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November 15, 2024

The Honorable Jay Inslee, Governor of Washington
The Honorable Sarah Bannister, Secretary of the Senate
The Honorable Bernard Dean, Chief Clerk of the House
Olympia, WA 98504

Re: Summary of the 2024 Annual Electricity Resource Adequacy Meeting

Dear Governor Inslee and Members of the Washington State Legislature,

It is our pleasure to provide the attached summary of the 2024 annual electricity resource adequacy meeting held on September 6, 2024. We convened this meeting and submit this summary pursuant to RCW 19.280.065. The meeting agenda, a recording of the meeting, and presentation materials are available on the Department of Commerce webpage and the Utilities and Transportation Commission webpage.

This year's presentations and discussions demonstrate the constraints placed by Washington's electric power system on the state's ability to achieve several core objectives: reducing pollution from greenhouse gases, providing sufficient clean electricity to support robust economic development, and maintaining reliable and affordable electricity service for consumers and businesses.

The expert assessments on resource adequacy presented at the meeting conclude that the Northwest has adequate resources to meet current demand for electricity and does not face a significant risk of outages in the near term. However, these assessments assume the industry will be able to execute their planned capacity expansions. Confidence in these assessments is also limited by the increasing level of uncertainty that planners face about future demand for electricity. The sources of this uncertainty include the added volatility of our weather, the pace of consumer conversion to electricity for transportation, heating and other end uses, and the growing energy demands of data centers.

A key focus of the 2024 meeting was the status of the Western Resource Adequacy Program (WRAP). Resource adequacy is a shared responsibility of the operators of the power system, and WRAP is a utility-initiated effort to hold themselves accountable for maintaining reliable service while realizing benefits of the participants' geographic and resource diversity. After the 2023 meeting, we noted our concern about the pace at which the industry was implementing the binding phase of this program and the fact that some Washington utilities had not yet committed to participation. While these concerns remain, we appreciated the commitment to WRAP

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implementation expressed by numerous utilities and evidenced by the revised transition plan announced shortly after our meeting.[1]

While much of the focus is rightly on the long-term need to expand the generating and transmission capacity that serves our state – including the need for improvements in government siting processes and utility interconnection processes – it is also important the policy makers and industry leaders take advantage of near-term opportunities to make the grid more reliable. A keynote presentation by the U.S. Department of Energy identified many such opportunities, including demand flexibility programs, enhancements of existing transmission lines, and installation of advanced technologies in the grid.

We are also attaching two letters received after the September 6 meeting from entities that participated in that meeting. We appreciate the continued engagement of the utility industry as well as consumer and environmental advocates in the ongoing efforts to assure resource adequacy with clean and affordable resources.

Sincerely,

David Danner
Chair
Washington Utilities and Transportation Commission

DocuSigned by:
Michael Furze
Michael Furze
Assistant Director, Energy Division
Washington Department of Commerce

[1] https://www.westernpowerpool.org/news/wrap-momentum-continues-with-board-approval-of-tar

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2024 Resource Adequacy Meeting Summary

Introduction

On September 6, 2024, the Washington Utilities and Transportation Commission (UTC) and the Washington Department of Commerce (Commerce) convened a public meeting to review the adequacy of energy resources to serve the state's electricity needs. This meeting was held, and this summary of the meeting is being submitted to the Governor and the Legislature, pursuant to RCW 19.280.065(1), which says:

> At least once every twelve months, the department and the commission shall jointly convene a meeting of representatives of the investor-owned utilities and consumer-owned utilities, regional planning organizations, transmission operators, and other stakeholders to discuss the current, short-term, and long-term adequacy of energy resources to serve the state's electric needs, and address specific steps the utilities can take to coordinate planning in light of the significant changes to the Northwest's power system including, but not limited to, technological developments, retirements of legacy baseload power generation resources, and changes in laws and regulations affecting power supply options. The department and commission shall provide a summary of these meetings, including any specific action items, to the governor and legislature within sixty days of the meeting.

