

Comments by James Adcock on Docket UE-210795
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In this review of PSE's 2023 Biennial CEIP Update, I express concerns about whether PSE is actually being serious about reaching the CETA requirement to be actually "80% Clean" by 2030. IE 80% non-emitting or Renewables "Primary Compliance."

I also express concerns about PSE increasing actions to actually exclude the general "Public" – the "IRP Stakeholders" – from real participation in the IRP process, substituting instead PSE's choice of "Organizations" whom PSE chooses as being acceptable to PSE to actually participate in the IRP Process. Such a PSE determined "choice" of "representation" – PSE's choice of representation not Ratepayer's -- does not represent "Public Participation" in the IRP Process as required by Law.

In general I am concerned that PSE seems to lack serious intent to actually implement their CEIP "Specific Actions." We understand that plans in an IRP are "Strawman Plans" – not plans that Utility necessarily intends to implement. But CEIP "Specific Actions" means just that – the CEIP plans are not "Strawman Plans" but rather the actual specific actions which the Utility will take in order to meet their requirements under CETA law – notably to actually get to 80% "actually clean" by 2030. If a Utility does not take those "Specific Actions" they would then not be complying with CETA law.

Where do you draw the line between "PSE is acting in a lawful manner" vs. "PSE is engaging in unlawful behavior, simply ignoring the requirements of Washington State Law"?

Page 1.2 Executive Summary

PSE is missing their own targets for 2025 by about 37% of clean target growth. IE instead of a 20% clean target growth, PSE only achieved 14.6% clean target growth.

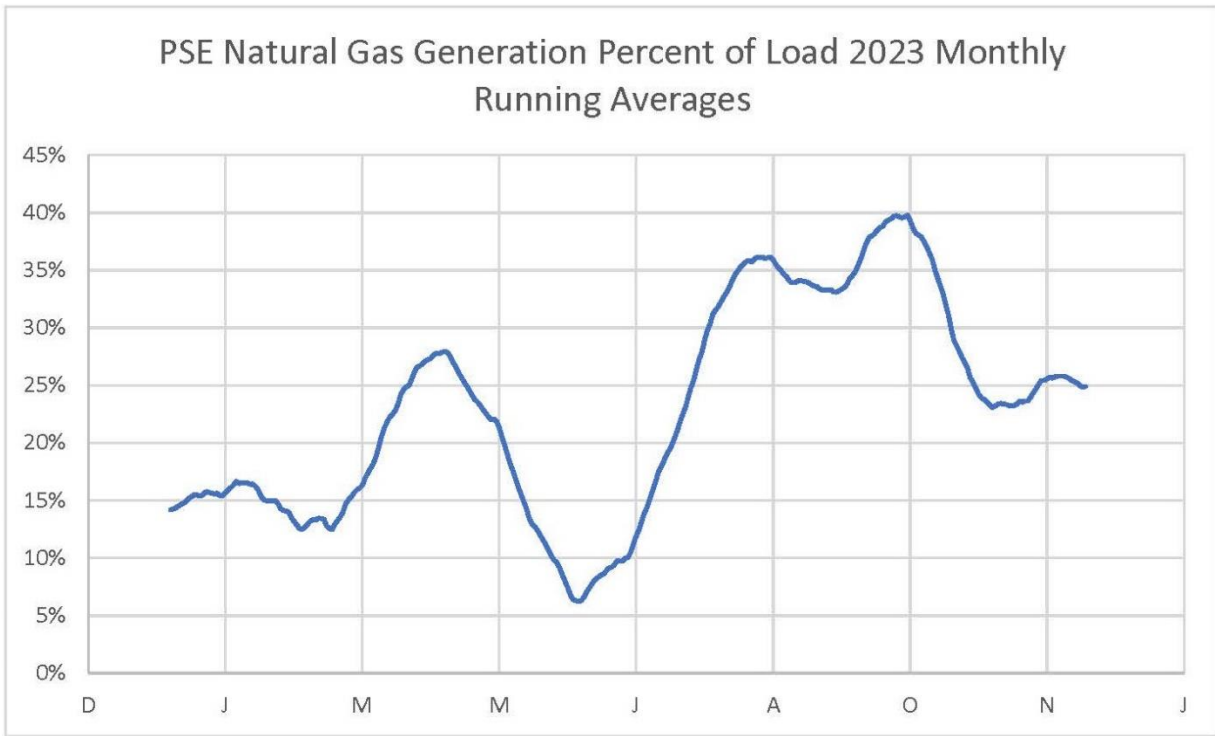
I express general concern that PSE never talks about the CETA requirement that PSE be 80% "actually clean" in 2030, i.e. only the 20% of the CETA requirements can be met by alternative compliance. The concern is that PSE will not actually be "80% clean" in 2030, but instead will propose expanding their use of "alternative compliance" measures [of dubious quality] beyond the 20% allowed in CETA.

