The Department should prioritize customer accessibility. For instance, customers who are in delivered-fuels territories don't have access to participating in CIP programs. We get a lot of confusion among customers and contractors about who is eligible to participate. Eliminating the fuel-switching prohibition would alleviate some of those concerns. The second priority would be implementation and evaluation metrics. There are a lot of great examples we can draw from, in Minnesota as well as other states such as Massachusetts.

BULL, CEE: We have about 40 years of experience working on energy efficiency programs and research. Our position on fuel switching begins with a strong preference that we collectively work to pass the energy conservation and optimization language from the electricity initiative in the most recent legislative session. It was broadly and painstakingly negotiated among a bunch of folks, many of whom are in this room, including regulators, consumer advocates, efficiency advocates, electrification advocates, and utilities of all sizes and types, to create legislation that is better suited to creating the necessary structure and guidelines for fuel switching. It was carefully and tightly designed to protect Minnesota's nation-leading traditional EE efforts while supporting opportunities for demand response and efficient fuel switching.

However, we can support a regulatory path for limited forms of efficient fuel switching through CIP, focused on specific policy priorities, not necessarily specific use cases. Our policy priorities for efficient fuel switching in CIP include:

- 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.

In all cases, any new policy should apply the criteria in the 2019 energy conservation and optimization legislation for determining when a fuel switching measure is efficient.

Our emphasis on efficiency within the built environment is intentional. In our view, 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.

HAASE, GRE: My comments will focus on expanding and evolving CIP into the customer-centric program that we all want it to be, both in terms of how we deliver cost savings and how we adapt to the changing desires of consumers as technology changes. Occasionally CIP can be viewed as a program designed by engineers for engineers. But we know that consumer desires change, motivations change, and a lot of that change is a function of the technology that is currently available.

We have evolved over the last 25 years, with very successful policies on renewable energy and energy efficiency. Today 30% of wholesale market energy in northern MISO is coming from renewable energy. We have achieved significant energy savings, and most utilities have flat or declining sales, and yet we continue to add new loads and build out our system. Our ability to take advantage of the dynamics around renewable energy in this market will yield cost savings for our members, and that is a key focus for GRE membership.

When we think about load growth, we often think in terms of “Goldilocks”; we want it to be just right. We don’t want to add to peak loads because that results in additional costs for our members. Strategies to address peaks include demand response (DR) and load flexibility, as well as consumer facing programs, rate designs, and programs to minimize the costs of adopting new technologies. Today we are looking at how we can integrate electric vehicles (EV) in ways that benefit our membership. As consumer preferences change, we look at CIP and ask, ‘What’s next?’ CIP has been successful. Do we continue to wash, rinse, and repeat, or do we continue to evolve the program to accommodate new technologies, because this is a technology-focused initiative? As traditional energy efficiency programs reach increasing levels of maturity, to what degree do we continue adopting and incentivizing those traditional programs at the appropriate levels, while also fixing our gaze on the other technologies that are being quickly adopted by consumers?

When we think about the variable nature of renewable energy, and we continue to add loads to the system, how do those loads interface with the generation? Some of the dynamics involve controllability by the consumer. We’ve seen that play out in smart phones and smart thermostats, and we’re looking at how that same functionality overlays onto existing systems.

When we look at the complement of energy policies that are on the books today, they are calling for a 30% carbon reduction by 2025 and an 80% reduction by 2050, as well as reduction in the cost of electricity to consumers, and continued energy efficiency programs. Regardless of whether it fits in CIP,

fuel switching does fit into the broader energy policy framework. As customers adopt new technologies, we want to continue to integrate them at the lowest cost possible.

LEIDER, MN Propane Association: The points I want us to consider today are need for fuel diversity, measuring environmental impacts, cost of energy, and infrastructure and economic impact.

When we start looking at fuel diversity, we see Minnesota is a very diverse state. We absolutely need natural gas, we need propane, and everybody needs electricity. Fuel oil plays a part as well, and there's biomass and everything else. There isn't one single answer that will fulfill the needs of all the people out there. This process needs to consider how competitive markets bring the right fuel at the right place and time.

Fuel switching doesn't necessarily equal carbon emissions reductions. A simple example is a natural gas-fired power plant. It takes three units of natural gas to produce and deliver one unit of energy to the home. In some cases you could put a natural gas-fueled appliance in the home and save energy and emissions.

Propane now is recognized as a clean fuel by EPA with the same characteristics as natural gas. And there can be increased carbon emissions with increased use of electricity. If you look at a home with an electric water heater and air-source heat pump, with Minnesota's grid mixture for electricity today, that home creates 24% more carbon emissions than a home with a propane tankless water heater and high-efficiency furnace. So fuel switching doesn't always lead to emissions reductions or cost savings.