Maintaining an adequate supply of electricity is a core obligation of the utilities that provide electric service to the residents and businesses of Washington. State policy reinforces this obligation as Washington transforms its electric power system and economy, reducing and eventually eliminating emissions from fossil fuel combustion for electricity generation.[2]

The state's 100% clean electricity law, the Clean Energy Transformation Act,[3] includes requirements for utilities to establish specific standards for resource adequacy and incorporate those standards into their planning and compliance.[4] As utilities reduce reliance on coal-fired and gas-fired power plants and add renewable resources such as wind and solar, new approaches and resources will be required to maintain resource adequacy. It is equally important to incorporate risks associated with fossil generating resources, including fuel supply risk and weather-driven forced outage risk.

While resource adequacy is an obligation of each electric utility serving end use customers in the state, it also is a shared responsibility of the overall electric power system and the entities that operate, plan, regulate, design, and fund that system.

The following summarizes the presentations and discussion at the 2024 meeting.

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[2] Washington 2021 State Energy Strategy, page 119-120. https://commerce.wa.gov/energystrategy
[3] Chapter 19.405 RCW.
[4] RCW 19.280.030. This resource planning statute was amended by the CETA legislation to add explicit resource adequacy provisions.

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Keynote: The Future of Resource Adequacy — U.S. Department of Energy

Paul Donahue, Director of the Deployment and Infrastructure, Office of Policy, U.S. Department of Energy (DOE), provided a review and overview of the challenges and opportunities facing the power grid. The challenges include, but are not limited to rapid changes in the national resource mix, extreme weather events, and demand growth from data and manufacturing centers, buildings, and electric vehicles, and siting and permitting hurdles for new resources and transmission.

Donahue highlighted that national studies on the electric grid show a need to invest in the electric grid now to meet long term challenges. The federal Inflation Reduction Act (IRA), Bipartisan Infrastructure Law (BIL), and Chips and Science Act have provided tax credits, loans, direct support, technical assistance, and other tools to facilitate development and deployment of zero emission technologies. Donahue emphasized DOE's commitment and efforts to explore every option available in this energy transition.

DOE is also supporting the siting and permitting of transmission projects. In order to streamline necessary grid deployment, for any transmission permitting process that touches federal government lands, DOE becomes the lead agency that manages the permitting process, which must be concluded within two years.

Donahue also emphasized the near-term opportunity to use virtual power plants in demand management to meet situational loads. This resource is critical to make the most of the existing system while other longer lead-time resources are developed.

Resource Adequacy Assessment — Northwest Power and Conservation Council

Every five years, the Northwest Power and Conservation Council (NWPCC) produces a power plan for the Pacific Northwest, which includes Washington, Oregon, Idaho, and the part of Montana west of the Rocky Mountains. Since 1999, NWPCC has also conducted probabilistic resource adequacy assessments and published annual reports on resource adequacy. The Council published its assessment for 2027 in January 2023.

The NWPCC's multi-metric approach to resource adequacy shows the region is adequate if the region continues its current trajectory under the Northwest Power Plan. Low levels of energy efficiency or higher than expected growth of data centers would increase the likelihood utilities would not have adequate resources and would need to take emergency steps to meet load, such as procuring high-cost resources not in the utilities' active portfolios or relying on industrial backup generators.

The Council sees the success or failure of the Western Resource Adequacy Program (WRAP) as a concern of the region. Changes in implementation of WRAP and the development of regional markets will affect the adequacy of the system.

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Resource Adequacy Assessment — Western Electricity Coordinating Council

Western Electricity Coordinating Council (WECC) is a regional entity with authority delegated under the Federal Power Act to ensure a reliable and secure bulk power system throughout the Western Interconnection. As the only independent, interconnection-wide organization in the west, WECC creates and enforces reliability standards. WECC's resource adequacy assessment examines every hour over the next ten years using data collected from balancing authorities throughout the Western Interconnection. It identifies periods when the bulk power system may not have enough electricity to serve customers.

WECC presented the results of its 2023 Western Assessment of Resource Adequacy (WARA) and some of the analysis the region can expect from its 2024 WARA. The WARA provides assessments for the entire Western Interconnection and for five subregions. The 2023 study finds reduced demand-at-risk hours, indicating entities are adjusting their plans to account for variability and/or increased load. It finds 2024 load growth forecasts are double 2022 forecasts with increased demand driven by large-load centers. WECC is also seeing an unprecedented number of planned resources in 2024 plans in the Western Interconnection—more than double the capacity added in the last decade. Assuming all resources are built on time, WARA anticipates a continued decrease in demand-at-risk hours. But WECC stressed that planned resources have not always materialized on time, noting that it is currently evaluating scenarios where less than 100% of planned resources are built.

