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April 26, 2012

MEMORANDUM

TO: Power Committee members
FROM: John Fazio, Senior Power System Analyst
SUBJECT: PNUCC Northwest Regional Forecast

Dick Adams and Shauna McReynolds from the Pacific Northwest Utilities Conference Committee (PNUCC) will brief the power committee on the latest Northwest Regional Forecast of Power Loads and Resources (NRF).¹ The NRF, which has been in publication for over 50 years, reports utility-provided information on electricity demand and resources. It calculates the balance between loads and resources over the next 10 years to assess both energy and peaking needs. Each utility provides its own load forecast and resource capability to the PNUCC. Key findings are summarized in the attachment and include:

- **Demand:** Increasing steadily at a rate of about 150 to 200 average megawatts annually
- **Resources:** Recent additions add up to about 1,500 megawatts, with roughly equal amounts of gas-fired generation, wind and efficiency
- **Needs Assessment:** Shows a shift to winter peaking deficits, with a gap between peak single-hour load and resource capability of as much as 3,000 megawatts

In addition, the NRF tallies up planned conservation, generation and contract purchases identified in utilities' most current integrated resource plans (IRP). Each utility IRP is developed with a unique combination of key parameters such as need, cost, risk and policy issues. This aggregated tally of utility-planned resources shows plans to cover the peaking gap are mostly gas-fired generation and efficiency, with about 50 to 60 percent being met with efficiency plus wind generation to meet states' renewable resource mandates.

Comparing the NRF planned resource results to the Sixth Plan regional resource strategy presents a good opportunity for review and focus of key issues for the mid-term assessment. PNUCC has provided its summary of key issues in the attached letter to chairman Dukes, dated March 27.

Attachments

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¹ The NRF can be found at <http://www.pnucc.org/system-planning/northwest-regional-forecast>.

Executive Summary

The Place to Find the Utility Perspective

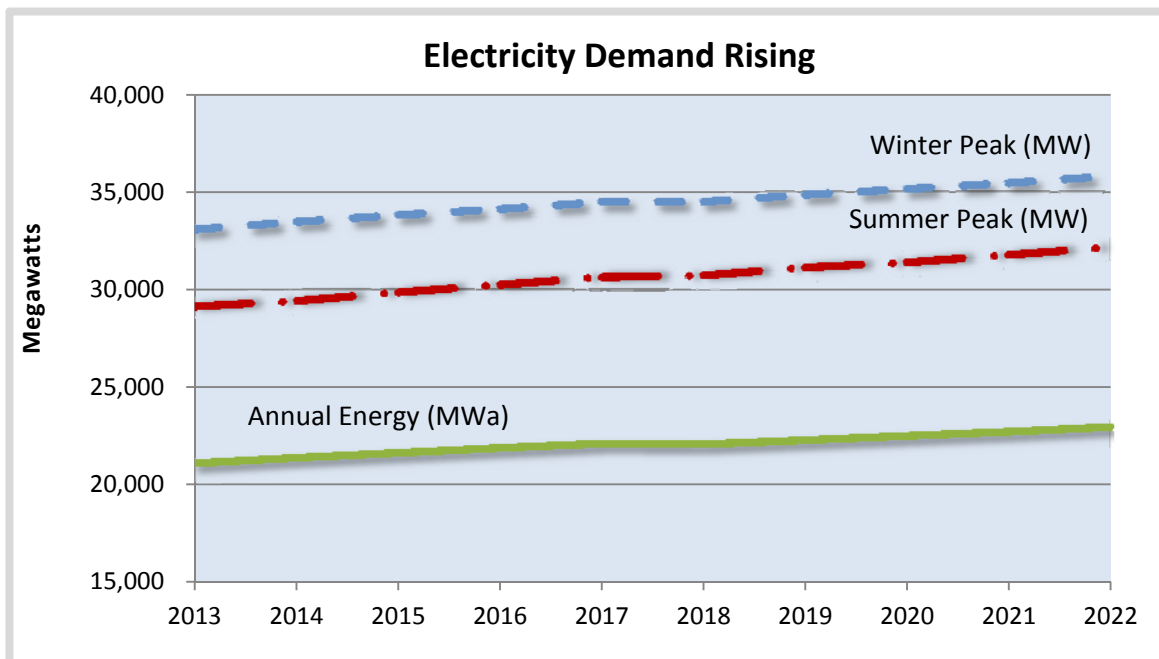
The Northwest Regional Forecast, an annual look at electric demand and resources, is the only assessment of the Northwest’s need for power from the utilities’ perspective. It serves as a regional “GPS” indicating where the power industry is now and what conditions look like up ahead. The *Forecast* provides a regional snapshot of actions utilities are taking to ensure an adequate, reliable power supply for the future.

