Northwest **Power** and **Conservation** Council

July 5, 2017

DECISION MEMORANDUM

TO: Council members

FROM: Jennifer Light, RTF Manager, Charlie Grist, Conservation Resources Manager, Ben Kujala, Power Division Director

SUBJECT: Guidance to the Regional Technical Forum on Treatment of Fuel Choice

PROPOSED ACTION: Provide guidance to the Regional Technical Forum (RTF) on a policy framework for developing savings estimates in measures where fuel choice is part of the decision.

SIGNIFICANCE: The primary role of the RTF is to develop reliable energy savings estimates for conservation measures. Traditionally, the RTF has developed savings estimates that clearly focus on the electric efficiency savings and can be confirmed by utility programs as improvements in efficiency of electric end uses. The RTF has received new measure requests for which customer and builder fuel choice is an option, and there is no practical way to determine whether a builder or consumer made the fuel choice decision as a result of installing the measure. In an effort to develop energy savings estimate that reliably estimate the conservation savings, the RTF and Council staff are seeking a policy framework that provides clear guidance to the RTF on how to account for fuel choice in its analysis. Without such a framework, the RTF will be stalled in developing energy savings estimates for measures that provide cost-effective opportunity for electric conservation savings.

BUDGETARY/ECONOMIC IMPACTS
This decision does not have any direct budgetary impacts.

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BACKGROUND

Over the past several months, the RTF has struggled to develop a baseline from which to estimate energy savings for a handful of measures for which that baseline has the potential to include choice of other fuels. These are typically space-heating or water-heating efficiency measures, but could include other fuel-substitutable end uses of electricity. Traditionally, the RTF has addressed this in two ways:

(1) Restricting the measure in such a way to eliminate the potential for other fuels. For example, the RTF's existing heat pump water heater measure currently requires the replacement of an electric water heater in an existing house with this new, efficient option. To claim savings for this measure, efficiency programs are required to ensure that the previous water heater was in fact electric.

(2) Developing whole-house new construction efficient measure bundles, or paths, that include measures for both gas and electric-heated homes. This allows the RTF to assume that if the efficient path chosen was the "electric path" it was likely that the builder was planning to build an electric-heated home, since efficiency measures were also available for gas-heated homes.

By restricting measures in this way, the RTF is able to establish a clear electric baseline and determine the resultant energy savings without concerns that the efficient electric option is replacing a gas (or other fuel) option.

Recently, the RTF has received a handful of new measure requests that seek fewer restrictions on confirming the fuel of the existing, or baseline, unit. The three examples to date are:

(1) Heat pump water heater in new construction,
(2) Ductless heat pump in new construction, and
(3) Heat pump water heater with an incentive to distributors/retailers.

For the first two—new construction—there is no reliable way to know exactly what a builder would have built if it did not select the efficient electric option. It is possible that a builder might have chosen space- or water-heating equipment that used gas or other fuels. For the heat pump water heater being incentivized at the distributor, the program is essentially buying down the cost of the water heater for the distributor to stock and sell. Because of this, there is often no practical way to know exactly where the water heater ended up (in a new house, an existing house with an electric water heater, or an existing house with a gas water heater). For each case, the RTF is being asked to make a decision, *a priori*, as to what the builder would have built otherwise or whether that water heater would replace a gas or electric unit in order to establish a baseline from which to estimate savings.

The reason that knowing what the builder would have built otherwise and what water heater would be replaced is important in that these are lost opportunity measures. That is, there is a point in time—the building of a house or the replacement of a failed water heater—for which a builder or consumer has the opportunity to make an energy efficient upgrade. For all such measures, the RTF uses the average market efficiency to determine the baseline. An easy example of this is a screw-in lightbulb that burns out in your home. Because the lamp has burned out, you must replace it with one that is on the market. Since the RTF cannot know exactly what new light you will choose to buy,

the RTF looks at the average purchases of all consumers buying screw-in lamps to determine a market average mix of lamps. If you then purchase an efficient LED, the savings are the difference in the consumption of the efficient LED and the market average lamp. This methodology was developed to avoid double counting of conservation potential against the demand forecast, which assumes that every time a lamp burns out in the demand forecast, it is replaced by this "market average mix lamp."