Western Resource Adequacy Program

The Western Power Pool (WPP) provided an update on the Western Resource Adequacy Program, or WRAP. Implementation of WRAP will transition participating utilities from individual utility resource adequacy approaches and put in place a single regional resource adequacy standard. This will increase transparency into regional resource adequacy needs and help the region capitalize on its diverse resources and loads. The program aims to reduce overall costs and improve reliability across the region.

The WRAP is currently in an initial non-binding phase. This phase allows utilities to submit data and view what their resource obligations would be under the program, but it does not require utilities to make any changes to their operations nor are they bound to share resources with other members. The program was expected to transition to its binding phase in the summer of 2025. Utilities that opt into the binding phase of the program will be required to meet their resource obligations under WRAP starting in the summer of 2028—the year the industry most recently agreed to start the binding phase of the program. At this point, all Washington electric utilities but one have indicated their intention to join WRAP; Douglas PUD has indicated that its resource contracts prevent it from participating in the program at this time.

Because WRAP did not receive commitments from a requisite number of utilities to participate in the binding phase and this phase of the program, the binding phase was delayed to 2027. The delay will provide utilities more time to acquire additional resources and align with

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programmatic requirements. As an additional accommodation, penalties for failing to bring resources to the program after 2027 were decreased.

Oregon Resource Adequacy Rules — Oregon Public Utility Commission

The Oregon Public Utilities Commission (OPUC) in 2024 established resource adequacy standards for utilities that do not join WRAP. Under these standards, OPUC will require entities to demonstrate every two years they have adequate resources to meet load. The standards established by the OPUC are similar to those in WRAP, but in some instances are more stringent.

The delayed implementation of WRAP led the OPUC to waive fines and the compliance requirement in the first period while WRAP transitions into its first binding phase in the coming years.

Utility Discussion Panel — Interim Plans and Actions to Assure Resource Adequacy

The 2024 resource adequacy meeting included a panel discussion by representatives from the Bonneville Power Administration (BPA), Tacoma Power, and Puget Sound Energy (PSE).

BPA is obligated under the Pacific Northwest Electric Power Planning and Conservation Act to assure the adequate supply of power to its load-following customers. Those obligations are satisfied through 20-year contracts to be updated in 2028. Utilities that elect slice or block contracts retain responsibility for their own resource adequacy. BPA continues to evaluate its WRAP obligations, but expects to participate in the binding phase of 2028.

Tacoma Power said that the WRAP program demonstrates how utilities can come together and solve problems across the Northwest. While Tacoma Power is hopeful that WRAP will help solve future challenges, the utility said it remains concerned about the ability to bring new firm supplies and meet energy needs in the medium term.

PSE said the transition to clean energy provides the utility a long runway, but it must continue to accelerate the addition of new resources. The utility expects its integrated resource planning to incorporate WRAP requirements.

Public comments

The 2024 resource adequacy meeting concluded with an open public comment period.

Washington Public Utility District Association (WPUDA) highlighted that the transition protects costs and reliability, but will require the use of thermal resources during the transition. WPUDA shared that utilities need to continue to evaluate additional resources and transmission.

Cowlitz County PUD No. 1 (Cowlitz) noted that power supply constraints make it difficult to support economic development and that electrification requires more resources. Cowlitz considered developing a methane gas plant with Cowlitz County, but permitting challenges rendered the project infeasible. Cowlitz asserted that if resources are going to be available, permitting will need to keep up with the overall goals.

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Orcas Power and Light Cooperative (Orcas Power) observed that BPA has a backlog of projects in its transmission queues. Orcas Power encouraged the Legislature to continue to monitor transmission project backlogs and potential impacts to ratepayers.

Grant County PUD noted it is seeing significant growth of data centers and substantial energy requests from other businesses, such as EV battery manufacturers, carbon micro-fiber producers, and sustainable fuel producers. Additional investments are needed in high voltage transmission and siting/permitting support.