Page 2.3

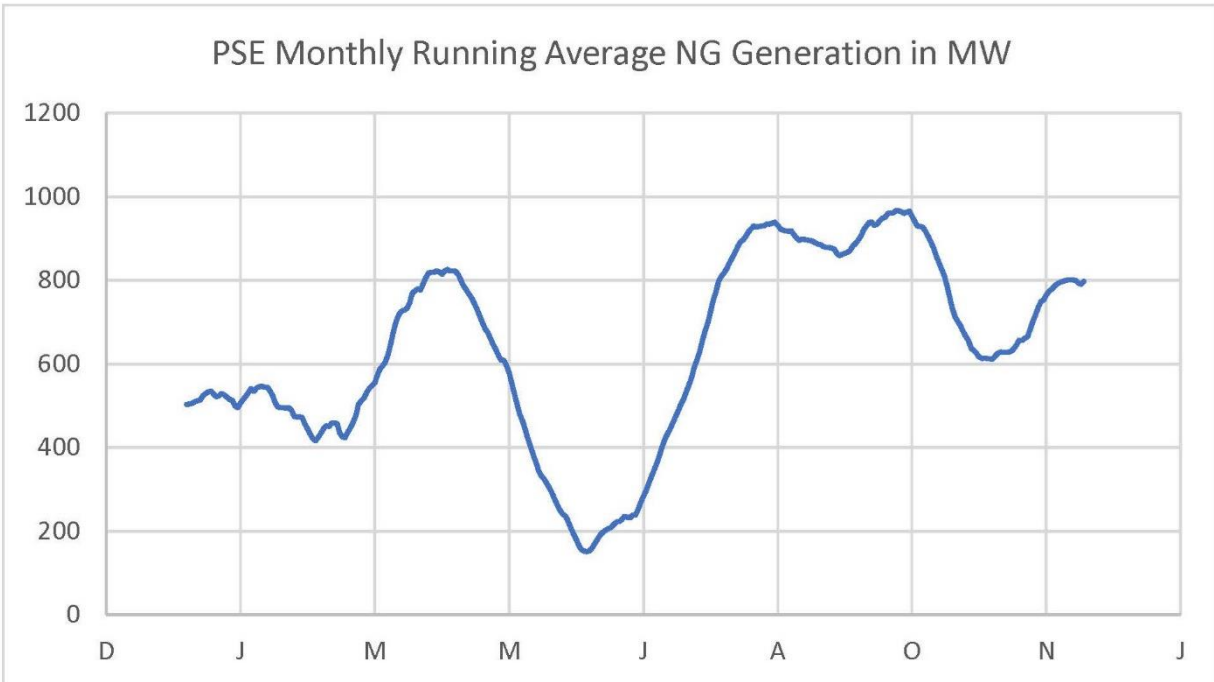
CETA does not measure compliance “over a four year period” prior to 2030. Rather, the CETA stated requirement is that PSE be “80% actually clean” in 2030. If for example, PSE proposed targets less than 80% in 2030, that would not meet the requirements of CETA law. Further, if PSE proposed 80% targets by 2030 -- but then did not in fact take meaningful Specific Actions to actually meet that goal -- then again, PSE would not be meeting the clearly stated requirements of CETA law. In either case Commission should require PSE to take immediate effective corrective action. PSE’s current Biennial Update demonstrates that PSE can reasonably predict how much new Renewables and other actions will be necessary to meet these 2030 requirements – and also demonstrates (for example) how shifting load requirement might cause PSE to slightly undershoot, or overshoot, the 80% requirement – assuming PSE took meaningful actions to actually meet that requirement in the first place. It is important that PSE go on a “linear glidepath” to 2030, so that meaningful progress towards meeting the 80% goal can be demonstrated. As PSE notes in this Update, once PSE is below the glidepath then it is very difficult to acquire resources quickly to make up the shortfall – because then other utilities acquire those assets needed to meet those goals. Thus, the importance that PSE stay on the glidepath to 2030, and not engage in “foot dragging” – delaying resource acquisition in the faint hope of making up that shortfall later.

In general, PSE is engaging in a total “Freeze Out” and shut down of the traditional IRP Stakeholders group – average ratepayers participating in all aspects of the IRP. This group primarily consisted of people concerned about PSE’s high level of GHG, and the “Existential Threat” that poses to the planet and the human race, as found by the Washington State Legislature [CETA Law], and as measured for example by the scientific peer reviewed paper “The mortality cost of carbon” By R. Daniel Bressler, Nature Communications volume 12, Article number: 4467 (2021)

Rather than declining amounts of not-clean generation, PSE has actually greatly increased the amount of Natural Gas Generation used over the last year – the first plot showing the running monthly average percent of load being served by Natural Gas Generation – currently up to 40% -- not the 20% average required by CETA law in 2030.