When looking at a technology that has multiple fuel options, it is important to either restrict the measure to more clearly define the market average baseline or to understand the market behavior with respect to fuel choice. Starting with just individual examples: let's take an individual that replaces his failed, electric resistance water heater with a new heat pump water heater. The electric savings are the difference between the new efficient option and the average efficiency of electric water heaters being purchased in the market. If, for example, another person replaces her existing gas water heater with a new electric one; this would result in new electric load on the grid – which could be seen simply as added electric load or as negative electric savings. The replacement of a gas water heater would also result in reducing gas load or could be seen as positive gas savings. Since the RTF cannot restrict these measures to just the electric market, and it does not know *a priori* what a builder would have built or what water heater would be replaced, it must make an assumption about the baseline. This includes assumptions about what consumers are choosing and to what extent the efficiency measure itself might influence fuel choice. The RTF is seeking policy direction on a decision-making framework for how to consider other fuels in the baseline for fuel-choice measures going forward.

ANALYSIS

Staff are seeking a clear policy framework that will enable the RTF to continue to conduct its technical analysis and provide appropriate savings values to the region for these measures where fuel choice is an option. Ideally, such a framework would be pragmatic, symmetric in its treatment of fuel choice, and balance the tradeoff of between uncertainty in the analysis with the cost and feasibility of reducing the uncertainty. A clear framework will allow for the systematic application to all relevant measures, while ensuring consistency with the Regional Act definition of conservation and the Council's existing policy on fuel switching.

To inform a recommendation, the staff brought the RTF question, along with the Council's Fuel Switching Policy, to the RTF Policy Advisory Committee for discussion and consideration. Staff also reached out to commission staff, NW Natural, Northwest Gas Association, and Cascade Natural Gas. The goal of these discussions was to bring an RTF PAC recommendation, along with any other feedback, to the Council for consideration and, ultimately, guidance to the RTF. Summary of these discussion and Council staff analysis and recommendation is below.

RTF Policy Advisory Committee Recommendation

The RTF Policy Advisory Committee (PAC) is comprised of representatives from the RTF funding organizations, commission staff in each of the four states, and other regional stakeholders. The RTF funders represent Bonneville, the Energy Trust of Oregon, two duel-fuel investor-owned utilities (Puget Sound Energy and Avista Utilities),

and a handful of electric-only IOUs and public utilities. The role of the PAC is to advise the Council on RTF budget, scope, and policy issues. Given this role, staff started with the PAC to develop a framework recommendation for Council consideration. The PAC discussed this at their February and May meetings, and in May voted on a proposed framework to recommend to the Council for consideration. The PAC's recommendation is attached. Avista was the one dissenting vote, and has provided its own recommendation (more below).

The starting point for the PAC's framework is to assume that efficiency programs have no impact on consumers and builders with respect to fuel choice. As reflected in the recommended framework, the PAC realizes that this is not a perfect assumption. Much of the PAC's consideration was around the complexity of markets and there are many drivers for consumers' and builders' decisions about fuel. The PAC recognizes that efficiency programs may be a factor in informing fuel choice, but given this market complexity, does not consider efficiency programs to be a significant driver in such decisions. Given this, the PAC's recommended framework is to assume no program influence on fuel choice and to monitor changes in market share relative to the assumption. As such, as a starting point, the RTF should assume zero percent switch to electric from other fuels in the baseline. The PAC does not feel that there are sufficient data at this time to inform an assumption other than zero percent of a switch between fuels. The specific language of the PAC recommendation appears at the end of this memo.

Key to the PAC's recommendation is a commitment to monitoring this assumption over time and consider a different assumption if the data warrant. Such monitoring would include, but not be limited to, tracking changes to market share over time and comparing those to what would be anticipated from economic analyses and demand forecasts.