Following the meeting, WPUDA and a group of electric utilities submitted separate letters with comments on resource adequacy issues. These letters are attached.

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ATTACHMENTS

1. Letter dated Sept. 24, 2024, from Liz Anderson, Washington Public Utility Districts Association
2. Letter dated Oct. 28, 2024, from Scott Kinney, Avista; Mike Wilding, PacifiCorp; Mary Wiencke, Public Generating Pool; and Josh Jacobs, Puget Sound Energy

WASHINGTON PUBLIC UTILITY DISTRICTS ASSOCIATION
WPUDA
YOUR connection

September 24, 2024

Commissioners Danner, Rendahl, and Doumit; and Commerce Energy Policy Director Blackmon

RE: Comments to the Dept. of Commerce, and the Utilities and Transportation Commission regarding their September 6, 2024, joint meeting on Electric System Reliability.

The Washington Public Utility Districts Association (WPUDA) wishes to thank the Washington state Department of Commerce (Commerce), and the Washington Utilities and Transportation Commission (UTC) for the inclusive approach to the September 6, 2024, joint meeting on electric grid reliability. We especially appreciate the "back and forth" dialogue allowing stakeholders, including WPUDA, the opportunity to respond to the information presented throughout the meeting. In the spirit of continued collaboration, the following are WPUDA's take-aways from this meeting and perspectives:

1. Electric utility service during peak load/extreme weather events is currently at risk. This risk was demonstrated last January when our region was perilously close to instituting rolling blackouts.

2. The retail demand during January's extreme weather event far exceeded this region's internal generating capacity. To maintain service Washington State, and the Pacific Northwest as a whole, imported far more power than has traditionally been considered prudent. Furthermore, while not directly addressed in the meeting, that massive importation of electricity to avoid blackouts came at a tremendous cost. By one estimate, the January event resulted in an over $430 million transfer of wealth from the Pacific Northwest to California. These costs, which must be recovered in retail rates, undermine the affordability of electricity.

3. Inadequate generating capacity is amplified by transmission congestion which directly undermines grid reliability. Transmission congestion constrains the amount of power that utilities can bring to Washington State from wind resources in Montana, and Wyoming, and from solar resources in California, Arizona, and New Mexico. Furthermore, the transmission across the Cascade mountains limits the transfer of electricity into wind/solar-poor western Washington.

4. Service disruptions will become a common occurrence for citizens of Washington State if the extraordinary growth in the demand for electricity materializes without the development of commensurate generation resources. The causes of this growth include increasing population, public policies supporting the electrification of transportation, buildings and industry, and the surge in computer data center development.

5. Meeting this load growth will require a sharp expansion of baseload and dispatchable generation. New nuclear generation, geothermal, and other non-carbon emitting technologies are not expected to be commercially available in sufficient quantities to meet this load for around 20 years. As such Washington faces an extended transitional period. During the early part of this period, the need is for new resources that reliably produce power during summer/winter extreme weather. Later, around the year 2030, additional baseload resources will be needed to accommodate the forecasted load growth.

6. There is no utility scale generation technology available today or expected in the near term that has both dispatchable and baseload capabilities and is carbon-free. Presently, the lowest emitting generating technology with these production characteristics is combustion turbines. While combustion turbines can use renewable

fuels, only natural gas is available in sufficient quantities to generate electricity at a utility scale. Natural gas combustion turbines have the added advantages in that they can be located on the load side of transmission constraints and can provide operational flexibility to integrate additional wind and solar resources into the regional power portfolio.

7. Finally, meeting participants agreed we have a narrow window to initiate the development of new resources if we are to avoid blackouts during this transitional period.