The second, similar looking plot, shows Natural Gas Generation in Average Megawatts [not Peak, but Average – 24/7] – shows PSE Natural Gas Generation serving PSE load in recent months has approached 1,000 Megawatts – 1 Gigawatt – average monthly generation, not peak, Natural Gas Generation:



It is important to note that there is never a time when PSE Natural Gas Generation “goes to zero” – that there is so much Renewable Generation that it cannot simply be used to displace some portion of the then concurrent PSE Natural Gas Generation. PSE would need to roughly triple its current amount of Renewables Generation in order to have so much Renewables that PSE couldn’t simply accommodate those additional Renewables by reducing the concurrent amount of PSE Natural Gas Generation. And this isn’t even counting “Wind Integration” [or “Solar Integration”] -- where PSE swaps Renewable Energy with a Hydro supplier, such as BPA [aka “Storage Contract”] in order to achieve effectively, a flatter, more even source of non-emitting power.

Or, in other words, PSE really doesn’t have any need for Hydrogen or other Long-term Storage such as Iron Oxide Batteries, or a Hydro-Operator “Storage” contract [water stored behind a hydro dam *IS* “Energy Storage”] until PSE triples its amount of Renewables – even ignoring the “Integration” potential of such Renewables.

Page 2.8. It still sounds to me in this description that PSE is never really including SCGHG – Social Costs of Greenhouse Gas [a currently very low estimate of the societal damages caused by PSE’s emissions – it should be 3X higher, about \$180/ton not \$60/ton as proposed by EPA] in any of its final dispatch modeling. I believe it is important that PSE do so, in order to understand whether or not their system is resilient to any State or Federal changes which would require [explicitly or implicitly] the actual inclusion of SCGHG in actual dispatch decisions. Examples would include a State or Federal Tax and Rebate system, or a change to CCA which would no longer give Electrical Utilities “free allowances” but rather require them to fully participate in the auction – which is currently clearing at values close to the historical EPA SCGHG values [\$60/ton] – but not nearly the proposed updated EPA SCGHG costs [\$180/ton], which are in alignment with current understanding of Climate Scientists, and which are about 3X higher than the currently used SCGHG numbers. If EPA were to adopt the \$180 / ton numbers,

the Cost to Human Society from PSE's emissions then exceed the value to human society of the goods and services that PSE's provides to Ratepayers. IE at that point in time PSE's total actions as a company represent a net negative to human society. Of course, the actual damages to human society are whatever those damages actually are – including the “Mortality Costs of Carbon” [Bressler] – and do not wait upon any formal determination by EPA or the State. “Prudency” in any case would be to avoid such emissions where it is reasonably practical to do so, for example by building additional Wind or Solar.

Further, PSE is supposed to return the auction value of the free allowances to ratepayers if it is more cost effective (lowest reasonable cost) to do so – and PSE doesn't seem to include that requirement in their modeling efforts. And SCGHG is a “real cost” – it is the real cost imposed on Human Society by PSE's choice of actions. In addition, there are the real Mortality Costs – real human deaths – caused by PSE's choice of actions – to continue high levels of GHG emissions, as calculated using the “Mortality Cost of Carbon” by Bressler.

Page 2.12 PSE talks about how they model on a yearly basis on a “P50” basis, which I believe is a perfectly fine measure for PSE [and Commission] to be using in terms of designing targets, and actual specific resource acquisition actions, to demonstrate that PSE meets the CETA requirement of “80% clean” by 2030. As a counterexample, if PSE were to fail to actually acquire such resources by 2030, that would not meet the stated CETA requirement. Or, if PSE suggested that they have until 2034 (for example) to acquire such resources, that would also fail to meet the clearly state CETA requirements. There is no “4 year averaging”, and there is no “2% cost off-ramp” prior to 2030. Rather, PSE actually has to meet the CETA stated requirement to get to 80% actually clean by 2030.

Page 2.13 These are all reasonably predictable obstacles that PSE should have assumed that they would be facing when they chose to “foot drag” acquisition of resources in the first half of the 2020's. The results will not be PSE's predicted reduction in Renewable's prices, but rather higher prices, due to competition for resources, including competition for ideal projects, locations, transmission connections, and higher interest rates for project financing. PSE has missed a “golden opportunity” by choosing to drag their feet – by choosing to *not* acquire resources on the “linear glidepath” requested by the IRP Stakeholders! Now, PSE is behind the eight-ball, and playing catch-up – by PSE's own design choice. And now the added costs of PSE's inactions fall to the Ratepayers to pay, not PSE's Owners or Management. PSE needs intervention by UTC to fix their failing actions – or rather inaction!

