



*We Feed You*

September 3, 2025

Adrian Young  
Cap-and Invest Industrial Policy Lead  
Washington Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

Submitted via the electronic comment platform

**RE: Washington Department of Ecology Draft Report to the Legislature on  
EITE Allowance Allocation for 2035 – 2050**

Dear Mr. Young,

Food Northwest appreciates the opportunity to provide comments on the Department of Ecology's (Ecology) draft Report to the Legislature on EITE Allowance Allocation for 2035—2050 (Report).

Established in 1914 and headquartered in Portland, Oregon, Food Northwest is a trade association of food manufacturers in Washington, Oregon, and Idaho. Several of our members operate facilities in Washington that are designated as EITE entities under the Climate Commitment Act (CCA). Washington's food processing EITEs are not just industrial facilities but are foundational pillars of the state's economy and are vital to the well-being of countless communities, especially in rural areas. They are major employers that provide well-paying, skilled jobs and add substantial value to Washington's agricultural production.

Food Northwest shares the State's goal to protect and improve the environment, and the need to reduce GHG emissions. In 2009, Food Northwest was the first industry group in the nation to adopt a goal to reduce industry-wide energy intensity by 25% in 10 years. We determined the energy intensity for all manufacturing facilities and tracked progress toward our goal. We are proud to have been a national leader in this effort. We are currently exploring new and innovative means to reduce greenhouse gas emissions. Through our raw products, food processors are directly linked to the environment and will be impacted by climate change. Responsible stewardship is critical to a sustained food industry.

Food Northwest appreciates the significant efforts of the Ecology staff in developing the materials and presentations, as well as creating opportunities for discussion on the issues. However, much work remains since all recommendations require assessments or analyses. These assessments and analyses must be completed to enable the legislature to make informed decisions on an approach for EITE no-cost allocations. Deciding at this stage risks relying on incomplete information and assumptions that could result in a program that fails to meet expectations. We recommend submitting an interim report and continuing with the assessments and consultations with the EITE Advisory Group, with the goal of submitting the final report in November 2026.

### **RMI and ERG Reports**

Food Northwest has concerns regarding the methodologies and conclusions in both reports, as well as Ecology's reliance on them for its report to the legislature.

RMI's study aimed to determine emissions reduction potential and decarbonization pathways for each industrial sector. It concluded that its proposed pathways are "achievable." However, RMI failed to consider the complexities and challenges associated with these pathways. The critical omission of electric generation and transmission infrastructure from RMI's analysis significantly undermines the real-world feasibility and cost implications. The projected increase in electricity demand for food processing alone (625 GWh by 2030, 1,704 GWh by 2050, as stated by RMI on page 26) necessitates massive investments in new clean energy generation and transmission, which have their own timelines, costs, and permitting challenges. Policymakers must not interpret "achievable" as economically or technically feasible without considering the broader energy and economic context. The "achievability" of decarbonization pathways is intrinsically linked to financial feasibility for industries, ratepayers, and the capacity of the electrical grid. Failing to adequately address these costs and the risks of industry loss and job destruction would not only undermine the competitiveness of Washington's EITE food processors but also cause profound and lasting damage to the very communities and citizens the state aims to protect.

ERG's study aimed to assess EITE's contributions to air quality, health, and environmental impacts on communities, as well as identify economic impacts, and analyze market structure and competitive dynamics. The study, however, lacks the granularity required to support the conclusions. The use of broad and generalized

categories for food processing in Washington is problematic. Treating them as a homogeneous industry or applying a nationwide outlook is a critical analytical flaw that fails to capture the unique competitive dynamics, market conditions, and economic contributions of these distinct sectors within Washington state. A generalized approach risks misrepresenting the actual impacts of policy on these vital industries. Likewise, equating greenhouse gas emissions with criteria air pollutants oversimplifies the complex atmospheric chemistry and localized impacts. A more nuanced analysis of the specific co-benefits of decarbonization for local air quality in overburdened communities is needed.

## **Comments on the Draft Recommendations**

**Recommendation 1.1:** Maintains Ecology’s authorization to provide no-cost allowances to EITEs from 2035 onward, provided it aligns with program objectives, allowance budgets, and emissions limits.