From WPUDA's perspective, threats to electric utility service are imminent but not immediate. We do not assert that electric service is at risk next week or next month. Rather, we see signs of growing resource deficits, which heightens the risk of forced blackouts. Evidence of resource deficits includes the Pacific Northwest Utilities Conference Committee's 2024 Northwest Regional Forecast. That report indicates that utilities collectively expect retail load to exceed the resources secured to serve that load as early as 2027 in both the summer and winter. Another sign was the delay of the binding phase of the Western Resource Adequacy Program. We understand that concerns over the ability of utilities to demonstrate on a forward-looking basis that they had sufficient resources was the reason for this delay. The Bonneville Power Administration (BPA) released on September 9 its most recent Pacific Northwest Loads and Resources Study (aka the White Book). That study indicates rapidly escalating energy deficits under low water conditions starting in 2027. WPUDA is also worried that BPA's production capacity is not secure. On December 14, 2023, the United States Government agreed to implement the Columbia Basin Restoration Initiative to stay of the district court litigation [NWF v. NMFS, 3:01-cv-640-SI (D. Or.)]. The Columbia Basin Restoration Initiative indicates potential "future changes to the [Columbia River System] … related to spills, and other operational changes, in addition to potentially breaching the four lower Snake River dams." The reduction in the Canadian Entitlement included in the recent "agreement in principle" for the Columbia River Treaty will help until the load of preference utilities exceeds BPA's firm production capability.

Finally, WPUDA believes ensuring a reliable grid is essential to a successful transition to a clean energy grid. Power disruptions due to grid reliability and resource adequacy issues will undermine public confidence in our state's clean energy policies by putting the health and welfare of our communities at risk. It is undisputed that Washington utilities are moving to deficit electric supply positions. This, in turn, threatens the reliability of Washington's electric system. To address this deficit, WPUDA recommends an "all of the above" approach that includes conservation, demand side management, landfill gas, centralized and distributed wind and solar, battery storage, and re-evaluating natural gas fired generation as a dispatchable and baseload resource to meet growing electricity needs, and ensure grid reliability while we develop new technologies. Given the time it takes to bring new resources on-line, Washington should quickly implement policies to support the development of new resources, take action to address the disconnect among state public policies where permitting delays and operational directives make the development of new resources unviable, and ensure that grid reliability measures are included in all existing and new energy policies.

We conclude by noting that reliable and affordable electric service directly supports public health, public safety, and economic vitality. It is important to make the Legislature aware that the reliability of our electric service is at risk and to convey a sense of urgency for immediate action to address the emerging challenges we face and to position the state to make a responsible transition to a 100% clean energy grid. Towards that end, WPUDA requests that your report to the legislature include a recommendation that the Senate and House Energy Committees hold a joint work session so that they can directly hear utility concerns regarding electric grid reliability.

Thank you for your consideration of our comments.



Liz Anderson, Executive Director
Washington PUD Association

October 28, 2024

Glenn Blackmon
Director, Energy Policy Office
Department of Commerce
1011 Plum Street SE
Olympia, WA 98504

Jeff Killip
Executive Director/Secretary
Utilities & Transportation Commission
612 Woodland Square Loop SE
Lacey, WA 98503

RE: September 6, 2024, Utilities and Transportation Commission and Washington Department of Commerce Joint Meeting on Resource Adequacy (Docket UE-210096)

The Joint Utilities (Public Generating Pool, Avista, PacifiCorp, and Puget Sound Energy) respectfully provide the following comments to the Utilities and Transportation Commission (UTC) and the Washington Department of Commerce (Commerce) following the fourth annual resource adequacy meeting held on September 6, 2024. Overall, the Joint Utilities appreciated the workshop and the robust discussions and presentations regarding regional assessments of electricity demand and supply, progress on the Western Resource Adequacy Program (WRAP), and other actions and topics related to resource adequacy. However, as articulated below, the Joint Utilities are concerned that there may be several gaps within the information discussed and presented, resulting in a less than fully complete picture of the region's current and future resource adequacy status.

The critical importance of regional resource adequacy for the Joint Utilities cannot be overstated. For reasons ranging from human health, security, economic stability, and equity, maintaining resource adequacy and reliability is critically vital for the communities served by the Joint Utilities. In addition, safeguarding reliability and affordability is a critical component of successfully achieving the energy transition and Washington's ambitious climate policies. Failure to clearly identify and confront the key challenges associated with planning, financing, building, and operating a system that primarily relies on renewable resources could result in unacceptable and consequential reliability failures and/or cost increases. It is within this context that the Joint Utilities recommend further examination of the following resource adequacy topics, which the Joint Utilities believe could provide the UTC and Commerce a more comprehensive picture of the current, short-term, and long-term state of resource adequacy in the Pacific Northwest.