As a compilation of Northwest utilities’ integrated resource plans, the *Forecast* spells out how we are meeting today’s challenges and power customers’ needs. PNUCC has provided the region with this annual update for more than half a century. Here’s a summary of this year’s key findings.

Electricity Demand Steadily Rising

The regional demand for electricity is influenced by an array of factors, including the economy, advancements in technology and our growing population. In addition, there are state and federal laws and a variety of energy policies that utilities have to consider in estimating electric demand.

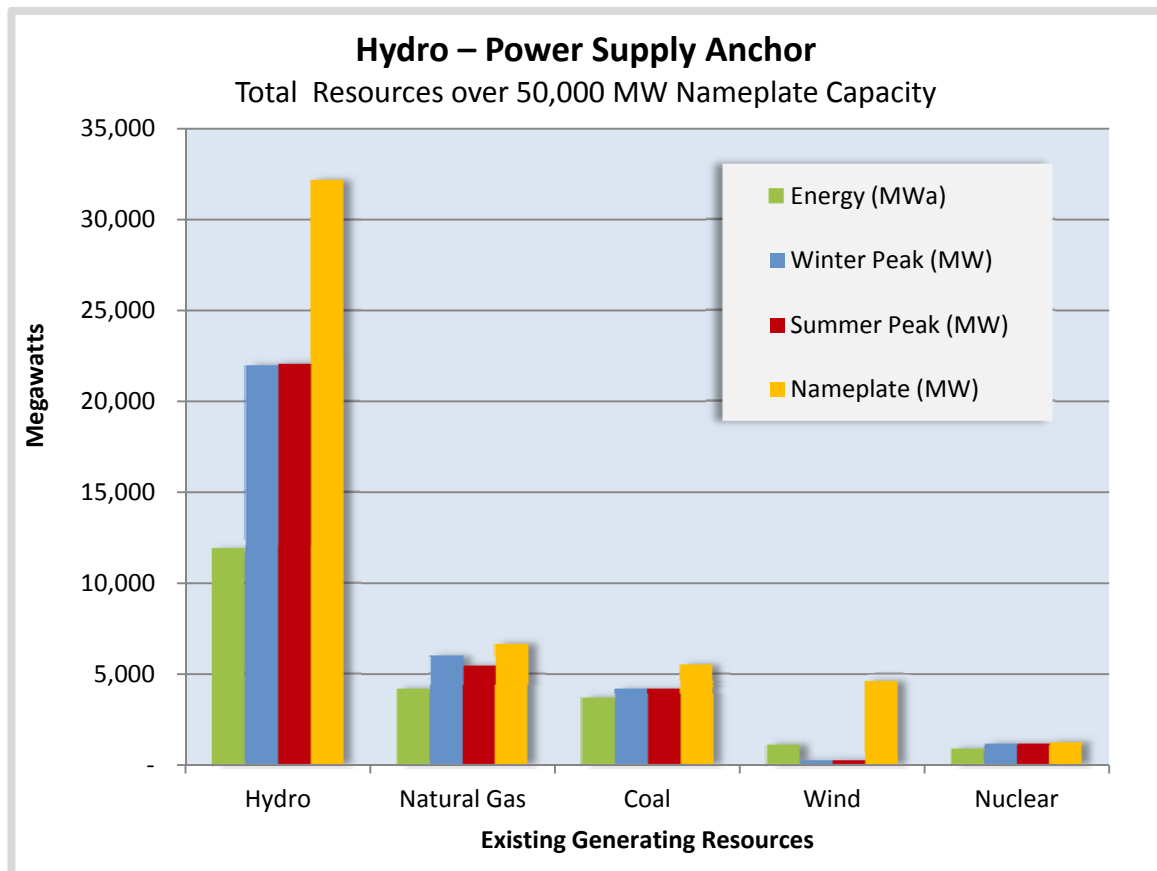
The 2012 demand forecast shows loads growing 150 to 200 average megawatts (MWa) annually over the next decade. This growth is what utilities anticipate after they have factored in savings from their energy efficiency programs. This year’s firm load forecast is up 450 MWa from last year, mostly due to a new five-year firm commitment by Bonneville Power Administration to serve an industrial load previously being met with power from the market.



