COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

700 NE Multnomah Street, Suite 1200
Portland, Oregon 97232

(503) 238-0667
F (503) 235-4228
www.critfc.org

November 19, 2021

Guy Norman
Chairman
Northwest Power and Conservation Council
851 SW Sixth Avenue, Suite1100
Portland, OR 97204
gnorman@nwcouncil.org

Dear Chairman Norman:

The Columbia River Inter-Tribal Fish Commission is providing comments on the Council's draft 8th Power Plan. These comments are in addition to the letters we sent on June 29, 2021, and October 25, 2021. We appreciate the efforts by the Council staff to meet with our staff and keep us informed during the development of the draft plan. These conversations clarified the process and identifying issues.

We continue to have concerns about the Council's assumptions about the integration of renewable resources. Stronger actions are needed to ensure that a combination of renewable resources, increased storage, reductions in peak demand, and increased energy efficiency can provide clean, adequate, reliable, affordable electricity and reduce the damage to salmon, steelhead, and other tribal resources caused by the electrical system. Those comments are detailed below.

Background

The Columbia River Inter-Tribal Fish Commission (CRITFC) was created by the Nez Perce Umatilla, Warm Springs, and Yakama tribes in 1977. CRITFC provides technical, policy coordination and enforcement services to the four tribes. More than 40 years ago, CRITFC assisted its member tribes in developing the provisions for the Northwest Power Acts energy planning and fish and wildlife requirements. Since then, it has supported its member tribes' desire for improving the condition of the Basin's anadromous fish populations.

Recent dramatic reductions in Columbia Basin salmon populations and the West Coast energy planning environment prompted CRITFC to undertake a third major revision to its Energy Vision for the Columbia Basin. These Energy Vision documents include recommendations intended to protect the tribes' treaty-secured fish, wildlife, cultural and other resources.

The first Tribal Energy Vision in 2003 included recommendations to avoid another energy shortage like that of 2001 that damaged fish and wildlife and the economy. The second Energy

Vision in 2013 focused on reducing hydroelectric dam impacts on salmon populations and decreasing costs for consumers. A major theme of the forthcoming 2021 update to the Energy Vision is to ensure that renewable resources in combination with increased storage, reductions in peak demand, and increased energy efficiency can provide clean, adequate, reliable, affordable electricity and reduce the damage to salmon and steelhead and other tribal resources caused by the Columbia Basin dams, transmission lines, and new resource development. The updated Energy Vision includes specific recommendations. A Review Draft of the 2021 Energy Vision was shared with the Council in late June of this year.

Integration of Renewable Resources

CRITFC supports the development of renewable resources if they are properly sited and integrated into the power system. Such development can help to address the climate crisis and benefit salmon. Without proper integration and siting, renewable resources can increase mortalities for Columbia River salmon and damage other tribal resources.

CRITFC is concerned about the assumption that the intermittent renewable resources coming online will be integrated with the hydropower system using current fish requirements and the otherwise unconstrained flexibility of the hydroelectric dams and reservoirs. For example, the analyses undertaken by the NPCC assumed static fish constraints for the 20-year planning horizon of the Power Plan. At no time in the history of the Northwest Power Act have fish constraints remained static for a 20-year period. It is highly likely that fish constraints will be modified within this upcoming 20-year period. The Council admits as much in its own plans. The 2020 Fish and Wildlife Program left unaltered the Council's 2014 recognition that "going forward, the Council takes note that the referenced biological opinion expires in 2018. There is uncertainty as to the future of measures currently included in our program that are derived from that biological opinion. In addition, the Council recognizes the need for careful consideration of experimental operations to test the impacts on listed fish and other aquatic species."

As discussed in our two prior letters, these flawed assumptions result in drastic operational changes with major daily flow fluctuations and near-zero flows several times a day. Such operations have devastating implications for water temperature increases, delayed salmon migration, treaty fisheries, and spill operations at other lower Columbia River dams. For example, in July 2015, low flows and high water temperatures combined to kill several hundred thousand adult sockeye migrating upstream through the Columbia and Snake mainstem dams.

Fishery managers have been calling for higher flows in the spring and summer to help young salmon migrate from their natal streams to the ocean for more than forty years. Imagine the challenges to a juvenile salmon trying to migrate down the Snake and Columbia if the rivers only flow for a few hours in the morning and evening while the rest of the day the river slows to store energy from solar projects. Rapid increases and decreases in flow have also been shown to stop or delay adult fish migration. The changes in flow projected in the Council analysis could make these migration problems much worse in future years.

<u>The Council should immediately incorporate the spill and reservoir operations and the operational requests in the Term Sheet for Stay of Preliminary Injunction Motion and Summary</u>

Judgement Schedule.[1] The term sheet increases spill for juvenile fish passage, limits "zero flow" operations, and maintains reservoirs at minimum operating pools to benefit salmon migration. We expect these provisions will remain in effect until a new biological opinion is in place. It is likely that these operations represent a floor and other measures will be added. Failure to address these term sheet measures into the Council's analysis would not meet the minimum procedural requirements under Federal law.

The Council's current approach ignores the application of the Clean Water Act to the Columbia River System and the ongoing work by the Environmental Protection Agency on water temperature and water quality. In comments on the CRITFC draft Energy Vision, EPA wrote:

> The US Environmental Protection Agency (EPA) appreciates the ability of the Columbia River Federal Power System to provide carbon free power for the Pacific Northwest. However, we are concerned about future regional river flow strategies to produce power and the impact of increasing water temperatures. On August 13, 2021, EPA reissued the Columbia and Lower Snake River Temperature TMDL. This TMDL was developed to provide information about the primary sources of temperature impairments in the Columbia River basin. The TMDL examines sources of temperature impairments on the Columbia River, from the Canadian border to the Pacific Ocean, and on the lower Snake River in Washington, from its confluence with the Clearwater River at the Idaho border to its confluence with the Columbia River.
>
> One of EPA's key findings is the impact of climate change on water temperature in the Columbia River. EPA determined that the warming trend due to climate change has significantly affected temperatures in the rivers since the 1960s, and these adverse thermal impacts continue to increase. A synthesis of available scientific evidence indicates that climate change has increased summer water temperatures in the Columbia and Snake Rivers by approximately 1.5°C since the 1960s. EPA's analysis also found that dam impoundments significantly contribute to warming of the Columbia and Snake Rivers in the summer and fall due to increased river surface area and increased time for water to travel through the reservoirs. These attributes of dam impoundments also magnify the rate of warming from climate change in the Columbia and Snake Rivers (see TMDL Appendix D). Actions to increase flow and provide quicker water travel time in a reservoir can decrease summer water temperature and cool the river. As the TMDL moves into the implementation phase, these types of dam and reservoir operations changes should be assessed to cool river temperatures during critical periods and locations to improve conditions for fisheries.[2]

Putting in place an energy development strategy that assumes, and implicitly accepts, that energy development can ignore these effects will simply set the strategy up for failure. As fish stocks absorb the impacts of these unprecedented fluctuations, hydropower operations are likely to be thrown back into the litigation forums that the region has been trying to manage its way out of for 30 years.

---

[1] NWF et al. v. NMFS et al. (Case number 3:01-cv-00640-SI)
[2] Comments by Mary Lou Soscia, Columbia River Coordinator, US Environmental Protection Agency, September 28, 2021.

The way to account for these effects in developing a sensible energy strategy is to analyze a range of river operations scenarios that respond to the challenges that fish are likely to face, and review energy options that make sense across the range. The Council, the progenitor of risk-based planning, is in the perfect position to bring these techniques to bear in this new era of unprecedented uncertainty.

Given the crisis in many salmon populations and the devastating changes projected for the operation of the hydroelectric system, CRITFC believes that future operations will need to provide more protections for salmon. **CRITFC strongly recommends that the Council consider a range of fish constraints in its analysis of the region's energy future and make a fully informed decision in adopting the Plan's requirements. Our October 25th letter formally requested that the Council conduct three sensitivity studies prior to finalizing the plan**.

In addition to the studies CRITFC has requested, the Council should strengthen the section on Exploring Alternative Approaches to Power System Operation in Section 10 of the draft plan by committing to analyze a full range of river operation and configuration alternatives. CRITFC has identified several operational and configuration alternatives in the draft Energy Vision. Senator Murray and Governor Inslee of Washington announced their intention to complete studies and recommendations on replacing the services of the Snake River dams by next summer. **The Council should also commit to reopening the Power Plan and Fish and Wildlife Program based on the results of these studies**.

The Council should correct the statement that "However, it is unclear how these daily river flow fluctuations will affect environmental conditions for fish in the river, particularly for juvenile and adult salmon and steelhead migration and for mainstem spawning and rearing habitat."[3] The devasting effects of these flow fluctuations are very clear and they need to be addressed.

Action Plan

The Council should include a robust Action Plan in the 8th Power Plan. Every Northwest Electric Power and Conservation Plan since 1983 has contained an Action Plan. For example, the 7th Plan included resource strategy actions, regional actions supporting plan implementation (including model conservation standards), BPA actions supporting implementation, Council actions supporting implementation, actions to maintain and enhance the Council's analytical capability, and actions to address the Columbia River Basin Fish and Wildlife Program.

Unfortunately, the draft 8th plan departs from this practice. This is a major weakness of the draft and will reduce its relevance. Without clear targets and actions, it hard to understand the path the Council is charting for the region. Section 6 describes the analysis of several scenarios, but without an Action Plan, the Council does not lay out the actions needed to address the issues and uncertainties in the analysis. Without an Action Plan, it will be difficult for the Council or other organizations to hold anyone accountable for implementing the plan.

[3] Draft plan, page 10-101.