RFP Discussion Page 2.24

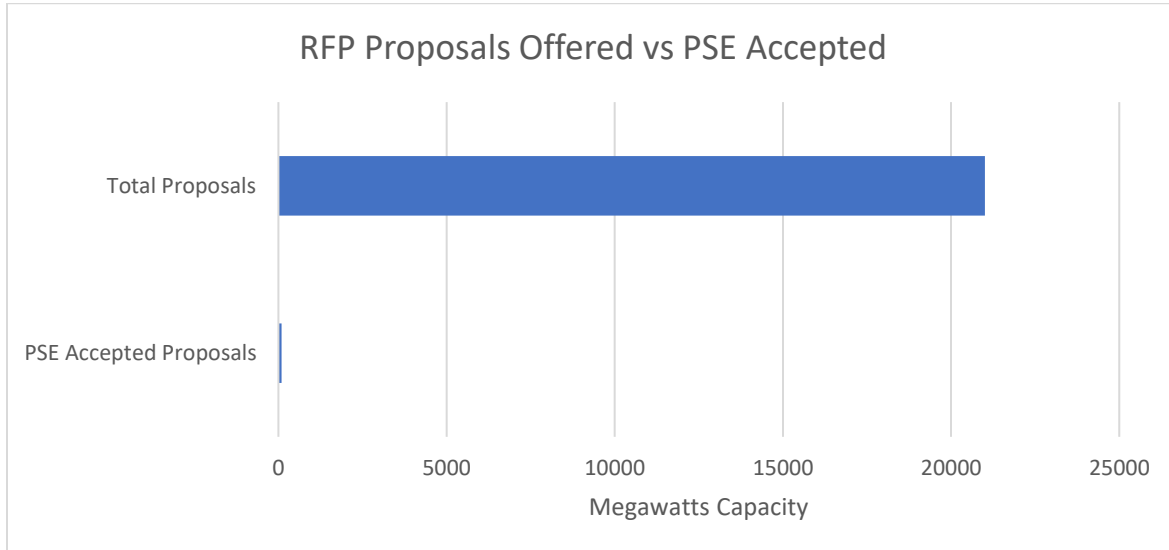
PSE RFP Proposals: 21,006 MW

PSE Accepted Proposals: 90 MW [nameplate] – which is really only about 35 Average MW

IE, PSE accepted less than one half of one percent of the total bids!

I do not believe this PSE choice of actions – or rather inaction -- represents a real commitment to meeting the CETA 2030 “80% Clean” requirements. I would be concerned that future potential bidders will feel highly insulted by PSE's tiny acceptance rate of these bids and will simply not bother to bid in

the future – believing that PSE’s RFPs do not represent a serious requests for bids – but rather only “fake compliance” actions. PSE needs to “Play Fair” both with RFP potential offers, and with Ratepayers. But that is not happening.



I ask that Commission review through independent auditor whether or not this extraordinarily low acceptance rate – in the face of PSE’s huge Renewables needs – whether the enormity with which PSE is rejecting offers represents prudent utility behavior given the need to meet CETA 2030 requirements: 80% actually clean by 2030

As PSE notes, there is a “lost opportunity cost” here when PSE does not secure a contract on a Renewable Resource – that resource then goes to a different bidder who secures the contract, and then that Renewable Energy is lost to PSE.

Equity, Page 3.5

In comparison, I will contrast PSE’s chosen definition of “Equity” with that of a different Group, whose definition PSE **did not choose**, namely ACEEE (The American Council for Energy Efficient Economy) [<https://www.aceee.org/topic/energy-equity>] namely:

"Transgenerational Equity" -- "Decision makers **consider the impact on future generation** of the clean energy policies and programs they develop" -- "Decision makers create solutions that **benefit future generations** and eliminate practices that could place unfair burden on our children." [Original Emphasis by ACEEE]

This is an aspect of “Equity” that PSE has steadfastly refused to do – to actually consider the cost of their continued foot-dragging emissions [close to 1,000 Megawatts of Natural Gas Generation, generated

close to 24/7/365 the past year] on future generations. For example, PSE continues to refuse to include the Cost of Greenhouse Gas Emissions in their actual final dispatch modeling. Such costs must be included if we are to save the lives of our children, and our children's children – again see the “Mortality Cost of Carbon” by RD Bressler. Such Mortality Costs are not included in PSE's modeling. Nor are the current best EPA estimates of Greenhouse Gas Emissions [EPA proposed] which are about 3X higher than what PSE is modeling – when PSE bothers to include those costs at all.