The Type of Technology Matters

Generating resources contribute to meeting our power needs in different ways depending on what technology they use. Resources such as nuclear and coal plants produce constant energy, and their peak capability is similar to their annual energy production. Other resources, like some natural gas plants, sit ready to fire up to meet our needs in peak demand situations for a couple of days or just a few hours a month. And intermittent resources – wind and solar projects – produce power when the wind is blowing and the sun is shining to help keep electricity flowing. In total, the region depends on more than 50,000 MW of generating resources to provide 21,900 MWa of firm energy and 33,800 MW of firm peaking capability to meet today’s demand.

Hydropower is the largest component of the resource mix, and the Northwest relies heavily on it to meet from 50 to 80 percent of our demand for electricity, depending on water supply and weather conditions. Hydropower is flexible, constant and agile. System operators count on quickly dialing hydropower generation up or down to keep the power system stable and in balance as demand for electricity and wind generation fluctuate from moment to moment. For planning purposes, the hydropower we depend on is what can be generated in the lowest water conditions. The result is 11,800 MWa of firm energy and 22,000 MW of firm peaking capability.



A Shift in Focus on Power Needs

Utility planners have found that no single yardstick can adequately describe our resource needs. This *Forecast* assesses annual energy, as well as winter peak and summer peak needs, in order to capture the multi-dimensional characteristics of the region's power system.

Utilities have shifted their focus from annual energy needs to how to meet peak demand. On an annual energy basis, we have adequate power supply. However, the analytics are telling us that there is a need to acquire firm resources to help meet both winter and summer peak needs over the next 10 years.

The bottom line is this: in the near term, the region needs to acquire another 2,000 to 3,000 MW of firm peak capacity. This estimate takes into account all the savings expected from demand-side programs, and it means the region needs new generating resources to maintain our reliable system.

Utilities are also developing new operating tools to assist with integrating intermittent wind and solar generation to provide what they call "flexible capacity". These flexible resources are able to react quickly to rapid changes in wind generation or electricity demand. While this need is not quantified in this year's *Forecast*, it is a growing requirement being factored into future resource decisions.