Reducing Peak Loads

The Council should add recommendations to the Action Plan to strengthen activities to reduce peak loads. Controlling energy demand during times of peak energy usage needs to be a priority for the region and will assist in the integration of renewable resources. Cutting peak demand will also reduce damage to salmon and steelhead. River fluctuations disrupt migration and increase exposure to predators. Reducing peak demand will also reduce greenhouse gas emissions from thermal power plants.

There are quantifiable benefits to consumers from reducing peak loads. For the electrical system, lower demand on peaks translates into fewer capital resources that are needed to serve loads. The grid can serve the same total energy needs with fewer generating plants and a smaller investment in new transmission and distribution lines over time if peaks are lowered. Line losses and ancillary services can also be reduced with lower demand.

The draft CRITFC Energy Vision describes the high cost of the transmission and distribution system associated with meeting peak demand. For example, serving the highest 600 hours during a year (out of 8,760 hours) is estimated to cost between 50¢ to $1 per kilowatt hour, compared to the average costs residential customers pay of about 8¢ to 12¢ per kilowatt hour. These high transmission and distribution costs get averaged into everyone's electric bill.

The Council's analysis appears to use an average rate for transmission in the region of $31 per kilowatt per year and the average distribution cost of $26 per kilowatt year[4] in calculating the benefits of deferring construction. CRITFC's analysis for its Energy Vision update estimates that the transmission and distributions costs of serving the top 600 hours (out of 8,760 per year) is between $80 and $100 per kilowatt year. Using these higher costs when calculating the value of deferring peak loads would likely improve the cost effectiveness of energy efficiency, storage, and other demand response actions.

Reducing peak demand would also defer or eliminate the need for some new transmission and distribution lines. For example, BPA and four Pacific Northwest investor-owned utilities spent more than $8 billion on transmission and distribution systems over the past five years. Future expansions will add significant costs and can adversely affect sensitive resources along power line routes.

As energy systems acquire the general ability to control loads, we can envision a time when loads can be shaped to harmonize with electricity supplies and the hydro system configurations and operations needed for fish and wildlife. Energy efficiency measures are a great strategy to reduce peak loads and are discussed in the next section. Other measures include:

Time-of-use pricing for electricity: CRITFC supports the Council's recommendation on time-of-use pricing to provide residential consumers with an accurate price signal for the cost of electricity at different times of the day and different months of the year. **The Council should**

[4] Northwest Power and Conservation Council memorandum *Updated Transmission and Distribution Deferral Value for the 2021 Power Plan*, March 5, 2019.

strengthen this part of the plan to include commercial and industrial customers and work with state utility commissions to get them implemented.

Currently, all commercial, industrial, and agricultural customers served by investor-owned utilities in California are required to be on a time-of-use plan. Residential customers can choose to be on a time-of-use plan by contacting their utility. The California Public Utility Commission states:

> If customers have energy usage that can be shifted from peak hours to off-peak hours, they may be able to reduce their energy bill by switching to a time-of-use rate plan. For example, customers could run large appliances like dishwashers and washing machines at off-peak hours. Electric vehicle owners may also benefit from switching to a time-of-use rate plan if they charge their vehicles overnight.

According to the California Public Utilities Commission, time-of-use pricing encourages the most efficient use of the electric energy system and can reduce the overall costs for both the utilities and customers by sending prices signals about the actual cost to serve loads at different times. Time-of-use rates vary according to the time of day, season, and day type (for example, weekday or weekend/holiday). Higher rates are charged during the peak demand hours and lower rates during off-peak (low) demand hours. In California, rates are also typically higher in summer months than in winter months. The California Independent System Operator has prepared a detailed analysis of the time of use periods in California.[5] The California PUC states: "This rate structure provides price signals to energy users to shift energy use from peak hours to off-peak hours."[6]

Sending a clear price signal to all consumers about the true costs of meeting peak loads will reinforce the recommendations on demand response, storage, and other strategies discussed below.

Demand Response: The Council's 2016 Power Plan identified the potential to reduce or shift peak demands. It found:

> The Seventh Power Plan assumes the technically achievable potential for demand response in the region is over eight percent of peak load during winter and summer peak periods by 2035. This assumption is based on the Demand Response Program Potential Study commissioned by the Council and feedback from regional stakeholders. This figure represents approximately 3,500 megawatts of winter peak load reductions and nearly 3,300 megawatts of summer peak load reductions by the end of the study period. In addition, the study identified additional potential for summer and winter demand response that could be available by the end of the study period to provide for load and variable generation balancing services[7].

The Council draft plan has significantly reduced the estimates for demand response, primarily because it was not as cost effective as renewable resources. **CRITFC urges the Council to**

[5] http://www.caiso.com/market/Pages/ReportsBulletins/RenewablesReporting.aspx.
[6] California Public Utilities Commission, see https://www.cpuc.ca.gov/general.aspx?id=12194.
[7] nwcouncil.org/7thplan, page 14-2.

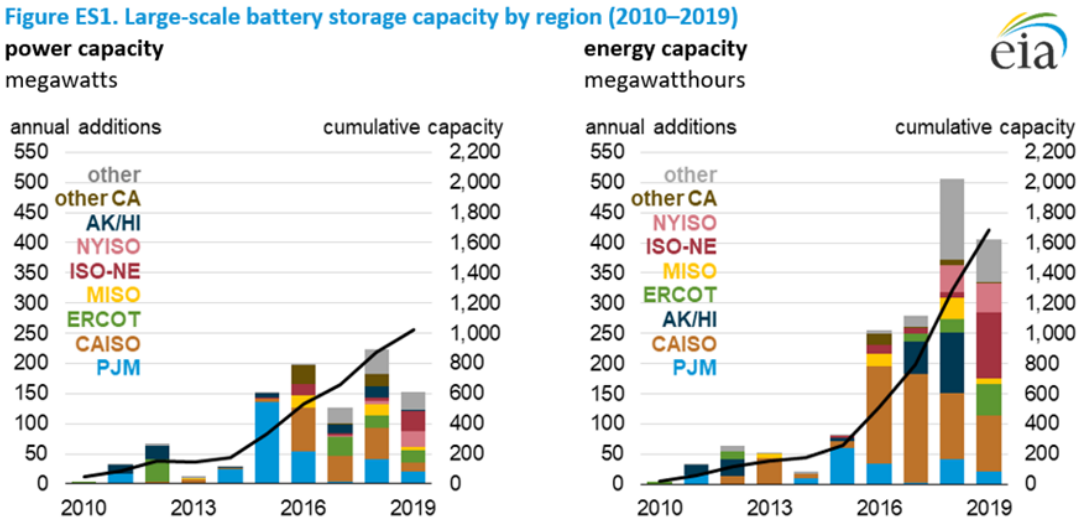
reconsider these calculations based on more realistic costs for integrating renewable resources. The flawed assumption that the hydroelectric system can integrate all the new renewable resources at low or no cost creates an artificially low cost that crowds out resources like demand response. **The analysis of these measures should also fully consider the significant savings from reducing the need for additional transmission and distribution lines to serve peak loads**. Including an accurate accounting of these costs is likely to make more demand response cost effective.

CRITFC urges the Council to expand demand voltage reduction and time of use programs and consider other demand response programs as alternatives to batteries or other storage devices. For example, innovators like OhmConnect are marketing their free demand response assistance as a way of reducing energy blackouts in California.[8]

The Action Plan should include recommendations for utilities to pursue demand response in residential and commercial buildings and other sectors. For example, Idaho Power and PacifiCorp are running air conditioning cycling demand response programs and irrigation pumping programs. These programs are designed to reduce summer peak demands, which may also have fisheries benefits.

Storage and Load Management: Integrating renewable resources with the region's electricity needs will also require significant energy storage and better management of electricity load, including Smart Grid, batteries, electric vehicles, water heating and thermal storage, and green hydrogen storage.

Utility-Scale Batteries: The chart below from the U.S. Energy Information Agency shows the expansion of utility-scale batteries between 2010 and 2019.



Source: U.S. Energy Information Administration, 2019 Form EIA-860, *Annual Electric Generator Report*

[8] https://www.ohmconnect.com/about-us

The growth of these batteries is expanding quickly as costs come down[9]. California will have 3,000 megawatts of utility-scale batteries to store electricity to meet peak demands online by the end of 2021. These lithium battery systems store power from solar plants during the day and can provide four hours of electricity when the sun sets. Preliminary reports indicate that the batteries are performing well, and their costs continue to come down.

Another technology, called iron flow batteries, has six-to-twelve-hour storage cycles, are scalable to 2000-megawatt hour systems, and have a 25-year operating life[10]. These and other technologies can provide reliable energy storage. The WECC projections show approximately 200,000 megawatts of solar and battery projects by 2045.

These batteries could help address some reliability and renewable resource integrations issues in the Northwest. Winter peaks often last more than twelve hours and will likely require a combination of storage, improved efficiency measures, demand management, and other strategies to serve these electricity needs, especially in low-water years.

The Council should include recommendations in its Action Plan for Northwest utilities to begin construction of battery systems at strategic locations. For example, these batteries could be located near load centers or near major generation and transmission hubs to reduce the transmission and distribution costs.

The Council's draft plan discusses the role of batteries but does not have actions to promote their use. It is CRITFC's understanding that the Council did not find them cost effective compared to other alternatives. As discussed elsewhere, the Council is assuming the hydroelectric dam reservoirs can be used as a huge battery at little or no costs (except to salmon). This flawed assumption prejudices the cost effectiveness of storage and other technologies, such as energy conservation that do not increase the mortality of migrating salmon. There is no basis in factual experience that warrants a system cost assumption that such unprecedented hydro actions such as stopping the daytime flow of the Columbia River will be tolerated by the affected regulatory community or other governments. This assumption also undermines any reasonable determination of cost-effectiveness required of the Council by of the Northwest Power Act while giving first priority to conservation. 16 U.S.C. 839b (e)(1).

