Comments by James Adcock on UE-200304 and UG-200305
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Comments by James Adcock on UE-200304 and UG-200305 PSE 2021 IRP
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Re: Dockets UE-200304 and UG-200305 PSE 2021 IRP

* It is maddening, that after a dozen years complaining about this issue, PSE still pretends -- in practice -- that climate change doesn't exist, and that coldest winter days haven't already warmed by 18 degrees, when modeling their "Winter Resource Adequacy Needs" -- and thereby motivating the build of [needless] new Peakers. See more details below.

* It is maddening, that PSE continues to "get away with" claiming one set of facts in one government forum, and then immediately turns around and claims the exact opposite set of facts in a different government forum. How is this possible? Doesn't UTC have some responsibility under "in all ways just and reasonable" to hold PSE accountable for this behavior? For example in front of King County PSE claimed that Energize Eastside is a local project meeting local needs, and the in front of FERC, when CENSE took them to court, turns around and claims the project is regional. And that in general that Energize Eastside is needed for increasing peak winter load demands. And in terms of the IRP, PSE projects increasing demand and resource needs, while under a separate docket, also at UTC, insists that demand is going down, and so they need a rate increase. UTC: please tell PSE to pick ONE set of "facts" -- and then stick with them!

* I suggest that what PSE describes as Biodiesel Peakers running only a few hours a year will actually be run on Natural Gas, with fossil fuel backup -- and not just for a few hours per year. If PSE is serious about calling these "Biodiesel Peakers" then PSE should commit to UTC and EFSEC to no-Natural Gas hookup on these units, and siting restrictions that severely limit yearly hours-run. Failing this, PSE is being disingenuous, and these are in reality just another 30 years of dirty CO2-emitting fossil fuel Peakers.

* I express concern that PSE has suggested needlessly delaying renewable builds rather than a "linear build-out" -- which in fact PSE could have already started a couple years ago, after the passage of CETA. Given PSE's deliberate pattern of foot-dragging "no mercy" should be shown if PSE fails -- for any reason -- to actually meet the 2030 80% requirements.

* As mentioned above, PSE continues to use 100-year-old weather data in their stochastic modeling ("Resource Adequacy"), after previously telling IRP participants that for this IRP they were only going to use recent-decade data. This has the practical effect of greatly

exaggerating the need for winter-peak power, since coldest winter days have already warmed 18 degrees F in PSE's coastal PNW service region -- a 27% reduction in peak day HDD. This continued use of 100-year-out-of-date weather data has been a on-going falsification in PSE's modeling for at least the last dozen years.

* PSE states that in their baseline assumption they are increasing HDD (Heating Degrees Days) by 0.9 degrees per decade. This is exactly in the wrong direction. As winters become warmer due to climate change, the amount of heating required goes down, not up. HDD is a measure of the amount of heating required, and thus should be going down, not up, as winters become increasingly warm. Further, coastal regions, such as PSE, are becoming warmer in the winter MUCH faster than average NPCC region, thus PSE modeling of the effect of winter-warming on reducing peak capacity needs in their region continues to be MUCH too low.

* Section 6: "Stakeholder selection of temperature model" -- PSE provided this required "forced choice" selection of temperature models without forewarning stakeholders, in the middle of a much longer survey, which was given on short notice, and without notice that the temperature modeling question would be asked. As such, a meaningful informed "stakeholder choice" of temperature models was not actually offered, nor could be made. And PSE did not meaningfully describe nor compare the choices being offered, in such a way that stakeholder choice could reasonably be made. In any case, proper and truthful modeling of this and all aspects of the IRP remains the responsibility of PSE, not the stakeholders. PSE has the absolute responsibility to get to 80% by 2030, without excuse or exception.

* Figure 6-6 Shows actually historical winter peak demand continues to go down -- as one would expect from the rapidly warming winters in PSE's coastal PWN service region, with 18 degrees warmer coldest winter days compared to historical temperatures [before the effects of climate change in PSE's coastal PNW region] Coastal PNW has shown very strong warming of coldest winter days. In comparison, this much less true of inland PNW utilities' regions. And then, engaging in "magical thinking" [or is it "magical modeling"?] PSE shows for no good reason in the future this is for some reason going to turn around, and peak winter demand will become higher again. This is complete "modeling" nonsense.