Commission Staff

Staff reached out to the regulatory commission staff in Washington, Oregon, and Idaho in advance of the May PAC meeting to better understand their perspectives. Additionally, commission staff from Washington and Montana participated in the PAC discussion and voted in approval of the above PAC recommendation. Based on the conversations and participation at the PAC, it appears that the commission staff in each of the four states are generally supportive of the PAC recommendation.

- Oregon: Their general starting assumption appears to be the same as the PAC recommendation, that programs are not driving the decision on fuel choice. For all of its measures, Energy Trust of Oregon assumes an electric-only baseline for electric measures. Commission staff emphasized interest in the concept of monitoring this assumption through various market studies and utility load forecasts.
- Idaho: Idaho Commission staff reported that there is no overarching policy on how to deal with fuel choice in efficiency programs. Questions of fuel choice may be taken up on a case by case basis when programs and conservation tariffs are reviewed. Commission staff was supportive of letting analysis inform the baseline decision and of monitoring markets.

- Washington: Washington regulatory staff on the PAC support the PAC recommendation of assuming no impact from programs on fuel choice along with periodic market monitoring and adjustment if necessary. Commission staff noted that for its dual-fuel utilities, Puget Sound Energy and Avista, Washington regulators currently allow utilities to convert electric end uses to gas as a means of reducing electric loads, as it is also seen as the best economic choice for the end use consumer.
- Montana: Montana regulatory staff on the PAC support the PAC recommendation of assuming no impact from programs on fuel choice and periodic market monitoring.

Avista Utilities Recommendation

Avista was the one dissenting vote with the PACs recommendation. As described in their minority opinion (attached at the end of this memo), Avista sees drivers in the market for consumers and builders to select electric over gas and therefore believes that the impact of efficiency programs on fuel choice is not zero. An example provided includes tactics to incent developers to not bring gas into a new development, limiting the fuel choice for builders in that area to electric only. Avista also noted that significant difference in efficiency program incentives, such as high incentives on an efficient electric technology with little to no incentive on an efficient gas technology, can give the impression that it is better to go with electric.

Based on their experience, Avista recommends recognizing that efficiency programs do have a role in influencing builder and consumer choice on fuel by assuming an estimate of 2% to 6% natural gas to electric conversion. This would have the impact of derating the electric savings by a small amount. Avista believes that this would better reflect the actual conditions in the market while limiting the overstatement of estimated energy savings from the measure.

Discussions with Stakeholders in the Natural Gas Industry

Given the nature of the question and the limited representation by the natural gas industry at the PAC, staff have reached out to the NW Natural, Cascade Natural Gas, and Northwest Gas Association (NWGA) to inform them of this discussion and bring their perspective to the table. NW Natural submitted a formal recommendation (attached), and a summary of the conversations is below.

One common theme from these discussion is that assuming efficiency programs do not influence the fuel choice decision is not realistic. Natural gas is a viable option for consumers and builders, and it is important to recognize that switching from gas to electric can occur. In lieu of the RTF setting program requirements that restrict fuel switching,[1] there was general agreement that accounting for some natural gas to electric conversion in the savings analysis, as proposed by Avista, is one way to explicitly recognize that fuel switching is occurring. One stakeholder noted that these small percentages are not going to have a significant impact on the final assumption, especially when considering the uncertainty around other aspects of the savings

[1] NW Natural specifically recommends requiring program controls to limit fuel switching. This is also mentioned in Avista's recommendation.

analysis. Based on this, it appears there is interest in the framework having some explicit recognition that fuel switching from gas to electric is occurring and to provide clarity in documenting those assumptions so allow for changes in the assumption when there is market movement.

Another common thread of these discussions was the concern with a framework that did not recognize the role that efficiency program incentives can have on fuel choice. Of particular concern is where there are large discrepancies in incentives. Examples of large incentives on heat pump technologies (both space and water heating) compared to low or no incentives for the efficient gas option are likely to have a bigger influence on fuel choice. This is particularly true in the new construction market where there is more elasticity around fuel choice. NW Natural specifically recommends the RTF using a "more representative market figure to reflect gas in the baseline" where there are significant incentives on the electric option.

