

A Proposed Pilot Capacity Standard for the Pacific Northwest

The Pacific Northwest Resource Adequacy Forum¹ (Forum) has developed a regional pilot capacity standard (to be used in conjunction with the previously adopted energy standard) for guidance in long-term resource planning. The Forum recommends that the Northwest Power and Conservation Council (Council) adopt this pilot standard as an interim guide for regional entities to use in their planning efforts with the understanding that the Forum will test and refine the standard and propose a final standard within a year. The Forum also recommends that this interim regional standard be submitted to the Western Electricity Coordinating Council (WECC) in order to inform WECC's ongoing process to develop West-wide adequacy standards.

The term “standard” in this context does not mean mandatory compliance nor does it imply an enforcement mechanism. Rather, it is meant to be a gauge used to assess whether the Northwest power supply is adequate in a physical sense, that is, in terms of “keeping the lights on.” It can be thought of as the minimum threshold for resource acquisition.

The regional resource adequacy standard consists of a metric (something that can be measured) and a target (an acceptable value for that metric) for both energy and capacity capabilities of the system. One of these targets will be the limiting constraint for a region or sub-region in the West. For the Northwest, the energy target is most likely the limiting factor. Therefore, the Forum is comfortable recommending an interim metric and target for the capacity capabilities of the region's power supply system.

The Forum believes that the form of the capacity metric and the initial values of the capacity targets presented in this paper are appropriate. As the pilot effort to test and refine the metric and targets progresses, the underlying assumptions and capacity counting protocols for this regional capacity standard will be finalized. Within a year, the Forum will recommend the final regional capacity standard to the Council for adoption. However, even after the final standard is adopted, the intent is for this process to be dynamic. The Forum recommends that both the energy and capacity targets be re-evaluated on an annual basis to ensure that they continue to mark the threshold for an adequate Northwest power supply.

The Pacific Northwest Regional Capacity Standard

The **capacity metric** for the Pacific Northwest² is defined to be the planning reserve margin (PRM), which is the surplus *generating capability over expected peak load* during the *peak load hours* for each month³ (also referred to as the surplus sustained-peaking capability), in units of percent, where:

- *Generating capability* is defined as the sustained peaking capability⁴ from:
 - All non-hydro resources⁵ (adjusting for fuel-supply limitations and/or environmental constraints and **not** counting resources on scheduled maintenance and **assuming that no resource is on forced-outage**)
 - Uncontracted in-region Independent Power Producer (IPP) resources: **100 percent in winter and in summer**, that portion of IPP generation that does not have direct access to out-of-region transmission (**1,000 megawatts** will be used as a placeholder until better information is obtained)
 - Hydroelectric resources, based on critical water⁶ conditions
 - Hydro flexibility (additional hydroelectric generation that can be provided without invoking emergency actions): **2,000 megawatts in winter and 1,000 megawatts in summer**
 - Out-of-Region spot market resources: **3,000 megawatts in winter and 0 megawatts in summer**
 - The net of firm imports and exports into and out of the region
- The *peak load hours* are defined to be the 10 consecutive hours per day over 5 days that yield the highest average load.
- *Expected peak load* is defined as the average load over the peak load hours, based on the expected coldest (or hottest) daily-average temperature.
- Until better information is obtained, the capacity targets will be assessed using daily average regional temperatures and loads.

The **pilot capacity target** for the Pacific Northwest is **25 percent for winter and 19 percent for summer**. The generating capability of the power supply in these months should be at least this much higher than the expected peak load over the peak load hours of the day. The capacity targets are comprised of:

- A component to cover operating reserve requirements: **6 percent**⁷ for both winter and summer, and
- A component to cover planning adjustment reserve⁸ requirements: **0 percent for winter and 7 percent for summer**, and
- A component to cover the load increase arising from a one-in-twenty year temperature deviation from the expected coldest/hottest day: **19 percent for winter and 6 percent for summer**.

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Endnotes

1. The Pacific Northwest Resource Adequacy Forum was created in response to action items ADQ-1 and ADQ-2 in the Council's 5th Power Plan (see www.nwcouncil.org).
2. The Pacific Northwest is defined to be the geographical area referenced in the 1980 Northwest Power Act, which includes the states of Oregon, Washington, Idaho and the western part of Montana.
3. The pilot capacity standard is in the form of a planning reserve margin (PRM), which can be calculated for every month. However, only the most critical month in winter and in summer are needed for resource planning purposes.
4. Peaking capability is the maximum sustained peaking capacity associated with the peak load period adjusted for fuel limitations or other operating constraints. For out-of-region resources, the peaking capability should be that portion of the resource that is contracted to serve regional loads. The Council's Natural Gas Advisory Committee will evaluate whether sufficient gas supply and transportation capacity is available to allow for counting the full peaking capability of the region's gas-fired power plants to meeting monthly or seasonal PRMs.
5. For the pilot standard, wind generation will be assessed at 15 percent of nameplate capacity.
6. For the region, under current operating constraints (including actions listed in NOAA Fisheries' biological opinion), the critical water year is defined by the hydrologic conditions from August 1936 through July 1937.
7. The 6 percent operating reserve requirement is an average for the region. The requirement calls for a 5 percent reserve for hydroelectric generation and a 7 percent reserve for thermal generation. The region's firm energy supply is almost equally divided between hydroelectric and thermal generation, thus the 6 percent average.
8. The planning adjustment reserve is intended to compensate for lack of non-firm supplies (such as out-of-region spot market capacity and hydro flexibility). For winter months, due to the availability of a healthy out-of-region spot market, no adjustment reserve is required. For summer, however, because the Northwest is competing with out-of-region load serving entities for spot market supplies, a 7 percent adjustment reserve requirement is suggested. These suggested values are derived from a loss of load probability (LOLP) analysis that assesses the likelihood of potential future capacity problems.