Page 3.13 I support PSE's efforts to identify and help the “Deepest Need” subset of ratepayers most greatly impacted by Climate Change. These people will most commonly be the youngest, oldest, poorest, and in most ill-health of ratepayers. For example, such people could be helped by installing mini-split heat pumps, to provide more affordable heat in the winter, and life-saving cooling during summer heat waves. My aunt, Patricia Adcock, old and in ill-health, died in such a heat wave, from heat stroke. When the elderly experience heat stroke, this causes shock and shivering, leading them to believe they are too cold, they go to bed, and cover themselves with bedding, and then they die. Heat pumps, providing summer cooling, could reduce such deaths.

Even less expensive than mini-split heat pumps are “saddle style” heat pumps, which sit in an existing window-frame, again providing inexpensive winter heating, and summer cooling.

But fundamentally, we need to understand that there cannot be any lasting justice for any such people – and for all people – unless “we” – in this case meaning “PSE” – actually reduce Greenhouse Gas Emissions. It is not “one verses the other” – we need PSE to actually do both! This is the meaning of “Climate Justice” – we actually need to reduce GHG emissions – or the situation just keeps becoming more and more Unjust!

Page 3.22 I support Commission order that a minimum of 30% of Energy Benefits actually go to Named Communities. I believe this level of support is appropriate.

Page 4.1 “Public Participation”

WAC 480-90-238

“Public participation is essential to the development of an effective [IRP] plan.

I continue to complain that PSE's “IRP Process” is completely horrible, even becoming worse, and I believe contrary to clearly stated law “Public Participation is Essential to the IRP Plan.”

I ask that Commission take clear corrective action against PSE now, before more time is wasted, including sending out a corrective “Re-invite” letter to those Stakeholders that PSE has previously “Disinvited” !

PSE actually began this round of “IRP Participation” by sending out a *DISINVITE LETTER* to historical Stakeholder Participants – actively telling them that they *WOULD NOT* be allowed meaningful participation in this round of the IRP! Instead, PSE would hand-pick *Organizations* whom PSE liked, to participate, preventing the general “Public” Stakeholders from meaningful participation – as required by

law!

There is nothing in Washington State IRP law which allows Utilities to hand-pick who they allow to participate in the IRP Process or not. That is not the meaning of "Public". A "Public" meeting is one where anyone can show up and participate. In practice PSE has actively and quietly killed the historic "IRP Stakeholders" group, by actively preventing participation by these members – some of whom have participated in the PSE IRP process for more than a decade. I believe the involvement of such individual Stakeholders, continuing to push PSE to actually make necessary Greenhouse Gas Reductions, and the reduction of needless and excessive other environmental damages, and to actually do so on a "Lowest Reasonable Cost" basis – including the cost of environmental damages – I believe to allow such continued Public Participation is essential in order to regulate PSE in a meaningful way, comporting with Washington State Law. But PSE is currently, right now, in this IRP cycle, not allowing such meaningful Public Participation – which again, is required by law.

Again, I ask Commission to intervene now to require PSE to open all IRP Meetings to Active Participation by all members of the Public, rather than PSE picking and choosing who PSE likes, to allow to actually actively participate.

Page 4.26 Wildfire Risks – I ask that Commission please understand, with a current burn-rate of our forests – 2% of our forests burned per year as identified by our Legislature implying nearly 100% burned in 50 years, that is it only a matter of time until Washington State experiences its own "Paradise Fire" or "Lahaina Fire" – as Greenhouse Gas influenced temperatures warm even slightly, due to "Palmer Drought Index", forests become much more dry, and forest fires become larger and more difficult to control.

Please consider the "Big Burn Fire" -- which burned 3 million acres in 36 hours!

PSE needs to have serious Fire Control measures in place now – before it happens – rather than waiting for it to happen! At the very least, PSE needs to have clear plans now about what lines it is going to deenergize, when, and under what wind, weather and drought conditions! We do not want to be standing around pointing fingers in a "circular firing squad" after it happens – having done nothing real to prepare in advance!

PSE also needs to have serious plans in place for "The Big One" – a large-scale earthquake which seriously damages natural gas and other pipelines, and electrical transmission lines – some now built directly on top of such pipelines – and simultaneously right on top of a major East-West earthquake fault line through South Bellevue – Eastgate!

Page 4.27 "Sense of Pride"

PSE and Commission need to understand that right now, rather than having a "Sense of Pride" in what PSE is doing – or rather is **not doing** – PSE current actions or rather inactions form an acute sense of existential embarrassment to us Ratepayers, who are having this Monopoly force its actions upon us – forcing us to pay for PSE actions which horrifically do not represent us, and which do not represent our values, while PSE continues to waste our Ratepayer monies on complete nonsense! Nonsense which

does not benefit us, does not benefit the planet, and which does not benefit the other citizens of this planet.