Minnesota has about 230,000 homes, farms, and businesses that depend on propane for heating and hot water. Add to that fuel oil, and we're serving 250,000 to 300,000 homes in rural Minnesota. Among those homes if we replaced 100,000 electric water heaters with high-efficiency propane water heaters, we could reduce carbon emissions by 61,000 tons per year, starting tomorrow. How we measure what we do in this program has to be looked at in its entirety before we say switching to electricity will be cleaner or less expensive.

With air-source heat pumps, we keep hearing that you still need backup. But if you take the base load away from fuel oil or propane and leave us serving the 10 coldest days in winter, the fuel delivery infrastructure will deteriorate. For example, in the winter of 2013, the Cochin pipeline started the reversal process. It had been bringing propane and other products into the United States, including Minnesota. But because it wasn't being used to its potential, and because of fracking and oil production in North Dakota and Canada, direction of deliveries was reversed, and they began sending product back up the line.

If you erode our baseload, and we don't use pipelines and rail cars on a regular basis, then they will go away. The rail cars and track space will be reassigned. It's a use-it-or-lose-it proposition. If fuel switching went to its fullest extent and everybody put in air-source heat pumps, you'd see the fuel delivery infrastructure go away.

Natural gas and electricity is counting on us to fill a gap. In January 2019 we had some fairly cold days, and we were shipping an extra 100 semi loads of propane a day to customers and power plants with dual-fuel systems. In conditions like that, when the wind chargers aren't turning and the solar panels are covered with snow, you need us. Fuel diversity is a necessity.

Fuel switching is happening whether we include it in CIP or not. Some is going one way, some is going the other way. People will choose what's best for them in their location.

CIP goals were put in place around 13 years ago, and they now are outdated. Maybe it needs to be completely rewritten. I'd encourage taking a long and slow look at any changes to the CIP program involving fuel switching. Be cautious.

MARK, CenterPoint Energy: Fuel switching and electrification often are treated as synonymous. But I've been around long enough to remember the last time we talked about fuel switching in CIP, when CenterPoint Energy had introduced a proposal to rebate condensing natural gas water heaters to replace electric water heaters. That was in 2004 or '05. For quite a while, the assumption was that fuel switching was from electric to gas, and now the tables have turned.

We continue to have the same view we had 15 years ago, which is that CIP ought to chase the most efficient outcome for the customer, and by that we mean the lowest cost, least net energy, and lowest emissions, and we ought to let the market compete on that basis.

Generally speaking, the safeguards [that are needed] put more work on the Department of Commerce, but it is the kind of work the Department is used to doing. We have a set of standards and assumptions for energy efficiency programs that tell us how much savings we can claim. We'll need to create a chapter that addresses fuel-switching questions. It's complicated, but certainly the kind of thing that regulators are used to doing.

The location of a fuel-switching measure will make all the difference in the world. Where you've got a clean grid, replacing electric resistance heating will create a different outcome than in a place with a coal-dependent utility. Minnesota has a wide variety in terms of the electric grid mix. When it gets down to a specific customer, it gets pretty messy. It is critical to keep the criteria in mind, be agnostic about what direction of fuel switching you might encourage, and recognize that some measures will be more likely to meet the criteria than others. Replacing a gas furnace with an air-source heat pump today doesn't make economic sense for the customer, but prices change, and that story may be different five years from now. We absolutely agree that if a measure does represent a lower cost for the customer, lower net energy use, and lower emissions, then it ought to be a CIP eligible measure, and the company that loses sales should get the right to encourage that measure. That is consistent with how we've always approached energy savings in CIP.

All things being equal, utilities have more incentive to grow load than to reduce sales through energy efficiency. Fortunately, all things in Minnesota are not equal. CenterPoint Energy's rates are fully decoupled. I get cost recovery on my programs and we have a robust financial incentive mechanism for performance on energy efficiency. As a result, I make more money saving natural gas than selling the same natural gas, because the incentives are lined up to achieve those savings. But not all utilities in Minnesota are decoupled. Should we require decoupling to allow utilities to [use ratepayer-funded incentives to promote] fuel switching? If the utility believes something is such a good deal that they want to chase it regardless of energy savings, then maybe shareholders should be paying that expense instead of ratepayers – unless there's a regulatory requirement to be met.

We need to consider cases where the customer switches entirely away from a fuel rather than partially. When a gas company loses a customer, that's different from losing load.