Page 6-9 "Summer Electric Peak Demand" PSE continues to predict that they will be "Winter Peaking." But that is not the question. The question is during which season will PSE in practice run into problems by having insufficient resources. And that question has been repeatedly answered for PSE if only PSE were to ever listen to reality: PSE has repeatedly in recent years actually fallen short of requirements during the *summer* months, not the winter. Why does PSE continue to make this "modeling mistake?" Could it be because PSE continues to make summer/winter contractual swaps with other utilities? Or that there is an "NG bias" in PSE's thinking and motivation? "Outside the fence" issues or considerations? I ask UTC's consideration of why this keeps happening. Otherwise PSE should be learning from their repeated mistakes -- always in the same direction.

Page 6-33 "Temperature Sensitivity" As discussed previously PSE hid a stakeholder "forced choice" of temperature model within a much longer survey, presented on short notice, without any discussion of what in practice those choices meant -- as PSE intended to implement them.

As such the "stakeholder choice" was nonsense, and in any case PSE, not stakeholders, remains responsible for the sensibility -- or non-sensibility -- of PSE's own IRP modeling efforts, including the issue of how to "honestly" model temperature rise due to climate change in PSE's coastal PNW region.

"Historical trended temperature" -- the issue is not, as PSE pretends here, one of increase of *average* temperatures, but rather one of the striking increase in the temperature of the coldest winter days in PSE's region, leading to MUCH lower winter coldest winter days peak RA requirements than PSE is pretending.

Figure 6-30: Again, this is PSE arguing average yearly winter cumulative HDD, when that is not the issue. Rather, the issue is the gigantic amount that the coldest winter days have warmed in PSE's region, greatly reducing the actual winter RA needs.

Figure 6-31: Conversely, during the summer, even PSE's most aggressive model choice of summer warming Cooling Degree Days (green line) falls clearly greatly short of actual, recent, trends. Why does PSE continue to falsely emphasize winter peak needs, while at the same time falsely under-representing summer peak needs -- while even ignoring recent actual summer shortfall events? Again, it is PSE's responsibility to fix these continued modeling errors, PSE cannot duck responsibility for these continued errors by having dumped an unannounced "forced choice" of temperature models on stakeholders in the middle of a short-response-time-required much longer survey -- and without explaining exactly how PSE's intended to implement those temperature modeling choices.

Figure 6-40: "Normalized" Winter Temperatures. What PSE is saying is that when winters end up not being as cold as their modeling predicts, then they will "fix the problem" by pretending that winters were colder than they actually were. Thus PSE pretends that the PSE modeling is actually "correct" -- even when it is wrong.

Figure 6-41: The same normalization "trick" is being used here.

Figure 6-44: Once again demonstrating PSE's consistent historical pattern of always exaggerating future load.

Figure 6-45: Once again demonstrating PSE's consistent historical pattern of always exaggerating future load.

Chapter 7: Resource Adequacy

Page 7-5: The introduction confirms, that contrary to PSE's representation to stakeholders only to use recent decade's weather data, that PSE continues their decades-long model falsification of using weather data over 88 years old -- 100 years out of date within the period of analysis. The primary effect of this modeling error is to greatly exaggerate PSE's peak winter Resource Adequacy needs -- perhaps by as much as 20%

Page 7-8: No rational basis is given for the assumption that smaller utilities would in practice be better able to fill their shortfall from market compared to larger utilities such as PSE.

Page 7-10: Given the lack of rational basis discussed immediately above, it points out the weakness of even PSE's modeling of a relatively "simple" traditional measure like LOLP, let alone more troublesome and error-prone measures such as EUE, LOLH, LOLE, and LOLEV. UTC should dismiss PSE's estimates and analysis of these more complicated measures for what they are: Vacuous Marketing Hogwash presented to UTC to motivate needless overbuilding with resulting excess PSE profits at ratepayer expense. Let us be clear as ratepayers: WE LOSE POWER ALL THE TIME! PSE DOES NOT CARE IN PRACTICE TO KEEP THE LIGHTS ON! What PSE instead wants to do is motivate profitable overbuilding, while doing nothing in practice to keep our lights on!