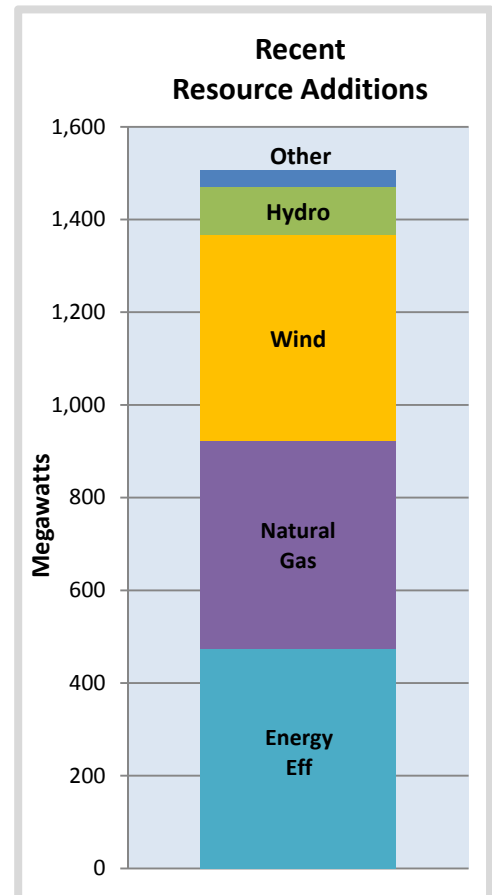
New Resources Stack Up

Between the resources acquired this year and what is now under construction, utilities have added 1,500 MW of nameplate capacity and energy savings to the power system.

New generating resources totaling over 300 MW were brought on line in 2011. These included a waste-to-energy project in Spokane, two wind projects in Idaho, a couple of small hydro projects, and the Dave Gates Generating Station, a natural gas plant built by NorthWestern Energy to provide system regulation.

In addition, the region has another 700 MW of generating resources under construction. The two largest projects are a 300 MW natural gas plant in Idaho and a 350 MW wind farm for Puget Sound Energy. There are also upgrades at existing hydro projects and a new cogeneration project being built in Oregon.

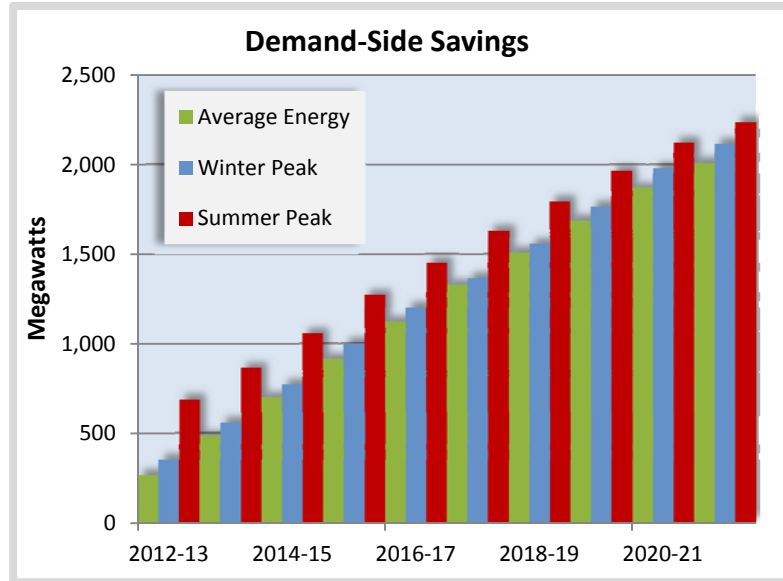
Utilities are also investing heavily in demand-side management and have added more than 470 MW of program savings in 2009 and 2010. According to the most recent reports from the Northwest Power and Conservation Council's Regional Technical Forum, utilities have acquired more than 220 MWa of savings annually for the last five years analyzed (2006-2010).