I wouldn't want to see policies detract from the retail DSM policies that we promote. It's important to take a careful approach, and look at things measure by measure, location by location, as we move forward.

V. Panelist and Stakeholder Q&A

The facilitator opened the floor⁴ for discussion, starting with a query for the panelists: "Please offer comments and observations on the criteria developed for consideration in the recent legislative session."

BULL: The criteria grew out of the technical resource work we've been doing at CEE around air-source heat pumps and water heaters. Our analysis shows that in many cases it would be beneficial to install them. We took that research work and tried to build it into a legislative language.

Some of the concerns that have been raised in this discussion are things we were trying to protect against in the legislative language. Technologies shouldn't be installed in a way that increases energy use or carbon emissions. The case of a coal utility installing an electric measure is the kind of thing you want to pay attention to. We negotiated with a bunch of people, and we drafted it very tightly to avoid a parade of horrors. It's an approach that I hope people can take another look at and get behind.

One thing that I think still needs to be worked on and thought through is the criterion regarding not increasing utility system peak demands and causing the need for significant new infrastructure. It's an important concept we can't lose.

MARK: The legislative process is unpredictable and can be risky, but [overreliance on] the regulatory framework has its own risks. To some degree it comes down to who you trust more to get it right, and that can vary depending on whom you ask and the day of the week.

Regarding the fourth criterion regarding utility demand and significant new infrastructure, in many cases electric utilities peak in the summer. Adding load in the winter is fine for now, but at a certain point that will change. How do we figure out when the next marginal heat pump is a bridge too far?

I think it is important to pay attention to peak demand. Our peak this year would equate to about 20,000 MW of generation, which I'm told would exceed the total electric generation capacity in the state. It's important to plan for peak loads, not only at the interconnect and utility level but down to the distribution level as more EVs are deployed.

We're focused on reducing demand through load management. That becomes part of the strategy when weather gets extreme.

FRYE: Many of these points illustrate why fuel switching should be incorporated within CIP as a bridging solution – bringing CIP incentives to customers who don't have access currently, and taking a slower approach to addressing the concerns and working out the details of a legislative approach.

MARK: It's fascinating to see all the states that have fuel-switching policies in place. It gives us a chance to see what is working and to learn from other states' mistakes.

⁴ Where comments and questions are included from a participating stakeholder who did not self-identify during the Q&A discussion, the participant is identified below as "STAKEHOLDER."

BULL: CIP has been amended 36 times since it was enacted. The program continues to be fine tuned.

The Department issued a report last year that showed we have enough energy efficiency potential all over the state to continue meeting our current CIP goals through the next decade. We want to make sure those savings measured are implemented, and that's why we worked to make sure our current framework for traditional energy efficiency remains intact and effective.

STAKEHOLDER: How do greenhouse gases fit into the CIP fuel-switching equation?

BULL: If we're talking about a customer who is served by electricity switching to natural gas for that particular use in the home, the carbon emissions attributable to electricity can be compared against the carbon in the gas. Part of the calculus accounts for the renewables on the electric system, and part of the policy will be to work out the baseline metrics.

STAKEHOLDER: Wasting solar energy is no more acceptable than wasting any other kind. That's why it's important to measure savings based on source energy, which has to include upstream leakage and line losses. Similarly, GHG calculations should be factored in terms of source energy.

HAASE: This brings up an interesting dynamic. We don't have one policy to rule them all when it comes to energy efficiency. We have CIP, and when you look at renewable energy and CIP, they don't necessarily speak across the aisle, even though they have interconnected components.

We can't look at policies in a vacuum anymore. Renewable energy standards, biofuels, renewable electricity technologies, and how they relate to end-use consumer technologies – you can try to codify those things in policy, but you should expect it will continue evolving over time.

MARK: I should mention the efforts we put into trying to develop renewable natural gas. We have a meeting September 26 to bring in experts and people who aren't familiar with RNG and talk about the uses, the market, the benefits, and various policies.

STAKEHOLDER: The elephant in the room is climate change. I think it's fair to say that the strong underlying rationale of this whole conversation nationally is concern about climate change and GHG emissions. So my question for the panelists, personally and to the extent you feel comfortable speaking for your organizations, do you feel that the climate crisis necessitates some tough choices as a society, and necessitates thinking about our energy systems in a different way from what we have done?