The legislature has already established the allocation of free allowances to EITEs. However, this recommendation imposes a limit on the allocation of allowances that is not in the statute. RCW 70A.65.110 states that facilities “must receive an allocation of allowances . . . at no cost” if they are classified as an EITE. Furthermore, in RCW 70A.65.070(6), the legislature states its intention to promote a growing and sustainable economy and to prevent leakage, and that these objectives are contingent upon the implementation of RCW 70A.65.110. Allocation of free allowances and “ensuring against emissions leakage and economic harm to businesses” are obligations that must be met in the design of all CCA policies and programs affecting EITEs.

**Recommendation 1.2:** Monitor developments in Carbon Border Adjustment Mechanisms (CBAM)

Food Northwest urges Ecology to advise against considering CBAM as a way to prevent leakage. We believe there could be substantial constitutional, trade law, and administrative obstacles, as well as practical challenges.

**Recommendations 2.1 and 2.2:** Develop an objective approach for assessing leakage risk and target allowances based on this approach.

The legislature has classified the industries described in RCW 70A.65.11(1) as EITEs, which, by definition, are at risk for leakage. An objective approach for assessing

leakage risk is not necessary and will be very costly, staff-intensive, and time-consuming. California spent years developing a leakage risk assessment methodology and then years collecting data, calculating, and assigning risk tiers to industrial sectors. They proposed applying an assistance factor whereby EITE industries with higher leakage risks would receive greater allowances than those with lower risks. Initially, the assistance factor for all sectors was 100% and would later be reduced depending on the risk tier. California abandoned this approach to the allocation of free allowances and applied the 100% assistance factor for all EITE industries through 2030. Given California's experience, this may not be a viable approach for Washington.

Targeted allowance allocation to prevent leakage risk associated with purchased electricity is a similar approach and would raise the same concerns. California offers an Industry Assistance Credit for EITEs, providing them with an annual credit on their electric bill. The amount of the credit is determined by carbon efficiency benchmarks and incentivizes facilities to take measures to reduce their GHG emissions. This may require PUC approval, but could be implemented once benchmarks or other baselines are established.

**Recommendation 3.1:** Assess product-based benchmarks and at least one alternative method for establishing allocation baselines.

Food Northwest supports assessments of the implementation requirements and impacts of adopting product-based benchmarks and alternative methods, such as "best available technology," and comparing them to retaining the existing allocation baselines. Involvement of EITEs and subject matter experts will be essential to these assessments. Food Northwest has identified resources, issues, and concerns that we would contribute during the evaluation process.

**Recommendation 3.2:** Assess the implementation requirements and impacts of using consignment of a portion of no-cost allowances.

Food Northwest supports assessing the implementation requirements and impacts of consigning a portion of no-cost allowances and using the proceeds to decarbonize operations. While the proposed option is mandatory, an optional consignment should also be explored.

**Recommendations 4.1 and 4.2:** Assess the requirements and impacts of implementing a cap adjustment factor and at least one alternative policy option.

Food Northwest supports an assessment of the cap adjustment factor and an alternative; however, we urge Ecology to explore accommodations (waivers, adjustments, etc.) for the timelines needed to implement decarbonization projects, as well as the technical and economic infeasibility of implementing decarbonization technologies. For example, the electrification of food processing facilities and other industrial sectors is currently not feasible and is unlikely to be an option for the foreseeable future. Food processors have been told by their utilities that the electric supply can't support industrial electrification. New large electrical loads placed on utilities will be required to pay for the generation, distribution, and transmission upgrades. These costs are substantial and will likely result in leakage. The outlook for industrial electrification is uncertain. An independent Advisory Group that reviewed NW Natural's IRP stated that "the electric future transition will be harder, slower, and more expensive than the scenarios we were presented even without electrifying current natural gas use." See attached *Statement of the Independent Advisory Group Regarding NW Natural's Integrated Resource Plan and Electrification of Current Gas Loads (IRP)*.

## **Complementary Policies and Strategies**

Complementary policies and strategies that offer incentives, grants, tax credits, and low-interest loans for EITE decarbonization are vital additions to any carbon reduction program aimed at preventing leakage. Food processors operate on thin margins. In its Industrial Decarbonization Roadmap, the U.S. Department of Energy identifies the low margins of food and beverage companies as a limiting factor to upfront capital investments in decarbonization. CCA compliance costs, higher electricity and fuel prices, commodity cost increases, and the expenses of new energy infrastructure could threaten their profitability. Such policies and strategies could reduce the financial burden and accelerate the deployment of decarbonization efforts and projects.