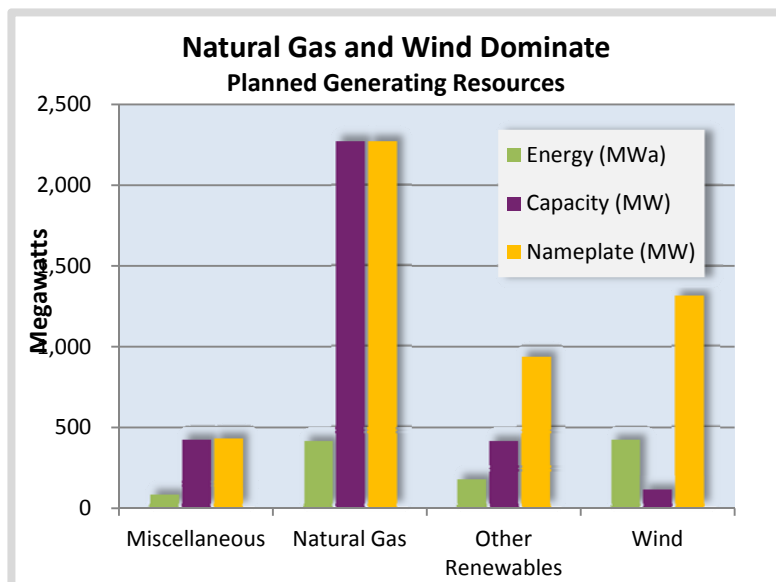
The Future: Demand-Side Savings, Wind and Natural Gas

Looking ahead, utilities are counting on more than 6,500 MW of demand-side savings and new generating resources to fill growing firm peak power needs and to meet state policy requirements.

Estimates of expected power savings over the next 10 years are foundational to utilities' resource planning efforts. Companies tailor their demand-side savings programs to fit their customers, and they work to capture savings through energy efficiency programs, distribution efficiency efforts, fuel switching, demand response and market transformation. Utilities are projecting savings of more than 2,000 MWa over the next 10 years.



Along with planned demand-side savings, utilities are getting ready to build or acquire generating resources. They plan to use natural gas-fired plants and wind turbines to fill most of their new resource needs over the next 10 years. Utilities have 2,300 MW of natural gas-fired generation on the drawing board, most of which is intended for peak demand situations. Wind generation will continue to be a major component of future electricity generation. The *Forecast* shows another 1,300 MW of wind turbines in utilities' plans, primarily to meet state renewable energy policies.



Besides wind, the region is also looking at dozens of other types of renewable energy projects that add up to 900 MW of nameplate capacity. These include turbine and generator upgrades at Wanapum and Priest Rapid dams; geothermal, biomass, small hydro and solar projects; and a tidal power pilot program.

Overview

Each year the *Northwest Regional Forecast* compiles utilities' 10-year projections of electric loads and resources which provide information about the region's need to acquire new power supply. The *Forecast* is a comprehensive look at the capability of existing and new electric generation resources, long-term firm contracts, expected savings from energy efficiency programs and other components of electric demand for the Northwest. This year's report presents estimates of annual average energy, seasonal energy and winter and summer peak capability. These metrics provide a multi-dimensional look at the Northwest's need for power and underscore the growing complexity of the power system. This information can be found in Tables 1, 2, 3 and 4 of the *Northwest Region Requirements and Resources* section of the report.

Northwest generating resources are shown by resource type. Existing resources include those resources listed in Tables 5, 6 and 8. Table 5 *Recently Installed Resources* highlights those projects that have come on-line most recently, and Table 6 *Under Construction* lists those generating projects where construction has started and that utilities are counting on to meet need. Table 8 *Northwest Generating Resources* is a comprehensive list of generating resources that make up the electric power supply for the Pacific Northwest. These resources are utility-owned, utility contracted, and owned by independent power producers.

In addition to those resources and energy efficiency programs currently in place, utilities continue to acquire resources and implement conservation programs to meet future demand. Table 7 *Planned Resources* captures resources utilities have identified to meet their own needs. The table shows the expected savings from utilities' demand-side management programs and planned generating projects that are being counted on to meet the growing demand. This information is a compilation of what utilities have reported in their individual integrated resource plans.

Planning Area

The Northwest Regional Planning Area is that area defined by the Pacific Northwest Electric Power Planning and Conservation Act. It includes: the states of Oregon, Washington and Idaho; Montana west of the Continental Divide; portions of Nevada, Utah, and Wyoming that lie within the Columbia River drainage basin; and any rural electric cooperative customer not in the geographic area described above, but served by BPA on the effective date of the Act.