Staff Recommendation

While the RTF has traditionally restricted measures to eliminate the potential for fuel switching, Council staff believes that there is value to supporting conservation by developing a framework that would allow the RTF to provide savings estimates for a broader set of measures. In doing so, the Council staff generally agree with the PAC's proposed framework, although some clarification is proposed. There are two parts to the question. First, whether to estimate some fraction of the market is switching from gas to electric. Second, for any portion of the market switching, what electric savings to assign.

Staff agrees with the starting assumption that efficiency programs are not the primary driver of fuel choice. This is not to say that efficiency programs do not have some amount of influence on fuel choice, but rather to say that there are other factors impacting customer fuel choice above and beyond efficiency programs. This starting assumption puts the RTF in a place consistent with the Council's fuel switching policy, which focuses on a market-oriented approach to fuel choice, rather than one where efficiency programs are driving that selection one way or another.

Based on this, Council staff agree with the starting assumption of zero percent conversion from other fuels to electric in the baseline. Staff recognize that there are examples of a push from gas to electric and vice versa. In addition to those noted in Avista's minority opinion, staff are aware of a couple jurisdictions in the region that have a strong interest in promoting beneficial electrification. At the same time, there are other jurisdictions that currently allow fuel switching in the other direction, from electric to gas. Without a clear analytical framework that would provide a better, and more certain, assumption, staff feel that zero percent is a reasonable starting point. Choosing an assumption such as 2-6% gas to electric conversion is asymmetric, as it does not account for switching in the other direction. Additionally, such a small percentage is in the noise of the analysis.

Council staff also considered a number of quantitative approaches to get at an estimate that might be different than assuming zero percent. These included economic analysis of consumer cost absent incentives, historical fuel choice trends analysis, leveraging the Council's load forecast models, and a threshold analysis on incentives. Staff do not

believe that any of these would necessarily provide an estimate that has less uncertainty than the PAC's recommendation of zero percent. For example, an economic analysis might provide information on what would be expected for a rational consumer, but fails to account for non-price effects (such as concerns about CO_2 emissions, consumer preference with respect to fuel, and other decision inputs). Historical trend analysis and the load forecast can help to account for these non-price effects, but also reflect how previous efficiency (both gas and electric), state, and Federal incentives impacted consumer choice. They also tend to have limited insight on emerging technologies. Finally, accounting for incentives in any way is challenging, as the RTF is never in a position to know the efficiency program incentives in advance of doing its analysis, nor does it have clear insight into other incentives in the market. Given the analytical cost and lingering uncertainty with each of these approaches, staff supports alignment with the PAC approach of assuming no net influence. This provides a pragmatic solution and enables the RTF to start right away to develop energy savings estimates for conservation measures that are beneficial to the electric power system.

With respect to the second part of the question—what electric savings to assign for any portion of the market switching—a switch from gas to electric does not qualify as conservation under the Act because it does not reduce electric consumption. So there are no conservation savings from such a switch. Thus, the portion of a market that is gas to electric conversions produce zero savings, as opposed to negative savings. While such conversions ultimately increase electric loads, and should be accounted for in load forecasts, they are not conservation and should not be treated as conservation savings.

Finally, staff strongly supports the notion of monitoring, with a goal of updating this assumption in the future. As noted above, there are a handful of jurisdictions interested in promoting certain aspects of fuel switching and electrification of some end uses. While electrification may be beneficial from a carbon perspective, it does not meet the definition of conservation under the Power Act[2] and would not be eligible for the 10 percent cost advantage afforded to conservation resources. Additionally, the RTF's charter focuses on estimating conservation savings, meaning estimating impacts from electrification do not fall within its current scope. By monitoring building stock, market studies, appliance saturation studies, and load forecast assessments, Council staff can identify whether there are significant amounts of regional electrification. This would be a signal to revisit the relevant measures and update its analysis to ensure the savings estimate focuses only on the conservation savings for electric to electric measures by updating the market share estimate for gas to electric conversions.