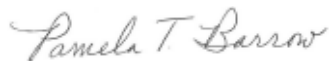
California has a grant program focused on food processing. The [Food Production Investment Program](#) was established to receive funds from cap and trade revenues, providing support for updating and improving food production facilities with energy-efficient and/or renewable energy technologies. This initiative aims to reduce operating costs and greenhouse gas emissions. The state declared that "This could help ensure California's food processing industries remain competitive and operational, and the jobs associated with food production remain in California."

Food Northwest supports the following Complementary Measures from Appendix 1 of Document 6:

- Expedite electrical grid enhancement for industrial electrification
- Incentivize the electrification of process heat equipment
- Increase funding for the Hard-to-Decarbonize Sector Grants Program
- Introduce state-level tax credits for emissions-reducing equipment
- Set up an industrially focused green bank
- Energy efficiency subsidies
- Provide voluntary efficiency audits for industrial facilities [additional funding]

Food Northwest thanks the Department of Ecology for the opportunity to participate in the Phase 2 process and to provide these comments on the draft recommendations. We look forward to continuing our collaboration with Ecology to develop and implement an approach to EITE no-cost allowance allocation that protects the viability of Washington food processing EITEs and other EITEs, while achieving the objectives of the CCA.

Sincerely,

A handwritten signature in cursive script that reads "Pamela T. Barrow".

Pamela Barrow

Vice President, Food Northwest



## **Statement of the Independent Advisory Group Regarding NW Natural's Integrated Resource Plan and Evaluation of Electrification of Current Gas Loads (IRP)**

### **Independent Advisory Group Members:**

Mr. Lee Beyer (1)

Mr. Stefan Bird (2)

Ms. Debra Smith (3)

Mr. Stephen Wright (4)

February 2025

### **Executive Summary:**

The four-member independent Advisory Group (AG) provides this statement on the elements of NW Natural's IRP (IRP) we were asked to review. This IRP examines different scenarios related to electrification of natural gas loads currently served by the local distribution company, NW Natural. Our engagement was to focus on key assumptions that would affect cost, reliability and carbon emissions on the electric system of the Pacific Northwest (PNW) and particularly those electric systems that overlap with NW Natural's service territory.

The AG was presented an initial set of three supply-side scenarios and four demand-side scenarios. The AG focused on the supply-side scenarios. These initial scenarios had different assumptions about the future development costs, location, timing and availability of different supply-side generation resources and transmission expansion throughout the PNW region. These kinds of resources would be needed for normal electric load growth and these three supply-side resource scenarios also are used in the IRP to meet the varying degrees of load growth assumed in the four demand-side scenarios. We understand that these four demand-side scenarios are driven by different assumptions about electrification of loads currently served by natural gas and not fundamental differences in "base load" electric demand growth. Although we did not review the demand-side scenarios in detail, this statement does express a concern about the "base load" forecast possibly underrepresenting electric load growth based on current trends.

We found the initial three supply-side scenarios presented to the AG to be overly optimistic by assuming base assumptions that would result in electrification of current gas loads being easier, faster and cheaper than our own experience and judgment. Even the least optimistic scenario was not consistent with our view of current reality facing the PNW energy system. Our collective feedback was that the electric future transition will be harder, slower and more expensive than the scenarios we were presented even without electrifying current natural gas use.

NW Natural then developed a revised set of supply-side scenarios with one scenario called "Current Trends" that reflected the most change from the original three scenarios. The other two scenarios moved somewhat, but our judgment is they remain too reliant on overly favorable



assumptions. It is the AG's view that the electric system will be greatly challenged to meet the existing policy prescriptions and planned load growth even without taking into account electrification of the natural gas system.

As an overall observation, we think the electric systems are already being pressed against the edges of their capabilities and electric systems are experiencing more "close call" events such as in January 2024 in the PNW. The electric systems of the region are also relying heavily on the gas systems for electric generation for peak load service. For example, the PNW electric system was in severe emergency conditions last January. Without record electric imports from the Southwest and Rocky Mountain states, the Pacific Northwest could have experienced rolling blackouts of a magnitude that would be unprecedented in our region.

The AG expressed views about future supply side additions, load forecasts, and electric system planning for uncertainty. The AG also added thoughts about the need for better gas-electric integrated system planning in the future although not achievable in this study.