The Joint Utilities recommend further discussion on the below topics, ultimately including the identification of policies that may be needed to ensure that reliability and resource adequacy is maintained as Washington's energy supply is transformed.

1. **An Assessment of the Achievable Pace of Renewable Resource Build-Out as Compared to the Pace Required to Also Meet Resource Adequacy and State Policy Requirements**

As part of the Sept. 6 workshop, several presenters addressed recent assessments of resource adequacy. In each of these assessments, as well as utility integrated resource plans (IRPs) and the Northwest Regional Forecast (NRF) prepared by the Pacific Northwest Utilities Conference Committee (PNUCC), resource adequacy is maintained through the addition of unprecedented amounts of resource build in the near- and long-term. The Western Electricity Coordinating Council's Western Assessment shows the need for 172 GW of capacity in the next ten years in the Western Interconnection—more than double the capacity added in the last decade. The Northwest Power and Conservation Council's Adequacy Assessments, looking at the Pacific Northwest region, calls for adherence to its 2021 Power Plan, which identifies the need for at least 3,500 MW of renewables by 2027, 720 MW of demand response, as well as 6,000 MW of balancing reserves. PNUCC's 2024 update to the NRF – an aggregation of Northwest utility plans – identifies utilities are planning on an additional 29 GW nameplate capacity of new resources in the Northwest in the next ten years.[1] Furthermore, the NRF is informed by regional utility IRPs which may not account for all expected and currently unknown demand from new large loads whose forecasting process does not align with traditional utility planning processes. While technically feasible within the parameters of utility resource planning requirements, the Joint Utilities are concerned that a key takeaway from the information provided and available for the region is that resource adequacy depends upon the success of a "moon shot" effort that is unprecedented. In many cases, the assessments rely on capacity additions that are at risk of not being deployed due to transmission or siting limitations, supply chain issues, prioritization of projects needed to build wildfire resilience, workforce needs, or may depend on the viability of new technology and/or new transmission builds.

The Joint Utilities understand the urgency of climate change and are making unprecedented efforts to ensure that the energy transition is accomplished as quickly as is possible. The recommendation to more holistically understand the pace required to meet growing capacity needs and state policy requirements is not intended to suggest that utilities slow down or conclude that the historical pace of renewable buildout cannot be accelerated. However, it is critically important to recognize that the failure to maintain resource adequacy and reliability *also threatens* the utilities' ability to achieve the energy transition as quickly as possible. If reliability failures do occur, these have the potential to result in high costs to consumers stemming from high market prices and the acquisition of emergency or unplanned capacity, and potentially slowing progress in investment in long-term resources that advance the energy transition.

The Joint Utilities therefore recommend that the UTC and Commerce: a) coordinate an objective discussion assessing the pace at which the capacity additions identified may be realistically acquired and the pace at which necessary transmission may be available; b) develop a better and more comprehensive picture of the elements that are likely to drive and impact that pace.

[1] https://www.pnucc.org/system-planning/northwest-regional-forecast/

2. **Consideration of Potential Barriers to Executing on Regional and Utility System Plans**

In conjunction with a better understanding of the realistic pace of capacity acquisitions, the Joint Utilities recommend the identification of key barriers and risks associated with reaching and maintaining the pace needed to achieve the planning assessments. Identifying the key risks and barriers could include the examination of specific topics such as: supply chain delays, interconnection queue reform processes, transmission expansion needed to support the needed procurement, siting limitations, wildfire risks, and viability of new technologies.

3. **Identification of Risks Associated with an Energy System that is Primarily Renewable and Available Technologies to Address Those Risks**

As we progress through the clean energy transition, the electricity grid will need to operate in ways very different from how it operates today—this also means that the character and nature of the reliability risks and associated resource adequacy needs will be new and different. The prevalence of non-dispatchable, variable resources coupled with battery and other storage technologies will fundamentally change how utilities manage system planning, reliability, and system operations. Increased volatility driven by more extreme summer and winter weather events will also create new and different types of risks for which utilities will need to plan and maintain reliability.

