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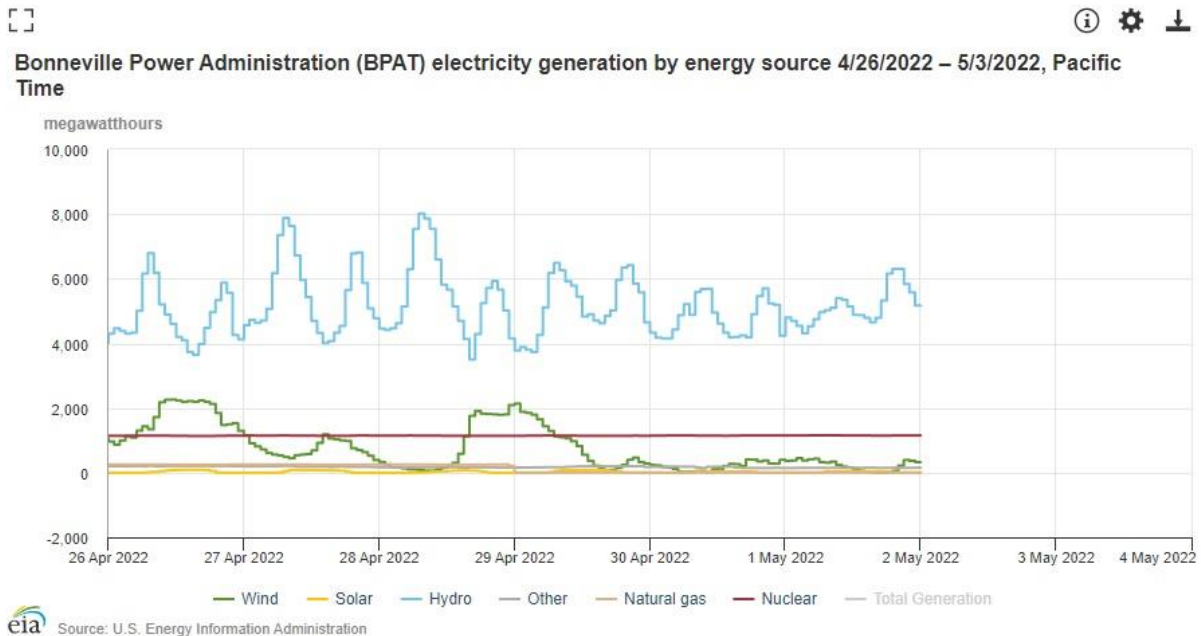
State Of WASH.  
UTIL. AND TRANSP.  
COMMISSION

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Commenting party's name: James Adcock, Electrical Engineer  
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Comments by James Adcock on Docket UE-210183 5-4-22  
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Hydro (BPA) has in practice the ability to massively store and shape energy over about a one-week period. Thus, it can be used to "shape" short-term Wind or Solar variation, but it cannot provide much contribution to longer term shortfalls. But most Wind or Solar variation -- including PNW-wide "Becalming Events" are of less than a week duration. What should be considered, however, is that historically about once in 20 years the PNW has experienced an Extended Winter Drought -- not a "Low Water Year" which happens about once every 5 years and needs to be something that every utility designs for -- but rather an Extended Period of Low Participation lasting a month or more, in Winter, resulting in greatly reduced Hydro Production. I don't know that we have reason to believe that Extended Winter Droughts will no longer exist given Climate Change -- thus I believe we should continue to assume that they could happen in the future.

Looking at current operational patterns of BPA -- which are available publicly -- it is very clear that it is NOT the case that "Hydro Generation" continues to "Follow Load", but rather: "Hydro Generation Automatically Gets Out of the Way of Wind and Solar." [See Illustration Below] The reason for this is simple: Wind and Solar can generate economically at lower market costs than Hydro, including negative market prices. Hydro Generators [BPA] act at least *somewhat* as rational market participants, and so they try not to generate when it is not economic for them to do so -- rather saving their water for later, economic, generation. Sometimes -- But RARELY -- this leads to Hydro Generators having to actually unproductively Spill water -- waste that energy -- but just how rarely this happens can be examined by looking at BPA's "Spill Flag" -- Spill VERY rarely happens -- obviously mainly during Spring High Water Events. And when Hydro is NOT being spilled, and Hydro is getting out of the way of Wind and Solar, then that means that Hydro is in fact acting as energy STORAGE -- more water impounded for later means more Energy Storage -- Hydro in the PNW has thousands or tens of thousands more storage capacity than Battery or Pumped Storage -- if only we could convince Hydro to maximize the use of that storage capacity. But even without maximizing the use of that storage capacity Hydro will do a fair amount of "Automatic" Storage -- for the simple reason that it is cost-effective for them to do so -- to generate when prices are high -- which is when Wind and Solar are not generating. Utilities ought to be working with Hydro Generators [BPA] to maximize Hydro-modulation based Storage -- presumably that would require some kind of "Wind Integration" or "Solar Integration" contract with the Hydro Generator to provide Shaping -- at a cost -- to the Utility, swapping that Solar or Wind Generation with a more-generally-useful Shaped Hydro product.