On-Site Batteries: **The Action plan should include recommendations for BPA and utilities to implement incentive programs to expand the use of on-site batteries.**

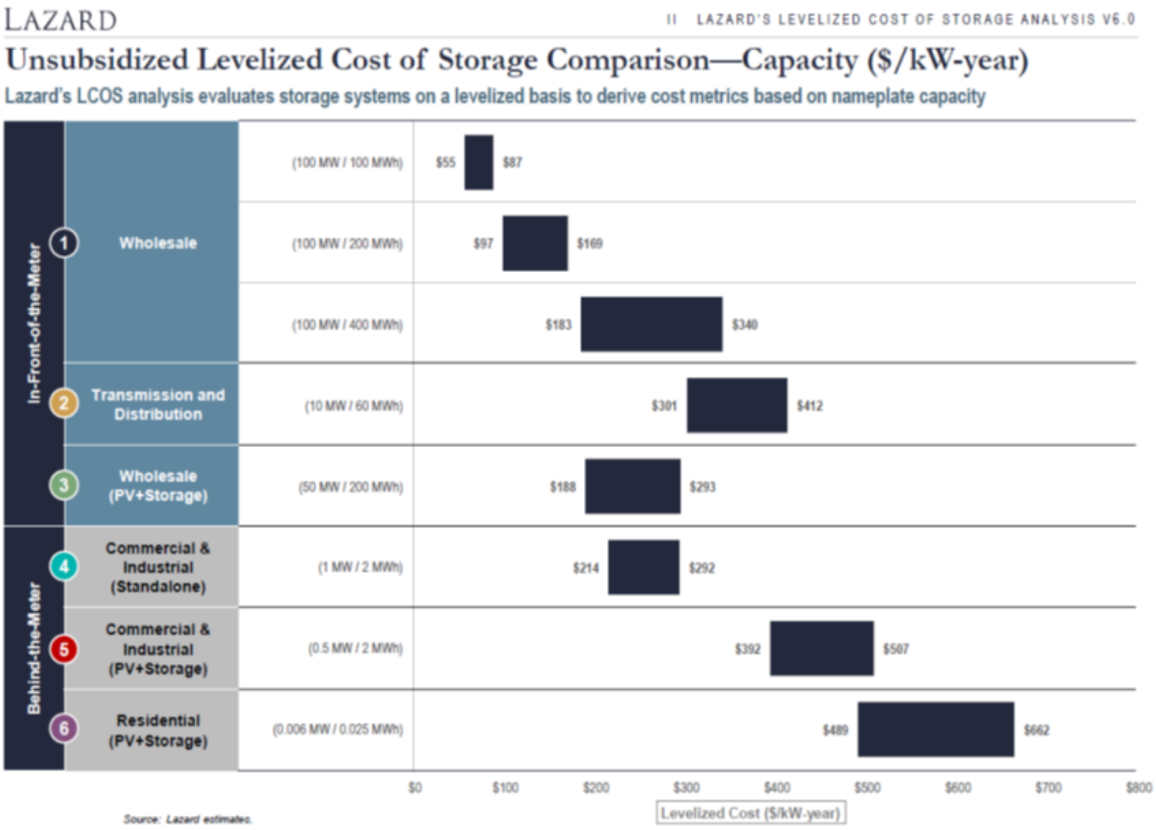
On-site generation home and business storage systems are becoming commercially available. For example, Tesla has a Solar Roof and Powerwall system to generate and store electricity for a house. The Powerwall also tracks National Weather Service alerts for severe weather and fully charges the battery in case of a forecasted power outage. The system also has time-based controls to use stored power when grid costs are expensive and net metering credits for excess solar energy sent to the grid.

The Oregon Legislature passed a bill in the 2021 session to allocate an additional $10 million for the solar and storage rebate program to help bring down the costs of these systems. The rebates

[9] See Oregon Department of Energy 2020 Biennial Energy Report Utility Scale Storage Technology Review.
[10] https://essinc.com/iron-flow-chemistry/.

may cover up to 40 percent of the net cost for a residential system installed for a customer that is not considered low- or moderate-income, up to 60 percent of net cost for a low- or moderate-income customer, and up to 50 percent for a low-income service provider[11]. The Council should encourage other states should establish such programs.

The chart below, prepared by Lazard Bank, shows the unsubsidized levelized cost of storage alternatives[12].



Electric Vehicles: **The Council plan should include recommendations to automobile manufactures to include systems that allow electric vehicles to schedule charging during off-peak periods.**

Electric cars and plug-in hybrid cars could be a win-win-win for consumers, the environment, and salmon. Electric vehicles have very low operating and maintenance costs, reduce greenhouse gases and other air pollution, and reduce dependence on foreign oil. If owners charge car batteries during off-peak periods or when surplus renewable energy is available, these cars will not contribute to peak loads or will provide a base load that could be served by renewable resources. Rather than "turning the river off" during parts of the day, increased flows can help migrating salmon. This will require all auto manufacturers to provide scheduling software that can control when the car charges (these are already standard on some electric vehicles). If timers

[11] https://www.oregon.gov/energy/Incentives/Pages/Solar-Storage-Rebate-Program.aspx.
[12] Lazard's Levelized Cost of Storage Analysis – Version 6.0, Lazard's Bank, 2020, page 5.

and demand-side management are not incorporated and used, electric cars can make things worse for consumers, the power system, and salmon.

The Council's plan should include recommendations for utilities to test the feasibility of smart meters for electric cars that would use power from the car batteries during peak periods and charge the cars when there is low-cost surplus power. In these "vehicle to grid" systems, car owners could get a discount on the electricity, and this could be a cost-effective way to meet peak and provide storage at a lower cost than utility-scale batteries[13]. These efforts will require improvements in information sharing so charging can be scheduled during the optimum time to reduce environmental impacts.

The Council's plan should include recommendations for BPA and utilities to work to improve the efficiency of electric vehicles. The Council draft plan projects that electrification of transportation could add 700 to 900 average megawatts of load by 2040. There appears to be significant potential for additional efficiency improvements in these vehicles.
An analysis by Amory Lovins concludes:

> Efficiency gains achievable by integrative design of whole light-duty vehicles can be severalfold larger, yet cheaper, than those predicted by canonical incremental technology-by-technology analyses. This means that US and international efficiency standards rest on overly conservative analyses; electrification can be cheaper and faster than conventionally assumed; and the efficiency potential predicted by groups like the US National Research Council and assumed in climate-mitigation assessments need major revision, aided by evaluation processes that better assess whole-vehicle design and early signals from concept vehicles. [14]

Current electric vehicles have high EPA miles per gallon (electric equivalent) ratings compared to internal combustion engines. For example, a Tesla Model 3 has a combined rating of 142 MPGe and a Hyundai Ioniq is rated at 133 MPGe[15]. Increasing the efficiency several fold would stimulate the adoption of these vehicles and reduce the impacts on the electricity system.

Energy Efficiency

Energy efficiency programs reduce both peak demands and year-round energy needs. Energy efficiency has been proven as a reliable resource in the Northwest with costs that are less than half the cost of new gas-fired power plants. These programs save consumers money and reduce the emissions of pollutants that cause climate change.

Energy conservation and efficiency improvements are inherently fish and wildlife friendly. They require no "steel in the ground" in undisturbed landscapes and will not impact tribal cultural resources. They operate 24/7. Unlike wind and solar energy resources, they are generally not subject to variations in weather. Unlike thermal resources, they are immune from fuel price

[13] Clean Vehicles as an Enabler for a Clean Electric Grid: https://iopscience.iop.org/article/10.1088/1748-9326/aabe97
[14] Lovins, A., "Reframing Automotive Fuel Efficiency," 2020, https://doi.org/10.4271/13-01-01-0004.
[15] https://www.fueleconomy.gov/feg/evsbs.shtml.

increases. Properly developed energy efficiency and conservation can benefit low-income populations including tribal peoples.

The region has saved 7,200 average megawatts since 1978 through energy efficiency programs, codes, and standards. That is enough electricity to serve more than 5 million homes. The U.S. Energy and Employment Report shows that over 100,000 people are employed in our region working with energy efficiency at utilities, the Northwest Energy Efficiency Alliance (NEEA), the Energy Trust of Oregon, state agencies, and at the many trade allies and contractors that work to implement programs and deliver efficiency services.[16]

These energy efficiency programs have saved Northwest consumers over $70 billion dollars and those savings are growing at about $5 billion per year. The Council's analysis shows that more than $8.5 billion has been spent by Northwest utilities on energy efficiency programs—a significant portion of these funds were spent in the region, providing jobs and economic activity.

Energy efficiency also reduces the region's seasonal storage needs because energy savings closely track energy demand. The "flexibility" of energy efficiency is extremely valuable. Energy efficiency programs have no adverse effects on fisheries or other tribal resources. The Council should include the peak savings and reductions in peak transmission and distribution needs in calculating the value of energy efficiency programs.

Reducing Peak Energy and Peak Transmission and Distribution Costs: Energy efficiency programs continue to be among the lowest-cost ways to meet future energy needs. They have the added benefit of reducing peak demand. Extensive regional experience shows that balanced energy efficiency portfolios disproportionately save electricity during peak periods. A well-insulated home or office requires less heat in the winter and less air conditioning in the summer. Energy efficiency is "fish friendly." It is the energy resource that has the least potential to damage tribal resources. Unfortunately, the Council's analysis does not incorporate a price signal that would recognize the value of energy efficiency in protecting tribal and natural resources. At the same time, the Council's draft plan makes unwarranted assumptions about the flexibility of the hydrosystem to integrate renewable resources and provide system reliability. These flawed assumptions undermine the Act's requirements directing the Council to set forth a scheme for implementing conservation measures with "due consideration" for "environmental quality" and protection of fish and wildlife including "flows for successful migration, survival and propagation of anadromous fish." 16 U.S.C. 839b (e)(2).