The AG noted the following about future supply side additions:

1. The biggest unknown about the cost of future supply is estimating the availability and cost of zero emission load following resources. There are substantial federal research and development dollars currently authorized, but it is unknown how effectively these will be deployed. The current very high cost of maintaining reliability under stress conditions without carbon-emitting load following resources (the status quo) should be a scenario that is analyzed. The AG recommends maintaining the availability of natural gas-fueled generation capability, which will increasingly operate at lower dispatch factors as more zero fuel cost renewable energy becomes available, until cost-effective, longer duration, zero emitting load following resources can make more advances.
2. Battery costs have been decreasing and are increasingly being adopted in the market. Currently cost-effective batteries, however, are limited to four hour duration. Longer duration batteries such as 100 hour iron-air batteries are on the horizon, but it is unclear how long they will take before they achieve widespread commercialization. Other proven technologies such as pumped hydro storage may be available in limited geographical locations but are historically higher cost and face more challenging permitting timelines. Longer term storage is necessary to maintain reliability in a system with increased reliance on variable resources and even more so without carbon-emitting dispatchable generation.
3. New standardized modular nuclear reactors are an option for both energy and peaking capability, but the technology currently carries an extraordinary array of risk in terms of cost and timeframe to be in place.
4. Demand side options hold tremendous potential but there are limits to the amounts of firm energy and capacity that can be assumed to be available in the most difficult circumstances due to consumers willingness to sustain demand reductions under stress temperature conditions.
5. The transmission assumptions we were presented are based on current planned schedules. For transmission upgrades that do not require new right of way the assumptions are likely reasonable. The increasing resistance to new transmission nationwide suggests caution with respect to schedules for new transmission that requires new right-of-way. The ability to

meet Western states' emission reduction targets with current load forecasts, let alone under more aggressive data center expansion and or more aggressive natural gas-based electrification assumptions, will require expansion of the transmission grid to access and deliver energy reliably from new remote renewable resources and new load following resources. Historically long timelines to permit new transmission lines, particularly across federal lands, as well as concerns about customer rate pressure, suggest caution with respect to the assumed speed of development of new transmission lines.

6. The accredited capacity for wind appears high relative to the capacity attributed to wind in regions using an established ELCC methodology. Offshore wind, which has received opposition by the new federal administration, is also limited by available transmission on the coast, which is generally weak due to small coastal loads. More sizable offshore wind resources will require new network transmission to be permitted and constructed to intertie to bulk transmission that can access large load centers, which adds to the timing risk and uncertainty.
7. There has also been a trend across the country to derate accredited capacity for thermal resources due to operational challenges occurring during extreme temperature conditions. There are a variety of reasons including inadequate weatherization of equipment and fuel supply disruptions. We recommend consideration as to whether the capacity factors for thermal units should be modified. The Western Power Pool may be able to help with this assessment.
8. There is substantial evidence that the cost of the clean electricity transition increases steadily over time, with rapid increases after 80% renewables is achieved, if there are not adequate cost-effective zero-emitting load following resources available.<sup>1</sup> Today, we are likely still on the upward slope prior to achieving 80%. This projected increase in costs translates into rate impacts. Utilities are increasingly seeing push back from customers on rate increases, mostly related to new resource capital expense. Oregon's House Bill 2021 – 100% Clean Energy for All - that was passed into law includes consumer protections for both affordability and reliability in the form of regulatory off-ramps. In addition, the physical siting of these resources is experiencing strong opposition from many customers. This raises concerns about the industry's ability to bring new resources online in a timely manner. A feedback loop is needed to recognize that if rates increase dramatically and quickly, or if permitting processes do not evolve to address siting concerns, there will be consequences for the rate at which the clean electricity transition can occur.

It is also important to understand that current and long-term concerns about product affordability are based on resource adequacy, as well as a myriad of other factors also putting pressure on forward rate trajectories. Although this work only deals with the rate impacts of acquiring sufficient resources within the regulatory framework established by each state, rate impacts are cumulative and customers generally do not look at individual drivers such as wildfire mitigation, system resiliency, grid modernization or general capital investment. Instead, rate actions associated with resource adequacy must be examined in the context of all other rate pressures.

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<sup>1</sup> 2019 Resource Adequacy Study in the Pacific Northwest on the Public Generating Pool website.

As a result, we have concerns about the achievability of the supply side assumptions even in the “Current Trends” scenario.

