From:	Kevin Jones
To:	Michael Laurie; UTC DL Records Center
Cc:	jessica.koski@sierraclub.org
Subject:	RE: a comment on PSE"s 2017 Integrated Resource Plan, Docket numbersUE-160918 and UG-160919
Date:	Monday, January 29, 2018 12:58:17 AM

Hi Michael,
I have found time to read your comprehensive testimony and want to thank you for the research and effort required to assemble these multiple points into a compelling story.

There are some key points that your relevant experience will likely allow you alone to emphasize in verbal testimony. Specifically the erosion of comprehensive home energy conservation programs that PSE provides and the reduction in energy rebate values. Since PSE is required to take into account all available conservation measures, your experience indicates they are falling short in this area. As such their IRP documents likely undervalue the capacity of energy conservation to reduce peak loads.

This argument takes a page out of Bob Jenks playbook – point out to the WUTC a likely area where the PSE IRP Document is insufficient or inaccurate and insist the WUTC tell PSE to revise their analysis to remedy the deficiency.

You might consider specifically referencing Initiative 937, the Renewable Energy and Conservation Initiative, which states in part:

> "Utilities subject to this law must pursue all available conservation that is cost-effective, reliable and feasible."

We know conservation is inherently cost-effective, reliable and feasible, but PSE's home energy conservation and energy rebate programs fall far short of pursuing all available conservation. Given the large number of residential buildings in PSE service area this is likely to represent a huge overlooked energy saving. I wonder if you could estimate this unaccounted conservation savings based on your home energy audit work? Probably not necessary to make the point but it would be interesting to see what kind of value this analysis would provide.

Otherwise the written testimony appears complete and compelling.

Thanks,
Kevin

From: Michael Laurie
Sent: Tuesday, January 16, 2018 3:12 PM
To: records@utc.wa.gov
Cc: jessica.koski@sierraclub.org; kevinjonvash@gmail.com
Subject: a comment on PSE's 2017 Integrated Resource Plan, Docket numbersUE-160918 and UG-160919

This is a comment on PSE's 2017 Integrated Resource Plan, Docket numbers UE-160918 and UG-160919

My name is Michael Laurie.
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I have over 30 years of experience working in residential, commercial, and industrial conservation in the NW and in 22 other states and 2 other countries.
I have a BS in Environmental Science, an Associate in Energy Management, and an MBA.
I live on Vashon Island and I am a PSE customer.

Puget Sound Energy's IRP some good steps but much more is needed now.
January 16, 2018

UTC Commissioners,

Thanks for this opportunity to comment on Puget Sound Energy's (PSE) IRP which has some good steps but needs to go farther.

I understand that your mission is to ensure that investor owned utilities provide safe, available, reliable, and fairly priced services.

To me providing safe services means ultimately providing services that no longer contribute to climate change which as we have seen lately has worsened a lot of very unsafe wildfires,
floods, droughts, hurricanes, and more.

It is clear to me and many others who have been studying the energy world for a while,
that within 5 – 10 years renewable energy and storage will be the best energy choice for generation of electricity both economically and technologically.
But because the utility industry is changing so rapidly no one knows all the details of how the industry will look in even 5 years because of possible carbon taxes and
a likely continuing drop in the price of renewable energy and storage.

Based on the article below that came out today, renewable energy and storage may be the cheapest choice in the NW sooner than we think.
Here is a quote from the article:
"According to **Carbon Tracker**, based on these bids, new wind+storage energy in Colorado is cheaper than energy from the state's existing coal

plants; solar+storage energy is cheaper than 75 percent of the state's coal energy. This is worth repeating, because it's a significant milestone: In Colorado, getting energy from *new* renewable energy projects with storage is cheaper than getting it from *existing* coal plants. Coal is **dead**."
https://www.vox.com/energy-and-environment/2018/1/16/16895594/colorado-renewable-energy-future

That is why it is wise for PSE in the short term to continue to invest in their existing conservation and renewable energy programs and if necessary buy power on the open market.
They need to need to keep their options open in the short term.
And any investment in a natural gas plant now or in the future would not only be a mistake because of its contribution to climate change, unsafe energy,
but it would be a very risky financial mistake, because once renewable energy fully wins out,
that natural gas plant will likely have to be closed down before the end of its useful life.

I am thankful that PSE is not proposing the construction of any new natural gas plants for at least 5 years and that they are looking to existing conservation and renewable energy programs
and buying power on the open market.

I am also thankful that in a recent review of US based utility energy efficiency programs, PSE's efficiency programs were rated in the top 20.
http://aceee.org/research-report/u1707

As someone who has worked in conservation for decades including having carried out residential and commercial energy audits in the PSE programs,
as well as having inspected a number of the installations funded by their conservation rebates,
I feel qualified to comment on ways that those programs could be improved.

I believe improving those programs will help keep PSE's electricity fairly priced because many studies have shown that smart energy conservation programs are typically the lowest cost way to meet new electricity needs.
And to make the eventual transition to renewable energy based electricity generation there are many steps that PSE should carry out now to help ensure that the transition can be carried out in a low cost and technologically smooth way.

The following are my suggestions for improving PSE's conservation and renewable energy programs.

Some of my recommendations for how to improve and expand PSE's programs are based on the ideas in the report linked below.
'Teaching the "Duck" to Fly', Jim Lazar, The Regulatory Assistance Project
http://aceee.org/research-report/u1707

PSE needs to do a better job of marketing their green power program. When a friend contacted PSE about getting cards to hand out explaining the green power program they were told it would take a while because they would have to print more cards. They should have hundreds if not thousands of those cards ready to go at all times. Otherwise there will be missed opportunities.