We believe that the proposed framework below provides a pragmatic approach that is mindful of the balance between cost and uncertainty. This allows for consistent treatment of measures, and also accounts for some symmetry across the potential influences on fuel choice in either direction. Most importantly, it is consistent with the Council's fuel switching policy focused on a market-oriented approach and provides a

[2] "Conservation" means any reduction in electric power consumption, as a result of increases in the efficiency of energy use, production, or distribution. [Northwest Power Act, §3(3), 94 Stat. 2698.]

path for ensuring that the RTF savings estimates in the long-term continue to focus on conservation savings.

PROPOSED DECISION-MAKING FRAMEWORK FOR MEASURE BASELINES WITH FUEL CHOICE

When the RTF analyzes a measure for which consumers have a fuel choice the RTF should assume efficiency programs have no impact on decision makers with respect to fuel choice and assume as a starting point that none of the electric-source units are conversions from other fuels. However, recognizing that fuel choice is a complex decision influenced by many factors and that the impact of efficiency programs on consumer fuel choice is not currently well understood, the RTF should develop a research strategy to monitor changes in fuel share relative to the Council's regular fuel-choice studies. Any electric market share clearly identified as fuel conversions from other fuels to electricity should be taken into account in the market baseline assumption and zero savings should be assigned to that share.

ALTERNATIVES

The Council could pursue an alternative framework from the staff proposed recommendation. One, already proposed by Avista, would be to recognize some level of gas to electric conversion by derating the savings by some small percentage. To be pragmatic and avoid bringing each decision to the Council, staff would prefer a single set of assumptions to be applied consistently across all measures. This might be a single number, or a set of numbers to reflect potential differences in existing and new construction markets. Council staff do not feel that choosing such a percentage necessarily provides any increased certainty in the resultant energy savings. Additionally, a small percentage assumption would not have a significant impact on the ultimate savings and would likely be in the noise of uncertainty in the analysis. If the Council preferred a larger assumption for gas to electric conversion, this could have a negative impact on efficiency programs ability to promote efficient electric products over the existing, very inefficient electric technologies, in their territory.

ATTACHMENTS

RTF Policy Advisory Committee Recommendation
Avista's Minority Opinion and Recommendation
Council's Fuel Switching Policy
NW Natural Recommendation

RTF Policy Advisory Committee Recommendation to the Council

Proposed Decision Making Framework for Measure Baselines with Fuel Choice

When the RTF analyzes a measure for which consumers have a fuel choice (ex: water heaters and HVAC), the RTF should assume efficiency programs have no impact on consumers and builders with respect to fuel choice. The PAC recognizes that this is not a perfect assumption. Markets are complex, and efficiency programs are only one factor informing fuel choice. Therefore, as a starting assumption, the RTF should assume no impact on other fuels verses electric market share. This results in a starting assumption of 0% other fuels in the baseline. At this time, the PAC does not feel there is sufficient data to inform an assumption other than 0%. The RTF and RTF PAC will continue to monitor this assumption going forward.

The RTF will develop a Research Strategy for leveraging existing market studies (example: stock assessments, market models) to monitor the change in market share and identify significant differences in market share of other fuels verses electric, relative to the Council's regular fuel choice studies (without focusing on attribution), which might result in a different assumption.