For the demand side, the “base load” demand forecast was standardized across the demand scenarios using current load forecasts. Like locking down other variables so that the policies and rates of electrification could be examined as the changing variable, we understand the purpose of a single “base load” forecast. However, we remain concerned that this forecast likely underrepresents the potential electric load increases being driven by factors other than electrification of gas load. Regional electric load forecasts have increased in an unprecedented fashion in the last two years, and we expect the forecasts to continue to increase. Specifically, data centers and AI have become large swing short-term variables and vehicle electrification is a long-term driver.

Planning Reserve Margin (PRM) is a key assumption in this analysis that addresses uncertainty in electric utility planning. We have already seen upward pressure on PRMs around the country due to the increased use of energy and dispatchability limited resources, load growth uncertainty and the capability of resources to deliver capacity during temperature related stress events, a challenge which has been exacerbated by extreme weather events. We also expect there will be an increasing effort to address the duration and magnitude of reliability risk (through tools like expected unserved energy or EUE) in addition to the standard probabilistic assessment of the frequency of electric outages. The emerging long duration, high magnitude outages during extreme weather events, as experienced in Texas and California, present high level human health and safety issues. In addition, the PNW is in the midst of a transition from being an energy constrained to a capacity constrained system and systems need to evolve as well. Electrification of natural gas uses will have the biggest impact at the times which are becoming the most challenging for the electric system. All these factors point toward the use of higher than historical levels of planning reserve margin to maintain the level of reliability PNW consumers have come to expect from their electric power system.

Moreover, the AG thinks the study should also consider the reality of periodic severe ice or windstorm events as we have experienced in recent years. Such events have resulted in multi-day electric distribution grid outages disrupting electricity supply to thousands of customers until electric distribution grid damage is repaired and power is restored. If natural gas winter heating capability is fully displaced by electric heating without auxiliary/hybrid natural gas heat pump capability, or without extraordinary levels of storage at the local retail user level, there will be substantial public safety and economic impacts. It is possible to underground electric distribution but only at significant expense, over a lengthy time period and requiring increased maintenance. The AG encourages that this risk receive attention in discussion of electrification.

Finally, we note that the AG believes there is potential for consumer value to be generated through increasing coordinated/joint planning and/or coordinated operations between gas and electric systems where there are overlapping service territories. Building on recent efforts to build collaboration in the PNW, it is recommended that synergies be unlocked that can reduce cost, improve reliability and decrease carbon emissions through consideration of coordinated and/or joint integrated resource planning, investment and operations for options from supply source to consumer use of the gas and electric systems.

Our specific recommendations regarding assumptions are included in the “Detailed Recommendations” section that follows below.

### **Detailed Recommendations:**

The AG recognizes there is never a perfectly accurate single point forecast for the future. The IRP’s goal of evaluating the impacts of possible future scenarios to help inform policy and strategy is reasonable, as long as the probability is not evenly weighted between the various scenarios currently being utilized. Our collective view is that, of the scenarios NW Natural is studying, the “Current Trends” supply side scenario most accurately reflects current reality now and for the foreseeable future. However, we continue to have residual concerns that the reasonable risk to electric system reliability is outside the range of the scenarios to be studied. This is due to supply, demand and uncertainty assumptions embedded in the study. We recommend addressing these concerns through sensitivity analysis to better understand load and resource uncertainty.

- The Current Trends scenario includes near-term increase in costs for wind, solar and batteries that best reflects current reality for the supply side in electricity markets. The causes for these increases would best be described as driven by high demand, supply chain challenges, import tariffs and permitting issues, driving costs up in the near term while technological improvements are driving costs down over the longer term. The other two scenarios follow more traditional NREL cost forecasting. The AG also noted there is an interaction between load and costs for supply. Higher loads lead to more stress on generation and transmission supply chains lead to higher costs. A scenario that assumes costs of all resources are higher when load growth is high is within the realm of reason and should be considered for scenario analysis purposes.
- The AG has suggested use of a sensitivity analysis approach that would vary the base load forecast using a higher growth rate. Although we do not have a specific numerical recommendation, we have suggested using the trends from the last two years as a basis for assuming a corresponding increase for at least one additional year at the beginning of the forecast period.
- The single planning reserve margin (PRM) that is based on PNUCC’s short-term PRM of 16% is reasonable in the short term. However, consistent with comments above, the AG believes this PRM is likely understated in long-term studies that assume increasingly higher percentages of variable generation resources over time. Electric system planning in this new long-term environment will require more sophisticated modeling techniques to ensure reliable service in all 8,760 hours of the year and not just the peak hour. In-lieu of deployment of these more sophisticated modeling techniques, the AG recommends consideration of an approach that would increase the PRM in relationship to increasingly higher percentage reliance on zero-emitting variable generation resources that is supported by review of other expert sources, or alternatively consider a sensitivity scenario with a gradually increasing PRM to provide an indicator of potential cost and risk impact. Potential sources of this PRM insight are information emerging in the work performed by the Electric Systems Integration Group (ESIG), Pacific Power’s current 2025 IRP process, and PRM analysis performed by RTO/ISOs across the nation. In the future, the AG’s recommendation