7.8 Page 7-36: The introduction of this section confirms again that PSE is actually having trouble meeting load needs *in the summer* not in the winter -- as they continue to erroneously model! As stated here, August 2020 is the latest regulatory shortage.

Page 7-45 PSE states that they did not change the modeled peak temperature extremes "because they could still occur." This is a nonsensical statement. As extremely cold winter days -- zero degree days -- have become a distant past, with coldest winter days now being only about 18 degrees, not zero degrees, the zero degree days have become a statistical impossibility. As such, not updating modeling to take into effect these large coldest days warmings represents a modeling falsification.

The fallacies in this PSE kindergarten argument should be obvious: when statistical measures like LOLP support PSE desire to build new Peakers, then PSE quotes statistics, but when climate change shifts statistics against PSE's desire to build new Peakers -- because coldest winter days have become much warmer -- then PSE ignores the rapidly changing statistics due to climate change -- aka "non-stationary statistics" and instead makes the false kindergarten-level argument: "well, if it happened in this past it could happen again." No, not actually, rather the statistics have changed so much already due to climate change that now zero-degree winter days have become in practice a statistical impossibility. But, while on a corporate-level PSE pretends to acknowledge the reality of climate change, in practice within the PSE IRP modeling group continues to ignore the reality of climate change, and how that is affecting the statistics that they should be using within their modeling efforts, but which still, after a literal dozen years of complaints, they still refuse to fix. They told stakeholders that they were going to fix it this time through the IRP, and then, and the end of the day, or rather the end of the IRP, they did not in fact fix the problem, but rather continued the old fallacies -- because those fallacies serve PSE's financial interest to continue to overbuild by exaggerating winter RA needs.

Section Customer Benefit Analysis page 8-16

I wish to express a concern that PSE posted, but then withdrew, a paper that they had planned to present at an IRP meeting, which showed that PSE intended to reduce customer benefits to lower income ratepayers. I ask the question to PSE and UTC: Is such "economic redlining" consistent with the notion that "all customers benefit" ? Or rather should it be the case that all

programs and benefits are available to all PSE ratepayers regardless of their income? I suggest that "all customers benefit" implies the latter, and to do otherwise is in practice racist.

R. Temperature Sensitivity page 8-133

In Sensitivity R PSE models to a *small* effect the amount of coldest winter day warming that I have been complaining that PSE has been mis-modeling for the last dozen years. As PSE, even to a *small* extent acknowledges that coldest winter days have actually become warmer, then the need for new peaking resources go down, reducing portfolio costs by 10%.

Or stated another way: Should UTC allow PSE to overcharge ratepayers by more than 10% just by the PSE modeling falsification of pretending coldest winter days haven't already become enormously warmer?

U, 2% Cost Cap Threshold page 8 - 144

In this section PSE falsely claims that the 2% cost threshold is in existence prior to 2030. It is not. CETA law clearly states that the 2030 requirement to get to 80% is absolute, without exception. Only after 2030 do 2% cost off-ramps come into play.

Y. Maximum Customer Benefit page 8 - 162

Again, I suggest that "Maximizing Customer Benefits" means that all customers should have equal access to all programs and benefits, and that PSE should engage in no "economic redlining" that prevents low income ratepayers from participating equally in all programs and benefits. Further, such "economic redlining" would prove in practice to be racist.

Resource Integration page 8 - 193

I suggest that the risk that NG supply may fail or be curtailed has not been sufficiently explored in PSE's electrical modeling. Recent BC "near miss" outages, and Texas' recent very real NG outages show that reliability of NG supply for electrical generation cannot be assumed.

Figure 9 - 5 page 9 - 15

This figure shows the degree of PSE falsification due to out-of-date historical temperatures, where coldest hourly winter days are currently not more than 18 degrees, corresponding to an hour 47 HDD. Yet PSE's analysis goes up to 55 HDD, 17% higher that can happen currently, due to the effects of coastal climate change.