The table below shows the Council's analysis of the energy efficiency savings between 2016 and 2019. It shows that the total savings were 857 average megawatts. These programs resulted in 1,683 megawatts of peak savings in the winter and 1,042 megawatts in the summer.

[16] 2020 Report: https://www.usenergyjobs.org/.

Capacity Savings by End Use - All Sectors Combined		
Year	(Multiple Items)	
Row Labels	**Sum of Winter MW Savings**	**Sum of Summer MW Savings**
Lighting	698.06	445.43
HVAC	519.19	145.70
Whole Bldg/Meter Level	185.24	133.75
Unknown	59.56	47.57
Process Loads	47.83	49.15
Electronics	45.71	37.14
Water Heating	44.68	25.12
Refrigeration	40.84	44.73
Motors/Drives	22.12	21.13
Compressed Air	14.88	14.77
Utility Transmission System	1.62	1.57
Food Preparation	1.31	1.23
Facility Distribution System	0.97	1.00
Utility Distribution System	0.67	2.91
Irrigation	0.60	70.97
Grand Total	**1,683.28**	**1,042.17**

These programs have the added benefit of matching electric energy growth. As the number of new homes and business are built and new efficient appliances are added, the energy and capacity savings increase.

The Council's 2021 Draft Plan assumes a total additional conservation potential of 5,103 average megawatts in 2041 that "saves 9,105 megawatts of summer peak and 8,511 megawatts of winter peak."[17]

The Lawrence Berkely Laboratory collected data on costs, energy savings and peak demand savings for electricity efficiency programs for 36 investor-owned utilities and other public agencies in nine states (Arizona, Arkansas, California, Colorado, Illinois, Massachusetts, Maryland, New York, and Texas) for 2014 to 2017.[18] The savings during the study period averages $0.029/kilowatt-hour (kWh) and varies by a factor of three ($0.013/kWh to $0.039/kWh) across the nine states. The report states:

> Based on this initial study, electricity efficiency programs appear to be a relatively low-cost way for utilities to meet peak demand, compared to the capital cost of other resources (Lazard 2018; EIA 2019) that can be used to meet peak demand. However, many energy efficiency technologies, such as more efficient light bulbs, are "passive" and are not dispatchable. In such cases, efficiency resources do not provide the same services as a natural gas peaking turbine, making comparisons between these resources complex. At the same time, our results suggest that electricity efficiency programs that reduce peak demand merit strong consideration by utilities and regional grid operators.

[17] https://www.nwcouncil.org/2021powerplan_conservationpotential.
[18] https://emp.lbl.gov/publications/peak-demand-impacts-electricity.

Further, "active" efficiency measures such as lighting controls enable active management of efficiency resources, offering additional grid services.

These cost-effectiveness calculations should also consider the very high costs of transmission and distribution systems that serve these peak loads. CRITFC's analysis from 2013 showed the transmission and distribution costs of meeting the highest 15 percent of peak energy needs ranged from 79¢ to $1.19 per kilowatt-hour. CRITFC did not receive any comments on this analysis and acknowledges that it should be updated by the Council, BPA, and utilities. If the update shows a similar magnitude of meeting peak transmission and distribution costs, those high costs should be included in the cost-effectiveness analysis and will likely show much higher benefits for alternatives that reduce the need for transmission and distribution, including energy efficiency.

Increase Energy Efficiency Targets: Council should increase the conservation targets in the 8th Power Plan to maintain at least the level of activity called for in the 7th Plan and work with BPA and utilities to try to exceed the targets.

In the 2021 Draft Plan, the Council recommends "that the region acquire between 750 and 1,000 average megawatts of energy efficiency by the end of 2027 and at least 2,400 average megawatts by the end of 2041[19]. These energy efficiency targets are significantly lower than the 7th Power Plan when the Council estimated that over 4,000 average megawatts of conservation could be acquired cost-effectively over the 20-year planning period.

It is CRITFC's understanding that part of this reduced potential is because LEDs are already in wide use and the Obama Administration adopted 49 new federal standards that are capturing some of the 7th Plan's targeted savings, so the baseline load forecast for the 7th plan is lower. If this is the case, the Council should clearly communicate this change is the baseline.

The CRITFC recommendation to maintain at least the level of activity for energy efficiency programs called for in the last plan are based on several factors:

First, we understand that one reason for reducing the energy efficiency levels is the assumption that solar and wind energy costs are lower than some of the energy efficiency. These lower renewable resources costs include the Council's assumption that this energy can be integrated using the regions' dams and reservoirs at little or no cost.

The Council will be evaluating alternative river operations. CRITFC has recommended that at least three scenarios should be evaluated before the plan is finalized and the Council has committed to further studies in Section 10 of the draft plan. CRITFC believes that using more realistic river operations will increase the costs of solar and wind energy and reduce the availability of power from the dams. This will likely make more energy efficiency cost effective. Maintaining the program levels from the 7th Power Plan would avoid sending signals to slow energy efficiency efforts that the region may regret.

[19] 2021 Draft Power Plan, page 5-29.

Second, the Council's cost-effectiveness calculations should include the very high peak energy costs of transmission and distribution systems. As discussed above, the Council's analysis for the draft 8th Power Plan appears to use an average rate for transmission distribution costs in calculating the benefits of deferring construction[20]. CRITFC's analysis estimates that the transmission and distributions costs of serving the top seven percent of loads are $25 to $45 per kilowatt year higher than the average used by the Council[21]. Energy efficiency and other behind-the-meter actions avoid those high transmission and distribution costs. Using these higher peak costs when calculating the value of deferring peak loads would likely improve the cost effectiveness of energy efficiency.

Third, the Council notes that this industry employees 100,000 people. Reducing these programs means downsizing this work force and reducing the number of companies providing these services when the region will likely need them in the future. Many industries are experiencing shortages of workers. Losing a trained work force could take years to recruit and retrain.

Fourth, as the Council reconsiders its energy efficiency targets for the 8th plan, it should assume a higher penetration rate. The 7th Power Plan assumed that only 85 percent of the cost-effective conservation will be achieved. If the region could achieve 100 percent of these savings, it would save consumers an additional $300 million per year[22]. If we assume these savings are phased in over the life of a 20-year power plan; the additional savings could total about $3 billion by 2036.

Fifth, the Council, BPA, and utilities should include incentive programs for measures that are on the margin to stimulate new technologies. The Council and NEAA should identify promising measures and develop programs to bring down cost and increase the commercial availability. The region has had success with similar efforts where early investments reduced long-term costs.

BPA and utilities can afford to pay the incremental costs of these marginal measures. The Northwest Power Act requires measures to be economically feasible for consumers, considering financial assistance from the Bonneville Power Administration and the region's utilities.

It is important to note that BPA and utilities do not pay the full cost of the energy efficiency. Consumers usually pay a share of the costs of these programs. Building codes and appliance standards provide significant savings at no cost to utilities. A rough calculation of the costs of energy efficiency savings that were paid for by utilities is about $8 per megawatt hour[23]—a fraction of the costs of alternatives or the value of the electricity sold in the market over this period. The Council should conduct its own analysis of the utility paid costs in considering the costs and benefits of stimulating new technologies.

---

[20] Northwest Power and Conservation Council memorandum *Updated Transmission and Distribution Deferral Value for the 2021 Power Plan*, March 5, 2019.
[21] See Appendix E.
[22] De-rating the energy efficiency that is achievable by 15 percent represents 600 average megawatts of low-cost power that were not included in the NPCC conservation targets for the Seventh Power Plan. A simple calculation of the value (marginal resource costs minus cost of conservation[22] multiplied by 1000 average megawatts) shows that the value of this additional conservation is $300 million per year.
[23] The analysis assumes that the energy 7,200 average megawatts of savings when phased in over the past 38 years totaled savings of more than 1.2 billion megawatt hours, divided by utility spending of about $9 billion.

Some rural utilities complain about funding energy efficiency, especially in the I-5 corridor. During the first seven power plans, energy efficiency was about half the cost of alternative generating resources. CRITFC doubts that any utility would have wanted the region to pay twice as much for new resources to meet power needs.

Sixth, there is a great deal of business and public interest in energy efficiency that did not exist in prior decades. Customers are asking for green certifications and business are routinely marketing products with zero-carbon footprints. Congress and the Biden Administration are considering infrastructure programs to address the climate crisis and increase funding for these programs.

Seventh, analysis indicates that there is likely additional energy efficiency available. We reviewed two papers that addressed this issue. The first is a paper entitled: *Beyond Supply Curves*, by Fred Gordon and Lakin Garth of the Energy Trust of Oregon and Tom Eckman and Charles Grist formerly at the Northwest Power and Conservation Council. It discusses how new technologies, which are often impossible to forecast, have significantly increased the amount and reduced the cost of energy efficiency measures. For example, the high efficiency windows in the 2005 Council Plan were 12 percent more efficient than the assumptions used in the Council's 1983 plan. The paper also shows how the cost of compact fluorescent lamps dropped from the $12 per bulb assumed in the 1991 plan to $3 assumed in the 2005 plan.

The second paper, by David Goldstein of the Natural Resources Defense Council, describes the methodologies that are "excessively conservative if the goal of policymakers is to meet aggressive climate change emission reduction goals." The paper documents the systematic biases that result in low potentials in energy efficiency. These include: 1) subjecting efficiency measures to a criterion of proof beyond a serious doubt; 2) assuming arbitrary realization factors less than 100 percent due to questions about social acceptance of energy efficiency; 3) implicit assumptions that a lack of research on the cost or feasibility of a measure means that is it excluded from a study; 4) a failure to consider system integration; 5) assumptions that once known efficiency measures are implemented, technological progress ceases and no further improvements are possible; and 6) reliance on projected costs of efficiency without looking at realized costs, which has always been lower whenever data has been available.

Eighth, the Council projects that electrification of transportation could add 700 to 900 average megawatts of load by 2040. There appears to be significant potential for additional efficiency improvements in these vehicles.