to pursue coordinated joint planning between the electric and gas utilities would support a more informed set of assumptions including PRM and improved quality of analysis.

- There has been a trend across the country to derate accredited capacity for thermal resources due to operational challenges occurring during extreme temperature conditions. There are a variety of reasons including inadequate weatherization of equipment and fuel supply disruptions. We recommend consideration as to whether the capacity factors for thermal units should be modified. The Western Power Pool may be able to help with this assessment.
- With respect to reliability and the issues of moving from a “dual fuel” (electric and gas) system to a “single fuel” (electric system) we have raised numerous concerns about assuring that the IRP analysis carefully assess issues around resulting system reliability and the potentially profound public health and safety issues of relying on a single fuel (electric) system. NW Natural’s IRP process examines its own gas system but is also attempting to evaluate the electric systems of the PNW which is a reason we were asked to serve on the AG. What is lacking, not just in this study but in all current integrated resource plans across the country, is an integrated systems perspective incorporating the gas and electric systems. The risk of reliance on one fuel is increased due to the exposure of the electric distribution system to ice and wind events. Recent storms in Oregon have displayed that multi-day electric outages while distribution systems are repaired would create a substantially greater human health and safety risk following electrification of the natural gas system. While this risk is difficult to address in this study, we recommend at least addressing qualitatively. Ultimately, these critical issues should be addressed through regional joint system planning (gas and electric).

### Independent Advisory Group Members Bios:

- (1) **Lee Beyer**: Lee Beyer was a member of the Oregon Legislature for 22 years serving in both the House and State Senate. From 2001 until 2010 he served as a member and Chair of the Oregon Public Utility Commission. He also served for many years as a board member of the Western Electric Coordinating Council, as a member of the EPRI Advisory Council and member and Vice-Chair of the NARUC Electricity Committee. During his time in the Legislature, Beyer chaired the committees with oversight of energy policy and was directly involved in the drafting and sponsorship of much of Oregon's recent energy legislation.
- (2) **Stefan Bird**: Stefan Bird previously served as CEO of Pacific Power, a division of PacifiCorp, senior vice president, commercial and trading, PacifiCorp Energy, CEO of CalEnergy, an independent power producer, and vice president of acquisitions and project development for Berkshire Hathaway Energy. During his 17-year tenure at PacifiCorp, among other activities, Bird led the dramatic expansion of PacifiCorp's renewable energy portfolio and interstate transmission grid, western electricity market transformation and engagement in Oregon energy legislation.
- (3) **Debra Smith**: Deborah (Debra) Smith served as CEO of Seattle City Light, General Manager of Central Lincoln PUD (serving the Oregon coast), and various roles at the Eugene Water & Electric Board. During her 30 years in the electric utility industry, Deborah prioritized customer responsiveness, collaboration across the region, and electrification/decarbonization. Deborah also served as the first female chair of the Public Power Council, as well as on the boards of the Smart Energy Provider's Alliance, the Electric Power Research Institute EPRI, and the American Public Power Association. She remains active on the Pacific Northwest National Lab advisory committee, as well as the Western Transmission Consortium.
- (4) **Stephen Wright**: Steve Wright began his career developing energy efficiency supply curves and integrated resource plans. He served as Administrator/CEO of the Bonneville Power Administration from 2000-2013, CEO of Chelan Public Utility District from 2013-2021 and is now a member of the Southwest Power Pool Board of Directors as well as the Interim Markets+ Independent Panel. He has served on the boards of the Alliance to Save Energy, Electric Power Research Institute and American Public Power Association.