Illustration (From EIA) – When Wind is High then Hydro Generation is displaced by that Wind, resulting in Energy Storage in the form of Stored Water. Note the reduced height of the Hydro Generation Peaks during periods of Wind Generation.



"Overbuilding of Renewable Resources" -- this phraseology is simply continued Utility nonsense-words used to try to discredit the use of Renewables -- and to ignore their own copious contribution to the destruction of the planet and the human race through continued needless Over-reliance on Fossil Fuels. It has always been the case -- and will continue to be the case -- that Utilities build more generating resources -- much more generating resources -- than will typically be useful and used at any moment in time. Using the same "Overbuilding Rationale" Natural Gas Peakers are currently Overbuilt by a factor of about 25X -- because on average over the course of a year Natural Gas Peakers are only used about 4% of the time -- 4% of full-on nameplate capacity. "Oh No -- Regulatory Requirements have forced us to build 25X more Natural Gas Peakers than we really required!" Such "analysis" is obviously Stuff and Nonsense. Let's go over this again: Utilities build more of pretty much every generating resource than is needed at any point in time. They do so for both economic and regulatory purposes -- to be able to use the most economic resource at any point in time, and to "Keep the Lights On" [which of course is a joke -- Utilities DO NOT 'Keep the Lights On']. When Utilities have too much Solar and Wind to be used -- or when Utilities have too much Natural Gas Generation than can be used -- productively and economically, at any point in time, then the solution is simple: Then Just Don't Run That Resource! This is nothing new, the concept of a "Dispatch Stack" has been around for many decades -- if not over a hundred years. Wind and

Solar now form the bottom -- lowest cost -- portion of that stack -- which means that Wind and Solar WILL dispatch once build, and everything, including Hydro, will try to get out of the way of that Wind and Solar. Natural Gas Generation [and Coal if environmental costs are considered] tends to be at the top of the Dispatch Stack -- the most expensive to run resources -- which means that more Wind and more Solar means less Fossil Fuel Generation -- which is exactly what we are aiming for! And the good news is that Wind can be built for about the same cost as just the fuel cost of running Natural Gas plants -- so it doesn't really cost anything more to build Wind!

What is true, is that increasingly as we try to use more Wind and Solar -- and Hydro -- to meet close to 100% of our generating needs, we will have more crying need for Storage -- including "Wind Integration" and "Solar Integration" with Hydro -- and eventually that Storage requirement is going to be increasingly expensive. But first before we panic about that we need to make sure that Hydro is actually being used effectively for Storage as much as possible -- including Fish considerations -- and is not simply being used as an excuse for continued Utility Stonewalling. But how to get BPA to act in a sensible way on these issues, in the best interest of ratepayers in the PNW, is not trivial -- I suspect. Even though the rivers are OUR rivers -- and NOT BPA's rivers!

I will point out, again, that Utilities are in fact trying to pursue a "Double Counting" scheme with the State of California, where in practice that which has already been used for regulatory compliance in California is sold again to "Washington State Ratepayers" -- who then are being forced to unproductively pay for compliance measures required by State of California -- we ratepayers of Washington then are being forced to pay for *Californian* compliance! I ask again: How is this a good thing for the Ratepayers of Washington -- that we are forced to pay for *Californian* compliance? This is simply a double-counting "Fraud" scheme.

In response to Utility concern that the use of "Retained RECs" -- now called "Retained NFTs" or something -- are causing them great complexity I have a simple solution: Remove the concept of "Retained RECs" [or whatever they are called now] entirely: The concept was never congruent with the plain language of CETA in the first place! The complained-of "complexity" is simply one of Utility's own making! Simply require Utilities to *actually* deliver at least 80% clean to customer load by 2030 -- as clearly stated in CETA law.

In my experience as a dozen-years-long participant in IRP process the notion of "accurate and prudent least-cost planning for resource acquisition and compliance purposes" is nonsense. The Utility IRP "modeling" is extremely limited, extremely flawed, and intentionally biased to try to "prove" the need for whatever resource the utility currently wants to build -- typically more and more Natural Gas Based Generation. It certainly in no way correctly models the real-time operations of a Utility nor Market, it does not correctly model the "cost tradeoffs" between Natural Gas and Renewables generation, does not correctly model the contribution of Renewables to Reliability, it does not correctly model Climate Change, etc. E3 recently correctly identified some of the problems in IRP modeling -- while understating the impacts of such flawed modeling.

IOUs and "Lowest Cost" -- the assumption that IOUs attempt to build on a lowest cost basis without robust regulator input forcing them to do so is obviously silly. IOUs exist to make a profit for their owners, and will maximize their monopoly-based profits unless forced to do otherwise. An easy way to "get away with" excessive build and resulting excessive profits is to "fake" the modeling. Only with regulator understanding of exactly what is going on in the modeling and how utilities are "faking it" can costs be contained, and needless and excessive environmental damage be avoided. If regulators don't have this expertise, they need to contract for it -- and having the utilities themselves choose these "independent" contractors obviously ensures that they are not in fact "independent."

"Heat Events" -- it is not a "Heat Event" if a utility is not even running their own Natural Gas Generation to capacity. Rather than being a "Heat Event" it is actually a demonstration of how Overbuilt that utility is already.

Thank you for your consideration,

James Adcock, Electrical Engineer