In summary, the challenges for the Council are to set realistic targets for energy efficiency and ensure the flexibility to achieve higher savings as they become available. CRITFC calls upon the Council to do so.

After 40 years of experience, there are ample results in the Pacific Northwest to demonstrate that improving energy efficiency can reliably save energy. We also know that the Council's targets have been conservative. New technology has repeatedly made conservation more cost effective

than estimated by the Council. Finally, the Northwest Power Act calls for energy conservation to be developed as a resource ahead of traditional resources.[24]

For all these reasons, the Council should address all the factors discussed above and increase the conservation targets to continue programs at the levels in the 7th Power Plan and work with BPA and utilities to try to exceed them.

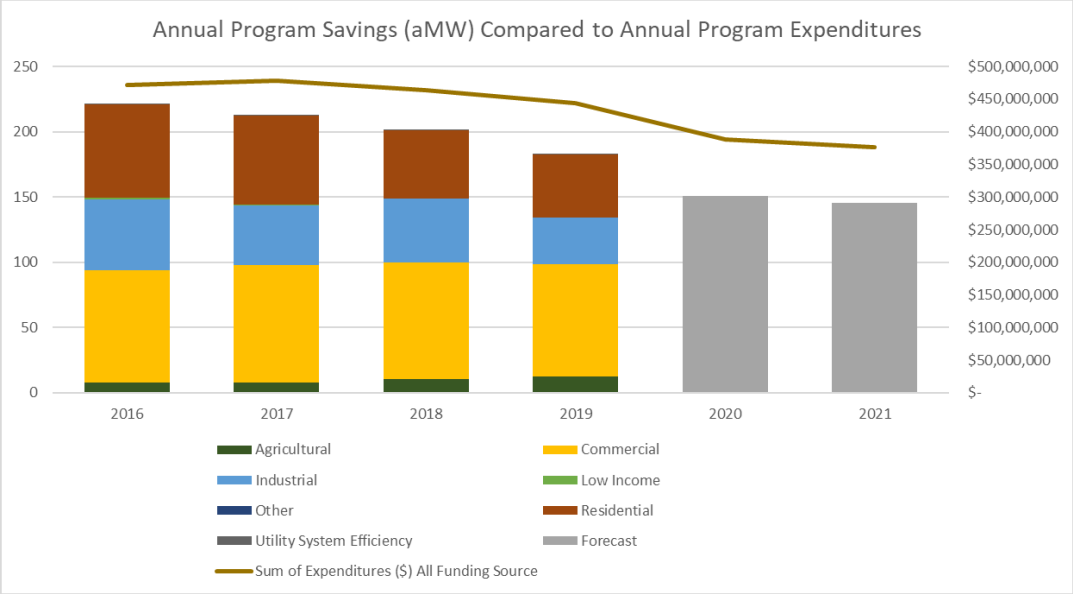
<u>Ensure that Utilities Achieve the Energy Efficiency Targets</u>: The Council should monitor the implementation of energy efficiency programs to ensure that utilities meet these higher conservation targets.

The Council summary of achievements shows the region ended up exceeding 6th Plan targets and was slightly ahead of 7th Plan goals – despite the impact of Covid-19 on programs. The Council's table below shows the region exceeded the Council's targets for all energy efficiency activities between 2005 and 2019[25]:

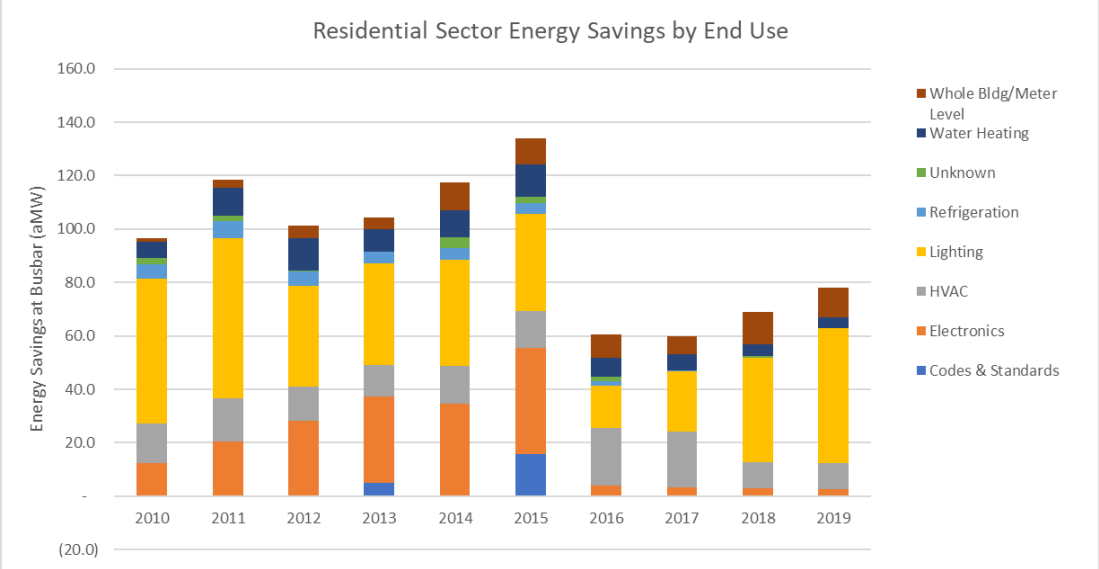
	Year	Cumulative Target (aMW)	Actual Achievements (aMW)	Actual Over/Under Target (aMW)	% Over/Under Target
5th Plan	2005	130	141	11	8%
	2006	265	293	28	11%
	2007	405	500	95	23%
	2008	550	735	185	34%
	2009	700	966	266	38%
	2010	900	1,223	323	36%
6th Plan	2011	1,120	1,503	383	34%
	2012	1,360	1,747	387	28%
	2013	1,620	2,009	389	24%
	2014	1,900	2,249	349	18%
	2015	2,190	2,492	302	14%
	2016	2,375	2,695	320	13%
7th Plan	2017	2,560	2,904	344	13%
	2018	2,790	3,133	343	12%
	2019	3,020	3,349	329	11%

The Council figure below shows total funding in 2021 was about $100 million per year less than in 2016 and annual savings declined from approximately 225 average megawatts in 2016 to a projected 145 average megawatts in 2021[26]:

[24] 16 U.S.C. § 839; 126 Cong.Rec. H9848 (Rep. Pritchard) ("[The Act] treats energy conservation as a resource, making it the top priority in meeting the region's energy needs. *NRIC and Yakama Nation v. Northwest Power Planning Council,* 35 F.3d 1371, 1378 (9th Cir. 1994).
[25] https://rtf.nwcouncil.org/about-rtf/conservation-achievements/2019.
[26] https://nwcouncil.app.box.com/v/2019RCPResults

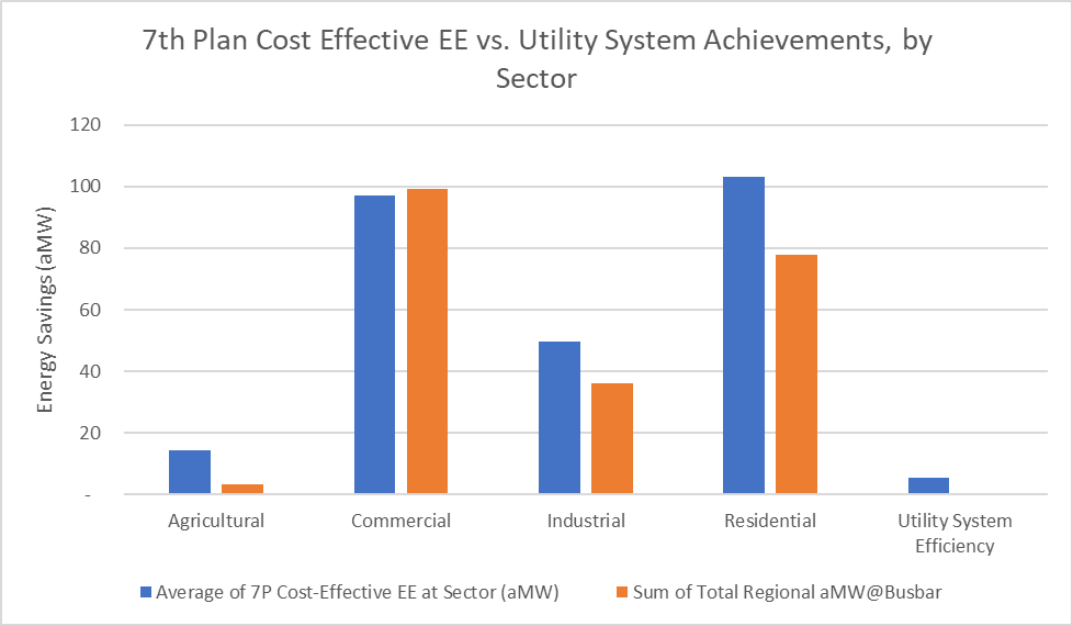


The reductions in energy savings have been significant in the residential sector, with savings for 2016 through 2019 averaging about half the progress in 2015[27]. The chart from the NPCC shows the energy savings, by end use between 2010 and 2019.



The chart below shows that utilities are not meeting 7th Plan goals in the agricultural, industrial, and residential sector.

[27] NPCC 2019 Regional Conservation Progress Report by the Regional Technical Forum.



Many utilities in the Northwest are national leaders in implementing energy efficiency programs and we applaud their efforts. Some utilities have not embraced this proven, low-cost resource. The failure to achieve these targets means more resources and transmission and distribution lines need to be built and these actions will add costs and present risks to upland resources like First Foods that the tribes are striving to protect. Failure to meet efficiency targets also puts more pressure on the hydroelectric system that kills salmon and steelhead, and the construction of grid infrastructure will affect other tribal resources.