Page 5.3 Specific Actions

While PSE takes steps to actually prevent individual Stakeholders from viewing what programs and benefits that PSE has in place, I was able to see some of the “Heat Pump” programs PSE does offer – and I was shocked at how limited and bad the vendor choice was limited, and how limited and bad the Heat Pump offerings were. Why doesn’t PSE simply allow all vendors, and all heat pumps, that are recognized for support by the Federal Government? PSE’s actions seem to me to be clearly intended to restrict actual uptake of Heat Pumps.

I ask Commission to intervene, first of all, to allow individual Stakeholders such as myself to be allowed to easily and transparently see all the programs that PSE offers, in order to be able to “vet” PSE actions for discussions in forums such as this one.

I also ask Commission to require independent auditor to see if PSE isn’t needless and excessively restricting their offerings – across the entire range of offers that PSE is making to Ratepayers.

I know that Commission has also asked in the past whether or not it might be a good idea to have an independent organization also make such offerings, to which I have a simple Request of Commission: Do It! Do It Now! Please require such an independent organization! PSE cannot be relied upon for unbiased implementation of such programs!

Page 5.12 Time Varying Rate

Time-of-Use Trial Program: I believe that, once again, PSE has actively sabotaged a Time-of-Use Trial Program, this time by raising Prices by 20% flat across the board, independent of Time-of-Use, *Before Even the First Month’s Bill to Those Ratepayers Who Signed Up For This “Two Year Test Program” -- Based On PSE’s Quoted Rates!* In any other Washington State Business, this would be called: *“Bait and Switch.”*

Please act to stop this nonsense. Program participants need to be treated fairly. In no way is it fair the rates are greatly increased above what PSE advertised for joining this program – before even the first month of program operation!

Page 5.13

I do not believe the ratios shown here are actually the ratios being offered to Program Participants, and in actual practice these ratios were never provided to ratepayers. It is hard to say for sure – because PSE doesn’t actually explain what they are talking about, or how these “Bill Discount Ratios” are calculated. For example, there is no “base rate” for ratepayers on these programs. Rather (assuming Schedule 327 for example) they pay a huge price penalty for any energy they use on-peak – for example if they use their oven to roast a chicken for dinner. They get a mild benefit for energy used during the day not-on-peak – where there is both a morning and even peak cost rate of three hours each. And they get a larger

discount overnight, which can be useful if they use this time to charge their EV, or perhaps if they run a heat pump. If the rates are properly designed – and when I checked it initially it did appear that they were properly designed [before PSE raised the rates!] – then an “average customer” with a strictly average load profile – receives neither penalty nor benefit from being on these programs. Only by moving their energy use from on-peak to off-peak – and especially during the nighttime hours -- do ratepayers receive a benefit. But *how much* benefit a customer receives for their efforts to move from on-peak to off-peak depends on the ratios of those benefits – and PSE – even before the program’s first billing cycle – acted to greatly reduce these benefit ratios, without even informing the ratepayers on these programs! IE again, it appears PSE has raised the per-kilowatt-hour charges to ratepayers on these programs uniformly “flat rate” by about 2 cents per kilowatt-hour, regardless of Time-of-Day, greatly reducing the benefits provided to those ratepayers who are attempting to move their usage to off peak hours!

Once Again, I suggest, in practice, PSE has acted to sabotage these “Time-of-Use” trial programs – before they even get started!

My concern is that PSE is acting to “put their thumb on the scale” [to sabotage the “Time-of-Use” trials] in an effort to justify [in the future] building more new Gas Turbines – which they may claim will run on Green Hydrogen – but I believe in practice will run on even more Natural Gas. Once these new Gas Turbines are built, I believe it will be very difficult to actually restrict PSE to only run them on Green Hydrogen.

Page 5.19 Distributed Resources

Again, I support the Condition 20 minimum 30% to Named Communities requirement, as being reasonable.

Page 5.20 PSE suggests that it hopes to meet 80 MW nameplate target, which represents about 27 Average Annual MW – comparing to about 1,000 Average Megawatts of PSE recent Natural Gas Generation [as reported by PSE to EIA] – or about 1/37th of total need – and this after PSE has consumed ½ of the decade of the 2020’s available to get PSE to 80% “actually clean” by 2030 as required by CETA Law. I suggest PSE needs to be targeting a much higher number here. 1/37th of PSE’s Not-Clean operations is way too small!

Page 5.28 Under Condition 18 PSE will increase its Community Solar to 25.4 Megawatt [nameplate] – Annual Average Megawatts about 8 Megawatts – about 1/125th of PSE’s recent Average Megawatts of Natural Gas Generation. Again, I suggest this number is way too low to get PSE to the required “80% actually clean” in 2030 -- as required by CETA law.