Avista's Minority Opinion

To the members of the Power Council:

We at Avista have some discomfort in using a zero gas baseline in calculating the electrical savings from midstream, new construction and retrofit before burnout measures based on the fact that gas makes up over 60% of the actual market. We understand that while fuel switching is small given the barriers in place for switching from natural gas to electric in retrofit situations, the low cost of natural gas and the lack of understanding of the costs of operating even high efficiency electric appliances make the midstream and new construction areas problematic. We have witnessed electric utilities on our borders offer incentives to developers to not bring in natural gas to the development at all. While these types of things seldom happen, it is not zero. Also high incentives on electric devices and little or no incentives on natural gas devices can give the impression that it is better to go with electric. Finally, fear is being used to direct people from using natural gas. The example being in the PAC meeting where one member used the term "go gas, go boom", a completely inappropriate reference. Because of all of these reasons, the value is not zero and the immediate impact to the region will be an over estimated savings from these measures. Our preference would be to have a completely different savings value where natural gas is available and one where it is not. But in lieu of that our preference is to start instead with a reasonable estimate of 2% to 6% natural gas to electric conversion. It should have little impact on the cost effectiveness of the measures, but will reflect the actual conditions in the marketplace. In short, we believe these measures will not only help electric only utilities, but our customers in areas where gas is not available, but we do not believe in starting with a zero value knowing that is not correct. We know and continue to communicate to customers that are trying to control costs and minimize their energy footprint, that the end-use of natural gas will remain an economic and attractive option for consumers [into the future] and that, as such, fuel switching should continue to occur in some measure.

Dan Johnson, PE
Director, Energy Efficiency

The Council's Fuel Switching Policy

The Council recognizes that there are applications in which it is more energy efficient to use natural gas directly than to generate electricity from natural gas and then use the electricity in the end-use application. The Council also recognizes that in many cases the direct use of natural gas can be more economically efficient. These potentially cost-effective reductions in electricity use, while not defined as conservation in the sense the Council uses the term, are nevertheless alternatives to be considered in planning for future electricity requirements.

The changing nature of energy markets, the substantial benefits that can accrue from healthy competition among natural gas, electricity and other fuels, and the desire to preserve individual energy source choices all support the Council taking a market-oriented approach to encouraging efficient fuel decisions in the region.

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RE: Treatment of fuel choice in the baseline

Chairman Lorenzen,

NW Natural is providing these comments in response to the Regional Technical Forum (RTF) Policy Advisory Committee (PAC) proposed "Framework for Measure Baselines with Fuel Choice." We believe that, while difficult, it's important to set policies congruent with customer motivations and market realities rather than favor simplistic assumptions that may be easier to implement, but are counter to programmatic goals.

NW Natural recommends the Council consider directing RTF to utilize upcoming market data, seek data from natural gas utilities and work to understand the implications of the current gas water heat baseline to avoid counter-productive and costly fuel switching.

NW Natural appreciates both the integrity of the Regional Technical Forum staff in recognizing that fuel-choice and the existing high penetration of natural gas water heating threatens the accuracy of their electric savings estimates as well as their dedication to finding a workable framework to responsibly serve the electric customers of the Pacific Northwest and drive to greater electric water heat efficiency. NW Natural staff is available to help provide data and work collaboratively with RTF staff to craft defensible positions to help move the issue forward.

We recognize the issue of setting the correct baseline is larger than just the Heat Pump Water Heater (HPWH) program, but for simplicity and concrete examples, we'll focus on that technology as a proxy for the larger issue at hand. We are fully supportive of the region's goal to transform the electric resistance water heating market and recognize the associated efficiency gains over the current baseline. Interestingly, the energy savings available when moving from electric resistance to a HPWH create a capacity for incentives so great that HPWH cost can be a net *gain*[1] to consumers. In plain language, this means the HPWH can be free, or *nearly* free, to a customer after incentives, due to its energy savings. In regions where gas is *not* available, these installations are legitimate electric savings; where gas *is* available however, it is illogical to assume of the 3+ million gas homes in the PNW none would be swayed by incentives that make the HPWH the less expensive first cost option. This is our interpretation of what assuming 0% gas in the baseline means.