Page 9 - 16

During the IRP meetings PSE refused to clarify exactly what they mean by a "52 HDD peak day planning standard." As discussed above, a 47 HDD peak hour is as cold as can be expected, and on a daily basis this would be only about a 42 HDD day. Using "the sky is

falling" justification does not explain the choice of planning margin. This PSE modeling should be thought out better -- and explained better.

Page 9 - 25

I continue to express concern of the "sanity" of the design of Tacoma LNG, which if it fails will cause many thousands of deaths, much of whom will be school children. I do not believe this is a sane design choice by PSE, showing appropriate concern for the lives of US citizens. Unfortunately, the Utility Energy Industry continues to show the ability to make shocking failures, including Aliso Canyon, and most recently the Texas grid failure.

Appendix A.

I will simply describe this IRP's public participation process as what it was: "A Disaster" -- after 12 years of PSE continual decreasing the quantity and quality of allowed public participation. In particular PSE actively engaged in a "freeze out" of my participation in the IRP, repeatedly refusing to acknowledge my "Raised Hands" and then if acknowledging my raised hands pretending not to understanding my technical questions, or answering technical questions on a kindergarten-level. But UTC need not take my word for this -- please do actively ask the other IRP participants how fairly they felt PSE treated IRP participants this cycle!

Appendix I. Page I - 11

While it is claimed that temperatures from the last 30 years were used -- but then PSE "adjusts" those temperatures downward below the actual real temperatures, to exaggerate the need for NG resources! This again, is an example of PSE IRP modeling groups denying the reality of climate change, where in the coastal PNW region PSE serves coldest winter days have already warmed 18 degrees. PSE doesn't like that reality, so then they adjust recent decade temperatures back down again, so that the PSE modeling groups can in practice ignore the reality of climate change in their modeling and claimed resource needs.

Appendix L. Itron Temperature Trend Study

Itron studied *Just The Most Recent 50 Years* and determined that coldest winter days *Within That Time Period* can still plausibly occur. I agree -- which is why over the last 12 years I have been asking PSE to limit their use of temperature data to the last 30 years. But that is not what PSE is doing. Rather, PSE continues to use temperature data back to the 1930's -- when coldest winter days were 18 degrees colder than they are today. PSE own actions are inconsistent with the very temperature studies that they asked Itron to perform. Why is that? Because Itron's studies would not support PSE desire to build additional Peakers based on 88+ year old temperature data.

L. Page 5

Itron agrees with me, and disagrees with the previously discussed PSE HDD statement: Increasing winter temperatures results in *decreasing* HDD days:

"As a result of increasing temperatures, HDD can be expected to decline on average 0.5% per year"

Figure 3 Page 6

Itron agrees with me, and disagrees with current and previous PSE use of historical weather data. The same as I have been saying, the coldest winter days one can currently reasonably expect is about 16 degrees F. But PSE continues to model for RA needs using historical data which goes down to zero degrees. This represents a greater that 24% exaggeration of peak HDD heating load.

Page 15 - Conclusions:

"Electricity and natural gas sales are strongly impacted by weather conditions. Forecasts thus require assumptions of future weather conditions."

A true statement. Increasing temperatures means declining PSE sales. But it also means -- strongly -- that PSE has greatly reduced winter RA needs, a fact which PSE continues to ignore in their RA analysis by reaching back to the 1930's to try to justify their desire for new Peakers. PSE wants to have their cake and eat it too: Complaining that rising temperatures means lower sales -- justifying higher rates, but then PSE turns around and ignores Itron's study by reaching back nearly 100 years in order to try to find winter weather cold enough to justify building more new Peakers – and a new Energize Eastside Transmission Line.

In its summary statement Itron continues to ignore what PSE is actually doing during their RA modeling efforts: Not assuming a "reasonable 23 degree coldest winter day" but rather reaching back in time to zero degree coldest winter days, and not using a "reasonable" most recent 30-years worth of weather data, but rather reaching back in time to the 1930's in order to try to justify their desire for new Peakers.

This concludes my review of PSE's IRP documents and PSE's distortive modeling efforts. Thank you for considering my comments.

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