As an example, in a recent white paper on long-duration energy storage (LDES)[2], the U.S. Department of Energy begins to identify statistics characterizing a phenomenon referred to as "energy droughts" or "dunkelflaute" (dark and windless) conditions, which involve extended periods of renewable energy unavailability. The Pacific Northwest will be particularly at risk for "energy droughts" because of the reliance on climate-impacted hydropower as an energy and capacity resource. In our transitioned future, ensuring reliability will require that incentives and technologies are created to ensure *energy* adequacy during periods of renewable energy unavailability. Our current planning metrics and bilateral market framework established to ensure resource adequacy are largely constructed around ensuring sufficient *capacity* to meet demand during peak hours. However, traditional forms of capacity planning may not ensure that sufficient energy is available, particularly during weather events which have been demonstrated to coincide with reduced wind availability. New business models and planning methodologies may be needed to fully address and understand the challenges and opportunities associated with future periodic energy droughts. In the Pacific Northwest specifically, the abundance of flexible and reliable storage capacity in the form of hydroelectric resources has the potential to "mask" a growing need to specifically understand and address energy shortages and the potential prevalence and frequency of "dunkelflaute" conditions.

The Joint Utilities recommend increased focus on these key adequacy and reliability risks and the means by which utilities will need to address these risks while maintaining reliability and affordability.

[2] Somani A., E.L. Barrett, Z. Zhou, G. Chan, L. Middleton, G. Tarel, and A.M. Campbell, et al. 2023. An Assessment of Resource Drought Events as Indicators for Long-Duration Energy Storage Needs. Richland, WA: Pacific Northwest National Laboratory. Retrieved from: https://www.pnnl.gov/publications/assessment-resource-drought-events-indicators-long-duration-energy-storage-needs.

4. **More Comprehensive Discussion of New Available Technologies to Meet the Region's "Clean Firm" Capacity Requirements**

In 2019, PGP, Puget Sound Energy, and Avista sponsored a study conducted by E3 to assess the resource adequacy of the Pacific Northwest.[3] Among other things, this study identified a near-term need for new capacity and a specific need for firm capacity in a deeply decarbonized Northwest electricity grid during periods of low wind, solar, and hydro production. The study also indicated that natural gas was the most economic source of firm capacity but identified several potential low-carbon firm capacity solutions such as: 1) new nuclear; 2) gas or coal generation with carbon capture and sequestration; 3) ultra-long duration electricity storage; and 4) replacing conventional natural gas with carbon-neutral gas. Although that study is now five years old, the Joint Utilities believe this study points to a continued critical, and growing need for "clean firm" capacity in the region. A comprehensive understanding of the resource adequacy picture necessitates an assessment of the timing of the availability of these options and whether that timing aligns with the needs being driven by resource retirements, load growth (especially with the proliferation of data centers looking to site in the Northwest), and weather volatility.

The Joint Utilities recommend a much more detailed discussion and assessment of the status of these and other emerging technologies and the timing of their availability. Consideration of emerging "clean firm" technologies should also include discussion of the risk of technological obsolescence and the potential for stranded or under-performing assets.

Conclusion

The Joint Utilities appreciate the UTC and Commerce's commitment to issues of resource adequacy and ensuring that the energy transition and the intent of the Washington Clean Energy Transformation Act can be met on a reliable and affordable basis. As noted throughout this letter, the Joint Utilities strongly believe that a regional understanding of the resource adequacy picture requires a framework for more frequent and structured discussion of the complex challenges of maintaining resource adequacy while achieving Washington's clean energy goals. The Joint Utilities look forward to discussing these issues in future dialogues with the UTC and Commerce. We appreciate your consideration of these important matters.

Sincerely,

/s/ Scott Kinney
Scott Kinney
Vice President, Energy Resources
Avista

/s/ Mike Wilding
Mike Wilding
Vice President, Energy Supply Management
PacifiCorp

/s/ Mary Wiencke
Mary Wiencke
Executive Director
Public Generating Pool

/s/ Josh Jacobs
Josh Jacobs
Vice President, Clean Energy Strategy & Planning
Puget Sound Energy

[3] https://www.publicgeneratingpool.com/s/E3_NW_RA_Presentation-2018-01-05.pdf