The Council should monitor future implementation to ensure that all utilities are meeting the targets. If the Council finds that some utilities are continuing to impose costs on other consumers, salmon, and other tribal resources, then the Council should impose a surcharge under the provisions of the Northwest Power Act.[28]

CRITFC would support a safe harbor provision. For example, a utility could avoid the surcharge if it had: 1) well designed programs in place in all sectors; 2) offered funding to cover all the cost to the consumer of the energy-efficiency improvements up to the costs of the next most expensive resource[29]; 3) had an effective public education program so all customers were aware of the programs; and 4) had committed sufficient funds to implement all requests for the energy efficiency programs.

Provide a Clear Conservation Planning Methodology: The Council's 7th Power Plan included a clear conservation planning methodology in Section 12 and Appendix G. The 7th Plan references a critical state law that is related to the Council's methodology[30]:

[28] Section 4(f) (2) of the Northwest Power Act authorizes the Council to recommend a surcharge of 10 to 50 percent for utilities that do not achieve the model conservation standards in Section 4(f)(1).
[29] The Northwest Power Act requires that the Council design the MCS to produce all power savings that are cost-effective for the region and economically feasible for consumers, taking into account financial assistance from the Bonneville Power Administration and the region's utilities.
[30] 7th Power Plan, page 12-55.

> The Energy Independence Act, or Initiative 937 (I-937) in the state of Washington, approved by the voters in 2006, obligates any Washington utility with more than 25,000 customers to "pursue all available conservation that is cost-effective, reliable, and feasible."[31] The law requires these utilities to develop and implement 10-year conservation plans that identify the "achievable cost-effective [conservation] potential". Every two years, each utility must review and update its assessment of conservation potential for the subsequent 10-year period. At the end of each two-year cycle, the utility's target and achievement are reviewed by a regulator or auditor.
>
> Washington's Energy Independence Act and the Northwest Power Act intersect in that the state's utilities are to engage in conservation planning "using methodologies consistent with those used by the Pacific Northwest Power and Conservation Council in its most recently published regional power plan".

CRITFC could not find a similar methodology in the draft 8th plan. **Omission of the methodology weakens the Council's plan and creates potential problems for the implementation of the Washington law**. The language on page 6-40 is very general and has so many caveats that it is difficult to hold utilities accountable for achieving energy efficiency targets.

<u>Expand Low-Income Weatherization Programs</u>: The Council's plan should recommend that all tribal homes and businesses should be fully weatherized by 2025 and all tribal homes and businesses should receive solar panels and battery systems that provide zero net energy by 2030.

Given the long history of damage by the electric power system to the Northwest tribes' resources, CRITFC recommends that energy efficiency and renewable resource programs give priority to tribal communities. The interim target is to weatherize all tribal homes and businesses by 2025 and all tribal homes and businesses should receive solar panels and battery systems so the energy efficiency and solar systems should meet all the energy needs of the building.

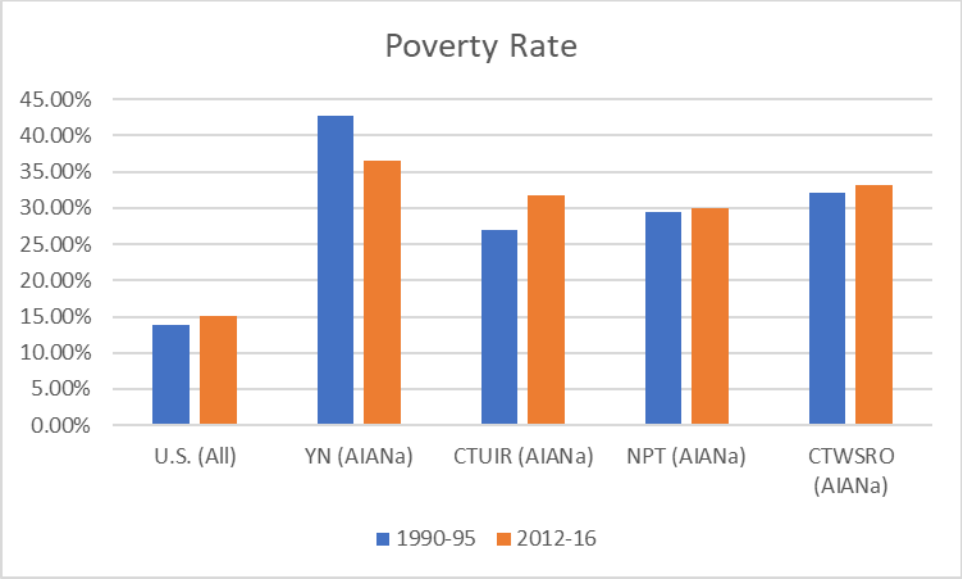
Tribal communities include many low-income people. Tribal poverty rates for the four CRITFC member tribes are still two to three times the national average. Per capita income is less than half the national average[32]. Data for CRITFC tribes are shown in the next two tables[33].

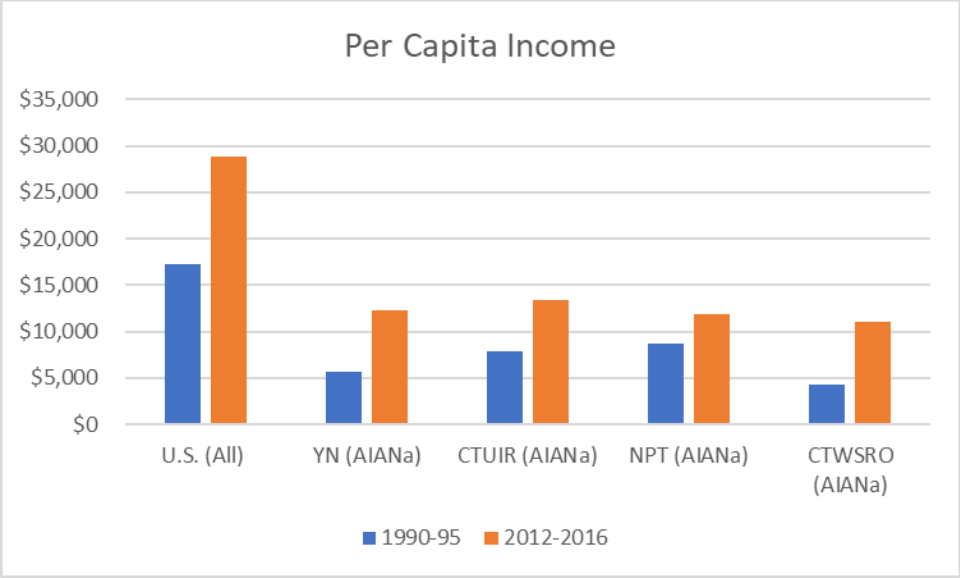
---

[31] Section 19.285.040(1) of Revised Code of Washington.

[32] The 1990-95 data (blue) were obtained from the 1999 Meyer Report, which presented information from the 1990 Special Tribal Run U.S. Census. The 2012-2016 data (orange) were obtained from the Center for Indian Country Development, which is a project of the Federal Reserve Bank of Minneapolis.

[33] YN is the Yakama Nation, CTUIR is the Confederated Tribes of the Umatilla Indian Reservation, NPT is the Nez Perce Tribe, CTWSRO is the Confederated Tribes of the Warm Springs Reservation of Oregon.





The Council's plan should also recommend that utilities weatherize and achieve net zero energy for all low-income homes by 2035. After forty years, many low-income houses and multi-family buildings still have not been weatherized. People who can least afford it, are exposed to higher bills. It is time to solve this problem. Achieving zero net energy will insulate people from higher future costs.

We note that the Clean Energy Transformation Act[34] (CETA) in Washington requires utilities to ensure an equitable distribution of benefits from the transition to clean energy for all customers. The act also requires utilities to make programs and funding available for energy assistance to low-income customers. Oregon requires that the total generating capacity of community solar projects be made available for use by low-income residential customers.

[34] Chapter 288, Laws of 2019

<u>Energy Management Practices in Commercial Buildings and Industrial Facilities</u>: The Council's plan should include recommendations for utilities, the Northwest Energy Efficiency Alliance, and other organizations to implement comprehensive programs to improve energy management practices in the commercial and industrial sectors.

Energy efficient commercial buildings and industrial facilities are a source of great potential savings. Energy efficient lighting and appliances, of course, are a source of savings. But the biggest gains are related to heating, ventilation, and air-conditioning (HVAC) and improved energy management in industrial plants.

Because HVAC systems and smart thermostats are complicated, they need continuing attention to remain efficient and tuned to the tasks for which they are designed. All new buildings should go through a building certification process to assure that they are operating as they were designed and to assure that the operation is efficient.

Most commercial buildings rely on programmable thermostats that are not being maintained. Many buildings are operated as though occupied continuously. Better scheduling can result in 30-40 percent savings in many of these buildings. With Smart Grid technologies and strategies that enable one to essentially dispatch loads behind customers' meters, these savings can now be more easily captured. We recommend a concerted regional effort to do so. In Washington state, there is a new building performance standard law that affects most commercial buildings over 50,000 square feet. It will require continuous assessment of operations and that buildings hit certain energy use targets[35].

Strategies to Reduce Greenhouse Gases

Solar and wind development can significantly reduce greenhouse gas emissions. Lower costs, higher efficiencies, and current federal and state policies are driving an increase in these resources. The capital cost of renewable resources developed to meet state Resource Portfolio Standards (RPS) and/or clean energy standards is being recovered in rates, so when these resources produce power in excess of "native load need" they can be sold at very low, zero, and even negative costs. As a result of the federal Production Tax Credit and Renewable Energy Credits, resource producers will pay others to take their electricity so they can get the credits.