Page 5.33 Distributed Battery Storage Systems

PSE will attempt to acquire 38 MW of BESS [Battery Energy Storage System], which could be used for Peak Shaving and Valley Filling. PSE actual operations recently [as reported to EIA] show a 1,295 Peak-to-

Valley load difference. The proposed Battery Storage capacity could meet about 2% of this daily variation. In practice PSE meets these peak requirements instead by using additional emitting Natural Gas Generation. I suggest this amount of Battery Storage quantity is way too low, and that PSE should acquire more battery storage – whether Distributed Battery Storage, or Utility-Scale Battery Storage.

Page 5.22

Item 26.a “iDot” collaboration with IRP Stakeholders: Again, I suggest that this condition is not being met, because in practice PSE has killed the historic “IRP Stakeholders” group – by actively sending the deliberate “DISINVITE LETTER” – telling such stakeholders that they would not actually be allowed to participate in the technical aspects of PSE’s IRP!

Page 5.53 As an Electrical Engineer, I disagree with PSE’s assertion that – in general – anything special has to be done to accommodate “reverse power flow” – both wires and transformers are naturally bi-directional in nature, and almost always when one neighbor puts solar on their rooftop that power just flows [say] to the neighbor heating his hot tub next door. Certainly, there can be say “activist hotspots” where a bunch of tech-savvy neighbors all decide to put solar [source] on their roof at the same time – but there could also be the case when that neighborhood all decide to buy Teslas [load] “together”, and when a business such as Walmart decides to cover their roof with solar, then again, PSE needs to make sure that will work consistent with that Walmart’s business neighbors. Etc. In practice, most of the time what happens, is that PSE simply provides less power to such neighborhoods during periods of solar generation – the only thing that happens is neighborhood net “load reduction” – and less Natural Gas Generation. Yes, something PSE has to watch. No, not something where PSE *usually* has to do anything “special”.

Page 5.56 I support “Bill Discount Programs” – to support ratepayers with the highest energy burden – ratepayers with the highest support need.

Page 5.57 Regional Clean Energy Hub

After being involved in the Electric Vehicle Community for about last dozen years – during which time all the Hype about future “Hydrogen Vehicles” and Hydrogen Infrastructure has proven to be “Stuff and Nonsense” – I remain highly skeptical of “Hydrogen” offering a real meaning answer to the World’s – and Local – clean energy needs! Hydrogen is NOT a source of “clean energy” – it is only a STORE and TRANSPORT of clean energy – if clean energy was actually used to make that Hydrogen in the first place – and the creation of that Hydrogen remains an extremely expensive and inefficient process wasting a large portion of that clean energy – “Spinning Gold into Dross”!

And further I remain highly concerned that Hydrogen will be used a part of a “Double Counting Scheme” and will be used as an excuse to build even more new Gas Turbines – promising “Futures” – promising to run those Gas Turbines with Hydrogen -- *in the future* – “Really, Trust Us!”

Commission will remember when, some decade past, a coal operator wanted to build a new coal plant – promising to convert that coal plant to “Clean Coal” non-emitting, sometime, -- *in the future* – “Really, Trust Us!”

While not discussed in detail in this CEIP Update, but rather in the current IRP cycle, PSE is activity touting Hydrogen Technology, including “round tripping” Electricity to Hydrogen, and then Burning the Hydrogen “round trip” in gas turbines – a terrible idea because of its extreme round-trip inefficiencies – wasting as much as 66% of the original Renewable Energy. PSE is also touting mixing Hydrogen into existing Natural Gas supplies – another terrible idea – again, extremely inefficient use of the underlying Renewable Energy. Currently PSE is generating enormous amounts of electricity – nearly 1,000 Average Megawatts on many days – using Natural Gas. [EIA hourly data] The best and highest use of Renewables is to directly reduce the need for these enormous amounts of Natural Gas Generation – currently the Peak amount of Renewables Generation PSE uses to reduce Natural Gas Generation is only about 1/3 of the same-time levels of Natural Gas Generation – even when the wind is blowing at its highest levels. [EIA Hourly data] IE PSE needs 3X as much Renewables to even begin to make a dent in their Natural Gas Generation Emissions! When PSE “round trips” Renewable Electricity to Hydrogen and back again to Electricity, that round-trip efficiency is only about 1/3 – 33% round trip efficiency. Compare to using that societal money instead to install Heat Pumps, with a SEER of 3, running off of that Renewable Electricity: The results is 9 times more benefit for human society than PSE’s proposed Hydrogen “Round Tripping!” Even when Renewable Electricity is turned into Hydrogen, and that Hydrogen [dangerously] introduced into natural gas pipelines, the efficiency is still about 5X less than directly using that Renewable Electricity to run Heat Pumps! Further, I believe that there is a grave danger that PSE will engage in “Double Counting” of Renewable Energy from Wind and Solar which is then used to make Green Hydrogen. If Renewable Energy is stored in batteries, only the 80% efficiency that comes out of those batteries is counted against CETA requirements. Similarly, round tripping Hydrogen is simply another chemical/electrical storage technology, effectively a “Flow Battery” – and thus only the 33% efficiency coming out of the entirety of the system: Wind Power/Hydrogen Electrolyzer/Hydrogen Storage/Hydrogen Transport/Burning in a Gas Turbine – only the 33% of the original electricity from the Wind Power Farm that actually comes out of the “Round Trip” can be counted as Renewable Energy against State CETA requirements – not the 100% original electrical power output from the Wind Farm! And when the output of that Wind Power Farm is used to create Hydrogen to mix into Natural Gas Pipelines, only the equivalent displaced amount of Natural Gas Heating Capacity can be counted – typically about 66% efficiency – and then only for the CETA “20%” 2030 “alternative compliance”, and not for the 80% “actually clean” requirement.