BULL: The short answer from CEE's perspective is 'Yes we have to make some hard choices.' But we have to make sure politically that we do things in a way that brings interests together and recognizes competing thoughts about how we move forward. I appreciate Roger [Leider] and others [who represent the petroleum industry] being here because it's important to understand they are an important part of the solution. It's important that the policy we push forward improves the state's leadership on GHG emissions reduction, but in Minnesota, I don't believe a policy that only cuts GHG emissions can garner broad support, pass the House and Senate, and get signed by the governor. We have to focus on saving customers money. We have to keep our eye on that ball, while we're also tracking carbon reductions. That may be the only way through the eye of the needle.

MARK: I want to make very clear in the following comments I'm not speaking for CenterPoint Energy. These are my own opinions. But it's clear to anybody with a basic grasp of mathematics that we can't continue to use 22 trillion cubic feet of natural gas in this country if we're going to reach our climate

goals. We could eliminate all the of the carbon from the electric and transportation sectors and we'd still be emitting too much if we burn that much gas. Something has to give.

We are not doing enough on energy efficiency. In the last 10 years, 50% of Minnesota's residential load growth has been met with energy efficiency. We need to double that just to keep pace with customer growth. Clearly we are not doing enough. We need explore ways to drastically reduce if not eliminate the use of natural gas for some customer loads. Renewable natural gas and heat pumps are things we should be exploring, but the challenge arises when you say we're going to eliminate natural gas or propane or any fuel.

Again, I'm not speaking on CenterPoint's behalf, but we need to take a hard look at ourselves, and acknowledge it might not make sense in some parts of the country to continue adding natural gas utilities. Maybe the smartest thing we can do for our shareholders is to get out of that business in some places and let someone else have the stranded assets. That is not a popular position, and it's not CenterPoint's position, but it's something we have to wrestle with. Do we really need natural gas heating in places like Berkeley, where the lowest recorded temperature is 25 degrees? Or in Arizona or Texas? This is a pretty progressive thing to say for a guy whose company is headquartered in Houston. But as a group we have to elevate the question. We cannot continue to use this much natural gas any more than we can continue to use this much coal if we have any hope of maintaining a livable biosphere.

HAASE: That's hard to follow, but I'll just say we are seeing a groundswell. The utilities may not be pushing it, but consumers are, and that's not just individual consumers but large customers, the big box stores, the Targets. I agree with Nick [Mark] that there is a lot that can be done to improve efficiency. Efficiency decisions are happening at the time of equipment replacement. You now have choices you never had before, including whether to change fuels. You might want to install solar. Early adopters perhaps didn't have a great economic argument for doing it, but they did it because they had a personal investment in that decision. As consumers become more aware of how their end uses affect the problem, they make different decisions. Just like with conservation and efficiency, it always starts with education; utilities will be there to explain the options and the tradeoffs. But what utilities should avoid is saying to customers 'You shouldn't do that.' That's a recipe for failure.

Frye: From Minnesota Power's perspective, we've made pretty drastic changes in the last decade to our generation mix, such as shutting down coal plants early. I agree tough decisions are needed in the industry. The biggest challenge from a utility perspective is recognizing that we serve all customers and we have to act as cost-effectively as possible to meet the goals as quickly as possible.

LEIDER: I can't speak for the 160 propane dealers in the state of Minnesota. I've been in industry for 47 years and I've seen immense changes in conservation and environmental impact, how people have been looking to make it better. Twenty-five years ago, the average home would use probably 1,100 to 1,200 gallons of propane a year for all of its energy besides electricity. The same type of home today uses 700 to 800 gallons a year. Conservation has had a big effect. Homeowners will keep moving in that direction. But we didn't get where we are with climate change in 10 or 15 years and we're not going to fix it with the CIP program. Do we need to be conservative? Absolutely. Is climate change going to be a major factor? I don't know. I remember back in the '60s scientists were talking about the impending ice age.

STAKEHOLDER: [To MARK] Is the company doing anything on fuel switching in Houston [where CenterPoint operates both electric and gas utility systems]?

MARK: As a regulated utility we are a creature of policy, and policies vary widely across the states we serve. We don't have any energy efficiency programs for natural gas in Texas. We do have electric efficiency programs, but they are very different from the way we operate in other states. In Texas, regulators don't want us to have a relationship with the retail customer.

We do have fuel switching rebates in Oklahoma. We'll give you \$2,000 to put in a natural gas furnace. That has a lot to do with the Oklahoma commission, which likes natural gas because it is produced in the state, and doesn't like the fact we're losing customers and shifting costs onto remaining customers. It is a tricky balance to try to figure out.

One thing that always comes up internally when we talk about fuel switching in Minnesota is how is it going to play in other states? How will we be viewed in other states because of the position we take in Minnesota? There have been some intense conversations and there will be more. A lot of our strategy gets shaped by state policy.

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