As a result, the forecasts of future wholesale energy prices for many hours of the day and for nearly all months of the year across the WECC will continue to be low. These low prices depress the value of energy efficiency's energy (kwh) savings which in turn increases the cost of energy efficiency as a source of capacity savings. Therefore, while these tax policies, cost-recovery practices and RPS requirements are intended to promote the development of non-greenhouse gas emitting generating technologies, they have the unintended effect of reducing the amount of energy efficiency that appears to be cost effective.

Even though some energy efficiency measures can reduce greenhouse gas emissions at a lower cost per ton than the cost of doing so with renewable resources, the existing incentives (tax credits, RECs) and electricity market structures make the energy efficiency measures appear

[35] https://www.commerce.wa.gov/growing-the-economy/energy/buildings/

more expensive. These policies may also not adequately address the high economic and environmental effects of transmission and distribution lines. Policies should address all these issues in the development of an integrated set of least-cost options for reducing greenhouse gas emissions, whether that be energy efficiency or renewables resources or most likely a combination of these resources. Unfortunately, under the current policy environment the least-cost mix of resources to reduce greenhouse gases is not likely to be developed.

These policies and standards can also have unintended and negative impacts on tribal communities and all consumers. Energy efficiency reduces consumer costs, provides energy and peak savings that are matched closely to energy needs, and provides local employment. Energy efficiency has other benefits that should be addressed in these policies, such as certainty, reliability, and insurance against heat dome and other extreme weather that can reduce some renewable resource production. Energy efficiency, along with other distributed energy resources such as batteries and demand response, can reduce the scale of renewable development needed to replace fossil fuel generation. Reducing the need for renewable resources helps avoid impacts to tribal resources associated with development of solar and wind farms and transmission lines to get their power to market. It also can reduce some large impacts to the operation of the dams and reservoirs that hurt fish and wildlife.

The Council should work with public utility commissions and legislatures to recognize the economic and environmental value of energy efficiency and distributed energy resources in offsetting the amount of renewable resources needed so the lowest-cost carbon reduction resource development path is selected. Simply increasing RPS requirements may not produce the best outcome because it does not consider whether there are lower cost carbon reduction resource strategies and strategies that better protect tribal First Foods and cultural resources.

Renewable Resources

Properly integrated and sited renewable resources will play an important role in meeting the region's energy needs and reducing greenhouse gas emissions. The draft plan documents the significant cost reductions and recommends that 3,500 megawatts of these resources be built by 2027. The Council should include actions regarding dual use solar and on-site solar projects.

Dual Use Solar*:* **The Council should include recommendations in its Action Plan for BPA and utilities to fund proof of concept projects for dual use solar**.

Utility-scale solar development should be compatible with high-value farmland. The American Farmland Trust (AFT) provided thoughtful comments to CRITFC about focusing solar development on marginal lands—those that are least productive for agriculture *and* not critical for wildlife habitat. Agricultural lands that require groundwater depletions for their productivity are inherently marginal. The Council staff presented innovative low-impact solar development, dual purpose projects that co-locate and integrate renewable energy with a complementary activity that gain from working together, and floating solar systems on agricultural reservoirs.[36]

[36] Considerations of Large-Scale Renewable Resource Deployment, Gillian Charles, June 2, 2021.

AFT has proposed pilot projects to demonstrate dual use solar on agricultural land. AFT defines "dual use" as solar development that is designed with agriculture in mind. Early research has shown that well-designed dual use projects have the potential to enhance agricultural practices, such as extending the growing season, preventing evaporation, and providing shade for livestock. It can also provide passive revenue for farmers to support the commercial viability of their farming operation.

Research is underway to develop the best practices and design of dual use solar. To date, these projects have been too small for electric utility application. Funding several utility-scale pilot projects could provide a proof of concept for this approach to siting solar on agricultural land.

Distributed Solar Generation: **The Council should add recommendations to the Action Plan for states and local governments, and utilities to expand policies to promote on-site solar systems**.

The costs of solar photovoltaic systems for homes and business have also decreased. These investments provide savings and certainty for the building owners. These systems have significant system benefits because they do not require expanded transmission and distribution lines and thus avoid the environmental impacts of those developments. Solar systems with batteries are designed to provide storage and backup power to improve reliability. Solar roof top and battery systems will be sited behind customers' meters. In this case, line losses and ancillary services to get the power to the load are miniscule. Also, the intermittency problem of solar power is diminished somewhat, because small photovoltaic systems will be spread over wide areas of the region. Passing clouds will affect only a small portion of the installations at any moment. Thus, predictability of solar will be enhanced. The evaluation of the costs and benefits of these on-site solar systems should include the savings to the transmission and distribution system discussed above.

The Council draft plan projects distributed solar systems will add about 1,000 megawatts of capacity and 200 average megawatts of energy by 2030. By 2045, the projection is about 5,000 megawatts of capacity and 750 average megawatts of energy. CRITFC believes these systems can provide even larger amounts of energy with appropriate incentives that recognize the full value of these distributed systems.

Utility and government programs can reduce on-site solar costs by supporting cooperatives that can purchase photovoltaic panels at lower-cost bulk rates and providing technical assistance to homeowners, landlords, tribal governments, and others. Programs can also provide additional financial incentives.

The Council should also add recommendations to the Action Plan for Northwest legislatures, energy regulators, and utilities to adopt zero net energy building standards.

California has implemented a mandate for zero net energy (ZNE) buildings. These are energy-efficient building with solar rooftops and batteries where the annual consumed energy is less than or equal to the on-site renewable generated energy[37]. The California goals are:

[37] See California Public Utility Commission: https://www.cpuc.ca.gov/zne/.

- All new residential construction will be zero net energy (ZNE) by 2020.
- 50% of new major renovations of state buildings will be ZNE by 2025.
- All new commercial construction will be ZNE by 2030.
- 50% of commercial buildings will be retrofit to ZNE by 2030.

The 2020 Oregon Biennial Energy Report[38] states:

> Oregon Executive Order 17-20[39] targets equivalent performance to the U.S. DOE Zero Energy Ready Home specifications in the residential building code by 2023 and includes a directive for new state agency construction to be designed to be able to operate as carbon-neutral buildings after 2022. Executive Order 20-04[40] continues the trend toward increased efficiency in new construction and net zero energy buildings by targeting a 60 percent reduction in new building annual site consumption of energy by 2030, excluding electricity used for transportation or appliances, from a 2006 code baseline. This advancement in efficiency makes net zero energy achievable for some residences and building types, when coupled with installation of renewables.
>
> Executive Order 17-20 also includes a requirement for solar-ready provisions in the building code to make future installations of onsite renewables more accessible for building owners, which was incorporated into the Oregon residential building code[41] for new construction in October 2020. As of 2019, the Oregon commercial energy code requires completion of the "2019 Oregon Zero Energy Ready Commercial Code Compliance Form" that, while not specifically requiring onsite or offsite renewables in the code, includes a requirement for an estimation of building energy consumption, renewables needed to achieve net zero energy, and the onsite renewable generation potential. This helps raise awareness of net zero energy buildings and what is needed to achieve that level of performance. Utility programs, energy policies, energy codes, voluntary performance standards, and interested building/homeowners all contribute to advancing net zero buildings.

Building and retrofitting homes and business to be very energy efficient and adding solar or wind energy with a battery system has many advantages. With the right incentives, it would reduce consumer costs, reduce peak demand and energy needs at all other times, and reduce the costs of expanding transmission and distribution power lines. All these factors should be included in calculating the cost effectiveness of these programs.

Zero net energy homes and building also provide energy security to the region and to individuals. They provide insurance against droughts that limit electricity from the dams, wildfires that disrupt transmission lines, cold snaps and heat waves that drive up electricity demand and reduce

---

[38] See https://www.oregon.gov/energy/data-and-reports/pages/biennial-energy-report.aspx.
[39] Office of the Governor, State of Oregon. (November 6, 2017). Executive Order 17-20. https://www.oregon.gov/gov/documents/executive_orders/eo_17-20.pdf.
[40] Office of the Governor, State of Oregon. (March 10, 2020). Executive Order 20-04. https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf.
[41] Oregon Building Codes Division (October 1, 2020). 2017 ORSC Amendments Solar Readiness Requirements for New Residential Buildings. https://www.oregon.gov/bcd/laws-rules/Documents/20201001-17orsc-solar-amendments-tr.pdf.

some renewable resource generation, and other natural disasters that will become more common as the climate warms. These benefits should be recognized in the Council's reliability forecasts.

A major effort to build and retrofit low-income residences that was discussed above will likely reduce the costs of achieving this goal in all structures. For example, the Council called on BPA and utilities to pay the incremental costs of meeting efficient building codes in the 1980s. As a result, the costs of materials and installation were reduced significantly, and these payments were no longer needed.

Finally, the Council should add recommendations to the Action Plan for state and local governments to adjust building codes to ensure that they can accommodate on-site batteries. In some areas building or fire codes limit the size of an on-site battery. These codes should be revised.

Siting Renewable Resources and Transmission Lines

The Council should recommend and participate in a comprehensive plan for siting renewable resources and transmission lines. This effort should also address strategically siting resources near loads, within the grid to relieve congestion, and siting that protects fish, wildlife, and other environmental values.