[1] RTF November 2016 Meeting – HPWH – Slide 10 - https://nwcouncil.box.com/s/rg8q7m92jtdiohlri3wtrzf8d33jtep8

This letter outlines why we believe it is important to wrestle through this topic rather than side step it and provides a few defensible paths forward. There are a multitude of reasons to identify the correct fuel baseline- some are specific to the integrity of the Council and some have broader regional implications**.**

Specific to NWPPC:

1. **Misalignment of NWPPC policy and promotion:** Gas to electric water heating- spurred by incentives, violates the Council's own policies on fuel switching.
2. **Definition of conservation:** Gas to electric water heating is not electric conservation as defined by the Council because it does not reduce electric power consumption – it increases it.
3. **RTF credibility:** The PAC's charter states the objective is to make recommendations that allow the RTF to maintain credibility – the proposed policy framework however, implies incentives and first costs do not influence customer choice with respect to fuel. This contradicts the economic principle of an incentive as well as the Council's Direct Use of Gas policy which states: "The Council also recognizes that in many cases the direct use of natural gas can be more economically efficient.[2]"

Regional implications:

4. **Sub-optimization of grid resources:** NW Natural believes this is possibly the most important reason to further understand the baseline and prevent fuel switching based on efficiency programs. For lowest system and customer cost, the Council's Direct Use of Gas studies say 73% of customers on any given fuel should stay on that fuel with exception of water heat – in 22% of cases customers should actually move *to* gas water heating.[3] In this regard, NW Natural is not actually advocating for fuel switching but for policies, measures, and program designs that are in line with the Council's own data and conclusions. The Council is trying to plan and protect rates regionally- moving gas water heating load over to electric has the real potential to raise peak load as well as rates on both the gas and the electric systems.
5. **Planning difficulty:** Electric utilities in the Northwest look to the RTF to develop real *conservation* savings and these savings estimates are factored into their load profiles for planning purposes. A hypothetical, but very real possibility, might be as follows: An electric utility is motivated to reduce load to avoid higher rates (as in avoiding future Tier 2 pricing) and deploys a HPWH program to help achieve their savings goal. The program might be successful in driving new HPWHs into the market but because many of these customers

[2] https://www.nwcouncil.org/media/30071/2012_01.pdf
[3] https://www.nwcouncil.org/media/30071/2012_01.pdf

started with gas water heaters, the hypothetical utility sees load growth from these new HPWHs rather than the energy savings it had hoped to achieve.

6. **Regional inequities:** Unfortunately, the regional "net" look presented at the February PAC meeting blurs the true impact of this measure as compared to viewing electric-only regions separate from dual fuel regions. The PAC has recommended using a blended average of 280 kWh of electric savings and 50 therms of natural gas "savings" per HPWH installed to account for the mix of original fuel sources. This solution would mean territories without gas would be short changed on the actual reductions achieved but conversely, in natural gas territory, it greatly overstates the "efficiency" savings when the customer is actually creating new electric load by switching from an existing gas water heater. Not only does this incorrect baseline put pressure on gas and electric rates, but it hurts the credibility the entire energy efficiency community.

NW Natural prioritized recommendations:

1. **Require program controls**. Reconsider the question/task at hand. The RTF's role is to calculate measure savings – no one is debating the savings on a micro level:
    - Electric resistance water heating to a HPWH results in 1250 kwh of electric savings.
    - Gas water heating to electric HPWH results in 1,800+[4] kwh of load *growth* (some during peak), is *not electric* conservation. There has been no data showing a trend from natural gas to electric resistance water heating - which would be required in order to claim electric savings associated with this move from gas to a HPWH. Without trend data showing the market moving from natural gas to electric resistance, it is not defensible to claim these as electric savings.

    Quantifying the savings is the role of the RTF but measure quantification is not really the issue. In the case of the HPWH, programs are asking the RTF for measures upstream from the consumer without having to control for the baseline or verify data. The issue is really the need to design programs such that fuel conversions are not happening as a result of incentives, just as they will need to ensure they are not incentivizing code applications; therefore, programs should follow the recommendation made at the RTF to require pre-existing electric conditions. For electric only territories, this is simple; for dual fuel territories, program design upstream can utilize forthcoming market research data. If the stated goal is fewer resistance water heaters in exchange for HPWH's, program design should focus on incentivizing actions based on data and only upon verified reduction in resistance heaters. When referring to a HPWH measure that assumes no gas in the baseline, even the RTF Staff and RTF Contract Analyst team recommended:

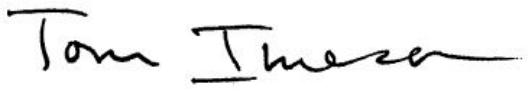
[4] http://pdf.lowes.com/energyguides/084691228998.pdf

*"RTF should not pursue a HPWH UES [Unit Energy Savings] measure specified this way. Given the issues just discussed (gas in the baseline and baseline code compliance for new construction) there is a **high risk** [emphasis added] of the Region claiming biased savings with this method; the mix of baseline conditions that provide 0 or negative kWh/yr savings is unknown."*

2. **Acknowledge the impact of incentives.** In regions where gas is available, and specific electric equipment is so heavily subsidized that first costs are artificially lower than the natural gas counterpart, the RTF should use a more representative market figure to reflect gas in the baseline; natural gas utilities can help to provide relevant baseline data. Fuel baselines are available for both existing and new construction. In fact, NW Natural is currently studying a subset[5] of this in the NW Natural/PGE/Pacific Power service territory. This analysis compares the frequency of HPWH installations by home builders within the utility program to builders working outside the utility program. Based on trend data to date, we are seeing more HPWH's being installed by builders receiving incentives than those building outside the program. This kind of market data can help inform realistic baseline figures when gas is available.

Our collective goal is optimization of the energy supply system– at the utility and customer levels. The Council plays a significant role in driving regional energy policy and long term planning. In order to ensure regional equity and alignment of Council policy and programs it is essential to (1) design against fuel switching and (2) where fuel switching occurs to not claim electric savings where there is actually load growth. Thank you for hearing our perspective and for reconsideration of this policy framework.

Thank you,



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[5] This analysis is only a subset of the issue at hand because it only isolates for one (the utility) HPWH "energy efficiency" incentive. Builders outside of the utility program will still experience subsidized HPWH pricing due to a multitude of other incentives. Still, this gives us a comparative starting point.

From: Dan Kirschner
Sent: Wednesday, July 05, 2017 3:02 PM
To: Light, Jennifer; Grist, Charlie
Subject: Framework for Measure Baselines in Fuel Choices

Jennifer and Charlie,

Thanks for visiting with me a few weeks ago about the "Framework for Measure Baselines with Fuel Choices" (Framework). As discussed at that time, The NWGA supports the positions expressed by Avista and NW Natural regarding the Framework. Specifically, assuming zero gas-to-electric conversions is indefensible.

This is especially true in light of the incentives outlined in NW Natural's letter. The incentives make sense in areas served only by electricity, where they encourage replacing existing electric appliances with more efficient units. However, the incentives are equally available in areas served by both gas and electricity, which complicates the equation.

The simplifying assumption of zero gas-to-electric appliance conversions recommended in the Framework does not reflect the real-world experience of NWGA members. Furthermore, it may overstate the energy savings potential of certain efficiency incentives, while understating the risk of actual load growth from appliance fuel conversions.

The NWGA recommends that the Council postpone adoption of the Framework to allow for greater clarity regarding market dynamics as proposed by NW Natural in its comment letter dated July 3, 2017. Postponing adoption of the Framework would create the time required to develop assumptions about the market that reflect the analytical rigor for which the Regional Technical Forum is known. We further recommend that the Council set a reasonable deadline for the completion of this analysis after consulting with natural gas utilities.

If the Council feels it must adopt the Framework during the July 11-12 Council meeting, the NWGA recommends that the simplifying assumption in the Framework be 5% gas-to-electric conversions pursuant to Avista's comment. 5% is no more arbitrary than 0% and reflects the fact that incentives do in fact affect appliance choices in areas served by both fuels. We further recommend that the Council's adoption be revisited within a reasonably short timeframe to incorporate a better understanding of fuel choices in light of efficiency incentives.

Thank you for your consideration,

Dan Kirschner, Executive Director

Northwest Gas Association