March 27, 2012

Ms. Joan Dukes, Chair
Northwest Power and Conservation Council
851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204

Dear Chair Dukes,

On behalf of the PNUCC Board of Directors and its members, I would like to express our interest in participating in the Council's upcoming mid-term assessment of the Sixth Power Plan. We had the opportunity to talk about the assessment with Power Committee Chair Jim Yost and members of your staff at our board meeting earlier this month. Those discussions were extremely valuable, and we hope to have additional such meetings in the coming months.

The Council's Power Plan is a vitally important document for the region. Utilities, interest groups, the media, and policymakers all make use of it, as a source of data, a yardstick for accomplishments, and a one-stop composite picture that explains key Northwest energy issues and policies. That's why keeping the information in the plan as accurate as possible is essential, and well worth the time and effort to do it right.

To give you a snapshot of how we view the mid-term assessment, we have attached a summary of PNUCC's goals and interests in several issues at the heart of the power plan. We also see the assessment as a great opportunity to provide the region with an up-to-date document that illuminates current challenges facing the electric power industry in the Northwest.

We would like very much to meet with the Power Committee in the formative phases of the assessment and participate in any committees or advisory groups that you establish. We are willing to roll up our sleeves and delve into the data with you over the next six months to help get this important update done. Please contact me or Dick Adams, PNUCC's Executive Director if you have any questions or would like to set up specific meetings to discuss this further.

Sincerely,

Jack Speer, Chairman
PNUCC Board of Directors

Attachment

cc: Council Members, Steve Crow, Terry Morlan, Mark Walker
PNUCC Board of Directors

Sixth Power Plan Mid-term Assessment PNUCC Goals and Issues

GOALS

While we expect the assessment will not include the same level of intense analysis done for the plan, we would like to see an assessment that:

- Contains accurate, reality-checked information and confirms that the Council and PNUCC members share a common view of the Northwest power system and its present and future challenges.
- Explains clearly any significant changes to the plan's themes or direction.
- Tees up the key issues for the Seventh Power Plan and communicates them in a manner that customers, elected officials, and others can easily understand.

KEY ISSUES

Conservation

We'd like to pitch in with the substantial technical work needed to give a clear picture on where we are with conservation acquisition. We suggest convening a group with representatives from private and public utilities and BPA to work with Council staff to:

- Estimate aggregate conservation savings reported by utilities, NW Energy Efficiency Alliance, Energy Trust of Oregon and from efficiency improvements from new codes and standards.
- Update estimates of expected conservation acquisitions in the rest of the action plan period, based on factors like economic activity, load growth, and changes in cost-effectiveness criteria.

Generating Resources

We think the assessment needs to look closely at whether assumptions in the plan are on track with what's happening now. Specifically, it should examine:

- What utilities are doing with respect to natural gas facilities for electricity generation; for example, the plan doesn't show any plants are anticipated until late in the 20 year planning horizon.
- How utilities are meeting state renewables requirements, including facilities being built and renewable energy credit purchases, and how these activities match up with estimates. Estimates of future renewables development also need updating.

Capacity and Flexibility Planning

We recommend attending to the issue of flexibility and looking at how we are doing in providing services to support wind generation. The assessment should:

- Review recent actions taken to address growing capacity and flexibility needs.
- Identify additional analytic tools that can help. This will provide a head-start on this important issue for the Seventh Power Plan.

Forecasts and Assumptions

We'd like to see the plan's forecasts compared to: actual load growth, wholesale market prices in the past few years, recent natural gas prices, and other economic drivers.

Energy Policies

The assessment should verify if assumptions in the plan about federal energy policies, such as a carbon tax, lighting standards, and renewable energy tax credits, are still valid today. It should update discussions of state actions that affect the Northwest energy industry, including California's renewable energy laws and policies.