Why is PSE giving rebates to commercial customers for converting from electric to natural gas heat?
That seems like a step backwards that will lock in fossil fuel use for decades because most businesses once they make an investment like that will not be willing to switch back very soon.
To prepare for the transition to what will be lower cost renewable energy, we need stop all new investments in what will soon be more expensive natural gas.

I am thankful that PSE is proposing investing in electricity storage but I think they need to be encouraged to invest much more heavily in storage and in more varieties of storage.
It is very likely that many types of storage both on the utility side of the meter and on the customer side of the meter will be crucial to not only delivering fairly priced power but also making
sure that power is safe, available, and reliable.
Large lithium based batteries like the 100 MW system recently installed to help the grid in Australia are an example of the size and type of batteries that need to be installed in multiple sites and tested in PSE's service area.
http://www.latimes.com/business/technology/la-fi-tn-tesla-australia-20171201-story.html

But PSE should also invest in storage on the customer's side of the meter.
And PSE should provide incentives for installation of small scale lithium based storage in homes and businesses with and without solar.
More on this later in my comments here.

A number of utilities around the US have programs where they can turn off electric hot water heaters of customers during peak demand times and then turn them on for use in off peak times.
This type of control can help reduce the need for peaker natural gas plants that operate only for the few hours of peak demand time, making the peaker plants not economically prudent.
And this control of the hot water tanks makes them into low cost storage systems, that store hot water instead of the currently more expensive storing of electricity in batteries.

Way back in the late 1980s when I was a consultant in the commercial energy conservation department at PSE, one of the engineers on staff headed up a study of ice storage in the basement of a commercial building in Bellevue.
This technology has now been well proven. The idea is that ice can be made at night in off peak hours and stored there until peak cooling demand times in the middle of

the day.
Then the commercial building can be at least partially or completely cooled by running air past that ice.
This reduces the need for peaker plants and is also a low cost storage technology that needs to be put in place in a lot of buildings now to ensure a low cost and reliable shift to renewable energy.

According to the study in the article below:
"Annual revenue for energy storage tied to utility-scale wind and solar is expected to reach $9.6 billion by 2026. Revenue for behind-the-meter installations, however, is expected to surpass $13 billion in the same timeframe. The addition of energy storage helps keep distributed solar PV economical by allowing customers to maximize onsite consumption of their solar energy even into the night; it also provides a source of backup power during outages.
Further, many larger markets such as California, New York and Germany have implemented programs that incentivize the addition of energy storage and more are likely to follow."
https://www.greenbiz.com/article/expect-strong-growth-year-commercial-energy-storage

That study is more reason for PSE to invest and or provide rebates for customer based storage to provide backup for on-site solar but also to help reduce peak demand on PSE's grid.
As the study above mentioned in other parts of the country and world incentives are being provided for energy storage on the customer side, PSE should do the same.

PSE should also put in place targeted electric storage on their side of the meter to reduce the need for transmission and distribution to enable renewable energy.
And they should look carefully at putting in renewable energy systems in places where their production can help the most in reducing peak demand.
And they should investigate and implement other strategic investments that will help PSE, their grid, and their staff to start now to make the inevitable transition to renewable energy which
will soon be the best source to ensure safe, available, reliable, and fairly priced services.

Back in the 1980s and early 1990s the rebates provided by PSE and the public utilities in Western Washington covered 80% or more of the installed cost of many energy efficiency measures.
As a result the phones were ringing off the hook at the energy conservation centers of utilities that offered these programs.
Now the rebates cover at most 50% of the cost and as a result, customer participation in these programs is not as great as it used to be.

I realize that how much rebate money is provided is to a large degree determined by studies by the Northwest Power and Conservation Council
and especially the work of the Northwest Technical Forum.
https://rtf.nwcouncil.org/

But to me the methodology that is used to determine how much spending on conservation and renewable energy is deemed least cost is flawed
because it does a poor job of accounting for the growing high cost of the externalities associated with coal and natural gas.
Leaders around the world are rapidly coming to agreement that we need to put a price on the negative impacts of our use of carbon-based energy.
https://www.carbonpricingleadership.org/

I believe if a honest, unbiased effort was made to put a price on those costs and that was taken into account in determining what level of rebates PSE could provide that it would likely lead
back to rebate levels like those in the 1980s and 1990s and customer participation in the programs would increase.

Finally, in the 5 year period that I carried out residential energy audits in the PSE Homeprint program on Vashon Island,
I carried out over 300 home energy audits.
When the program first started the specifications called for use of a blower door to help find air leaks in the home where heated air escaped and cold air came in.
And the other details of the program were such that the energy audits that us auditors carried out were very thorough and we were paid a good living wage for the work.

Then after 2 years the program was changed to eliminate the blower door except under special circumstances that rarely occurred and the audit specs and pay were reduced
so much that the time put into an energy audit was very minimal, and many auditors were missing at least some savings opportunities especially those related to air leakage
and they no longer had the time to explain all the details of the savings opportunities in the homes.
I'm sure this led to reduced energy saving investments by the homeowners.

I believe that if a reasonable cost for carbon based electricity generating sources was included in the analysis to determine program and rebate levels,
I think returning to the more comprehensive audit could easily be justified again and there would be far fewer missed energy savings opportunities in the audits
and more energy saving investments by customers.

Thanks again for this opportunity.

Michael

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