Here is another way of thinking about this problem: If PSE were to select an independent vendor to run a battery storage facility for them, would that then mean that PSE can count both the energy going into the battery and coming out of the battery as being “Renewables” – i.e. would PSE then be allowed to “double count” the power? What if PSE selected two independent vendors, each running half of a “flow battery” – the first vendor changes electrical energy into chemical energy, and then ships that chemical energy across the street to the other vendor, who then changes that chemical energy back into electricity? Can then PSE “double count” that energy? No – but that is exactly what is being proposed in the case of round tripping hydrogen! In all cases, ONLY the final power coming back out of the system can be counted as Renewable Energy, not the Renewable Energy going into the process, only the net energy coming back out of the process! The same rules must apply to any system converting Renewables to hydrogen: Only the final energy coming out of the final end of system can be counted as Renewable Energy against CETA requirements, not the Renewable Energy flowing into the process.

There *are* legitimate uses of hydrogen in industrial practices, but such usages are neither the Regulated Electrical Utility Business, nor the Regulated Natural Gas Utility Business, and should be left to the actual companies running such industrial practices.

Further, I remain concerned that PSE will propose adding new [in practice] Natural Gas Peakers to their system, suggesting that at some point in time in the future these Peakers could be turned into Hydrogen Peakers. Commission will perhaps remember a similar proposal some years ago where a Developer wanted to build a new coal powered generating plant – suggesting that somehow at some point in the future it could “magically” be turned into a “clean coal” plant!

Page 6.1 Customer Benefit Indicators (CBIs)

I remain very concerned that PSE can and does implement CBIs which are simply “Stuff and Nonsense” – and can easily manipulate customer surveys and directed-meetings to achieve whatever CBIs they want – as opposed to taking actions in their system which will actually reduce Greenhouse Gas Emissions, or provide other real customer benefits, and do so on a *reasonably* “Lowest Reasonable Cost” basis.

Further, the numbers used to represent such CBIs are often simply “pulled out of thin air” rather than being converted into a unified scale – for example all CBIs should be reduced to dollar amounts “estimated dollar customer benefits” – and then each of those dollar amounts from each measure really would actually be comparable to each other. And then, additionally, PSE could in fact act to optimize traditional “Lowest Reasonable Cost” – since then the CBIs would all be calibrated as “Costs” [or negative costs – Positive Customer Benefits -- Normalized to Dollar Amounts]

For example, doing so might point out at there is some “Customer Benefit” that PSE is measuring, but when PSE attempts to normalize -- “monetize” the benefits from such a program – those benefits actually turn out to be tiny! But without putting all CBIs onto such an actual fairly “unified scale” of measurement – PSE will never actually figure out what is important to do, or not – and can run off spending Ratepayer monies on “Stuff and Nonsense” – without real benefit to either the Ratepayers or to the greater human society taken as a whole [i.e. “Social Cost of Greenhouse Gas Emissions” – which *IS* for example “normalized” to a dollar amount scale! So, such “normalizations” of CBIs can be done!]

In Summary, please I ask Commission to act now to force PSE to increase useful actions now to reduce emissions, to actually reach “linear glidepath” to the 2030 “80% actually clean” requirements.

I also ask Commission to act now, to open all IRP meetings to full “Public Participation” as required by law. When PSE picks and chooses which organization can fully participate – those choices represent PSE, and not the historic IRP Stakeholders group – whose participation has been actively killed by PSE.

Sincerely,

James Adcock, Electrical Engineer, MIT