The recommendations for energy efficiency, demand response, clear price signals, and distributed generation can reduce the need for new resources and additional transmission lines. We recognize that meeting the goals to reduce greenhouse gases will likely require additional development of renewable resources and some transmission lines. Therefore, CRITFC recommends the region prepare a thoughtful plan for where renewable resources should be developed, and where they should not. The plan should provide expeditious siting with clear and uniform standards across all political subdivisions that safeguard fish and wildlife and other tribal resources.[42]

In the mid-1980s, over 70 small hydroelectric facilities were proposed by private developers to the Federal Energy Regulatory Commission for licensing and development in the Salmon River Basin of Idaho. The National Wildlife Federation and the Nez Perce Tribe objected to initial steps in this development proceeding without a comprehensive plan of review. *National Wildlife Federation v. Federal Energy Regulatory Commission, 801 F.2d 150, 1507 (9th Cir. 1986).* The Ninth Circuit Court of Appeals emphasized Congress' commitment in the Federal Power Act to coordinated study and comprehensive planning along an entire river system before hydroelectric projects are authorized. This particular conflict and other similar conflicts over siting small hydro development in the Columbia Basin led to the regional policy adopted by the Northwest Power and Conservation Council and Bonneville Power Administration establishing "protected areas"

[42] CRITFC's member tribes have ample experience with the devastating impacts of carbon free resources, such as the Columbia River Basin's system of dams that deeply impacted the tribes. These impacts have been documented in extensive surveys. https://www.critfc.org/wp-content/uploads/2014/11/circum.pdf Even contemporary projects like the $2 billion pumped storage project proposed near Goldendale WA pose impacts to tribal cultures and economies and can be expected to face stiff tribal opposition. Situated directly on a sacred tribal site, the proposed project directly impacts Yakama Nation cultural, archeological, ceremonial, monumental, burial petroglyph and ancestral use sites.

where hydro project development is discouraged.[43] The current incentives for wind and solar developments are creating an analogous situation, where impacts of uncoordinated renewable resource development may permanently harm Columbia Basin water, fish, wildlife and cultural resources.

According to the Washington Department of Fish and Wildlife, 30 industrial solar projects are proposed for Washington with a footprint of 49,000 acres, or nearly 77 square miles. All but one of those projects would be in the Columbia Basin. The Oregon Department of Energy (ODOE) reports that the state Energy Facility Siting Council has approved seven projects and has seven more under review. The 14 projects cover 27,969 acres or 44 square miles. Local siting process in Oregon would likely add to this total. Other states are facing similar development.

Facilities sited on shrub steppe compromise the function of sagebrush and grassland ecosystems and degrade habitat for deer, elk, greater sage grouse, ferruginous hawk, pygmy rabbit, and many other species. Developments also risk excluding tribal members from their traditional cultural foods and medicines, either through loss of the foods, loss of access to the foods, or both.

A siting plan should take a programmatic approach considering reasonably foreseeable impacts associated with such development. All affected tribes should be included during the early phases of siting, planning, and permitting processes by both state and federal governments. The plan could assess renewable resource sites and prioritize their potential for development. Potential aesthetic, wildlife, and cultural resource impacts, all of which may bear upon site selection, and related issues, such as the need for new transmission, could be examined.

The need for such comprehensive planning was highlighted in a separate concurring opinion in the Whistling Ridge wind development proceeding before the Washington Energy Facility Site Evaluation Council in 2011. *Whistling Ridge Energy Project, Washington EFSEC Order No. 868 (October 6, 2011)***.** "Absent such a plan… economic considerations will be paramount and the broader public interest in protecting the environment could finish second. This is in no one's interest, least of all renewable resource developers" (James Luce, Chair).

The region would benefit from a comprehensive planning process that would guide renewable resource development and siting for wind, geothermal and solar technologies, and for transmission lines to favorable locations and outcomes for regional fish, tribal cultural resources, and energy needs. Common to each of the foregoing plans was the concept of developing criteria that would protect key resources by designating areas where development should be avoided as well as criteria that could guide development to areas where development could be incentivized.

Such criteria could stimulate innovations in renewable resource siting. For example, "low-impact" solar is designed to improve soil health, retain, water, nurture native species, and produce food. These projects preserve natural habitat, rather than leveling land and removing

---

[43] For more information and for the formal Protected Areas provisions, see the 2014 Fish and Wildlife Program's Protected Area Strategy (Part Three, Section IV (A)(5)) and Appendix F to the Council's 2014 Columbia River Basin Fish and Wildlife Program, available at https://www.nwcouncil.org/sites/default/files/2014-12_1.pdf . A 2020 Addendum was added to the 2014 Fish and Wildlife Program, but the text of the 2014 Program – including the Protected Area strategy - remains in effect. *See https://www.nwcouncil.org/sites/default/files/2020-9.pdf* .

topsoil to use gravel or artificial grass.[44] The NPCC has also reported on dual purpose projects that integrate renewable projects such as livestock grazing, beehives, and certain crops. A National Renewable Energy Laboratory study identified over 25,000 reservoirs that could be covered with floating solar systems to reduce evaporation and algae growth and supply ten percent of U.S. power.[45] The criteria might also promote repowering existing sites to improve efficiency and output.

The draft Energy Vision for the Columbia Basin recommends criteria that should be considered in a comprehensive siting plan. CRITFC stands ready to work with the Council, state siting agencies, and others to prepare the plan.

Resource Adequacy

The peak load reductions, energy efficiency, storage, and renewable resources recommendations above will all assist the region to provide adequate electricity supplies.

The Council should work with the Northwest Power Pool as it updates its Resource Adequacy program. This effort is designed to address Pacific Northwest capacity shortfalls through 2030. If successful, the Northwest Power Pool Resource Adequacy Program will achieve electric system reliability while minimizing pressure on the existing hydroelectric system as the *de facto* fallback, with predictable adverse impacts on salmon, when the region is capacity short. The program description states: "the capacity program will not initially focus on longer time-horizon of fuel-related issues (*e.g.,* dry water years), though we understand those issues are important."

CRITFC has recommended that a principal feature of the Adequacy Program should focus on a planning reserve margin (PRM), or reliability buffer, to guard against unanticipated reliability events and protect the region's natural and cultural resources. While individual utility PRMs have typically centered around 15 percent, the Resource Adequacy program should increase this buffer to ensure reliability for both capacity needs and energy shortages in a low-water years. CRITFC notes that the California Independent System Operator (CAISO) requires utilities to purchase a resource adequacy product and is reportedly moving to a 20 percent reserve margin to help solve California's reliability problems.

In the near term, these reserves are likely to require having combustion turbines on standby. There may be opportunities to fuel these plants with biofuels that reduce their net carbon footprint. CRITFC recommends that the Power Pool and utilities prioritize such opportunities. Additional near-term reserves are likely to be fueled by natural gas. While CRITFC strongly supports the long-term elimination of all fossil fuels to address the climate crisis, in the near term, there may be circumstances where the choice is burning some natural gas or shutting down river operations and killing migrating salmon. This has happened in the past with devastating effects to tribal resources. Therefore, CRITFC supports rate treatment for the costs associated with maintaining, staffing, fuel contracts and fuel storage, and other costs for these resources.

[44] InSPIRE project stands for Innovative Site Preparation and Impact Reductions on the Environment. From NPCC June 2021 presentation.
[45] Floating Photovoltaic Systems: Assessing the Technical Potential of Photovoltaic Systems on Man-Made Water Bodies in the Continental United States, Spencer *et al*, Environmental Science and Technology, 2019, 53(3), pages 1680-1989.

These actions would likely address near-term capacity concerns and low-water energy concerns; however, there are high costs associated with maintaining generating resources that may only run a few times a year or a few weeks during a decade. Over the longer term, implementing CRITFC's recommendations on reducing peak loads, promoting energy efficiency, properly integrated renewable resources, and other dry-year strategies, provide a range of other longer-term actions to maintain resource adequacy at lower costs without damaging fish and wildlife and other tribal resources.

Nuclear Power

The Council's draft plan does not include a discussion of small modular nuclear reactors, although they are discussed in the technical material used to develop the plan[46]. There are several efforts in the Northwest to explore the development of this technology. There have also been recent news articles on these developments[47]. For example, X-energy has submitted a proposal to the U.S. Department of Energy to install several reactors on 22 acres of the Hanford Nuclear Reservation. The Confederated Tribes of the Umatilla Reservation "does not support the deployment of Small Modular Nuclear Reactors (SMR or SMNR) or any new/additive nuclear missions at the Hanford Site."[48]

X-energy claims that these smaller reactors can be used for base load or load following. The website says these reactors operate at temperatures above 750ºC (1,382ºF). It is hard to see how such high temperatures could be cycled on and off to fill in times when solar and wind energy is not available. These plants are also expected to have high capital costs. If they operate intermittently to follow load, they might only operate a few hours a day or a few months every few years; therefore, the cost per kilowatt hour is likely to be much higher than the energy efficiency, demand response, and the storage alternatives described above. **Given the interest in this technology, the Council should address the costs of these reactors, including the integration issues in the final plan.**

Any consideration of new nuclear plants should also address waste storage and safety issues that have plagued the current nuclear industry for more than 60 years.

Conclusion

The Northwest is at a critical crossroad, facing challenges to the health of the planet and the future of iconic fish and wildlife. These challenges are especially important to tribal resources that have sustained tribal people since time immemorial.

One path leads to affordable, carbon-free energy that harmonizes with the ecosystem. This future would prioritize energy efficiency, renewable resources, new storage technologies, reductions in peak loads, and other strategies that are compatible with the needs of fish and wildlife. These efforts would reduce the impacts of renewable resource projects and transmission lines on tribal resources and save consumers money.

---

[46] https://www.nwcouncil.org/2021powerplan_emerging-technologies_generating-resource-reference-plants.
[47] https://www.seattletimes.com/seattle-news/environment/this-next-generation-nuclear-power-plant-is-pitched-for-washington-state-can-it-change-the-world/.
[48] August 6, 2021, Letter from CTUIR Chair Kathryn Brigham.

The other path creates conflicts between renewable resources and tribal resources and results in higher costs for consumers.

Choosing the first path will require the courage to act, common-ground solutions, a commitment of resources to accomplish the hard work ahead, and the humility to periodically evaluate and course-correct as necessary based on new information and understanding.

CRITFC and its member tribes are committed to working with other regional interests to lead the region to a brighter and healthier future. Our people and the resources that sustain them depend on it.

If you have questions or need additional information, please contact Rob Lothrop, lotr@critfc.org.

Sincerely,

Aja K. DeCoteau
Executive Director

Cc: NPCC Members