



# Resource Adequacy Pilot Capacity Standard

**Resource Adequacy Forum  
Steering Committee  
July 28, 2006**

# Objectives

1. Decide on the form for the capacity **metric**.
2. Decide on initial capacity **targets** for winter and summer.
3. Decide on the **language** in the pilot capacity standard document.
4. Agree to forward this proposal to the Council.

# Why Now?

- WECC needs input from the NW to aid in its development of a west-wide adequacy standard.
- BPA would like a standard in place to aid in its regional dialog efforts.

# Why Not Now?

- No disagreement over the form of the capacity metric.
- This is a pilot standard, implying that the targets are not permanent.
- The region is currently not capacity constrained, therefore we have time to refine the capacity targets.

# Getting to a Capacity Target



# Temperature Statistics

## Regional Daily Average Temperatures

Winter Months		December		January		February		March	
Prob		Temp	Diff	Temp	Diff	Temp	Diff	Temp	Diff
100%	Hottest	56.3	19.5	54.2	19.1	57.1	18.2	60.0	16.7
95%	19 in 20	46.2	9.4	45.5	10.4	47.9	9.0	51.7	8.4
50%	Average	36.8		35.1		38.9		43.3	
5%	1 in 20	25.9	<b>-10.9</b>	19.6	<b>-15.5</b>	27.2	<b>-11.7</b>	35.5	<b>-7.8</b>
0%	Coldest	3.6	-33.2	3.3	-31.8	6.6	-32.3	18.7	-24.6

Summer Months		June		July		August		September	
Prob		Temp	Diff	Temp	Diff	Temp	Diff	Temp	Diff
100%	Hottest	82.0	21.0	89.5	22.8	85.1	18.9	80.6	20.1
95%	19 in 20	70.6	<b>9.6</b>	76.1	<b>9.4</b>	74.7	<b>8.5</b>	69.6	<b>9.1</b>
50%	Average	61.0		66.7		66.2		60.5	
5%	1 in 20	53.2	-7.8	59.2	-7.5	59.0	-7.2	51.8	-8.7
0%	Coldest	46.0	-15.0	51.1	-15.6	53.0	-13.2	43.0	-17.5

# Temperature – Load Relationship

For weekdays

Based on 1995-2002 NW data

<b>Month</b>	<b>MW-days/degree</b>
January	-230
February	-261
July	183
August	129

# Load Deviations

(From Weekday Average\* Regional Load)

MW-days	January		February	
	Load	Diff	Load	Diff
Avg	24,600		23,600	
1 in 20		3,556		3,062
	July		August	
Avg	20,300		20,200	
1 in 20		1,721		1,097

\* Based on average daily temperature.

# Reserve Margin\* for a 1-in-20 Year Event

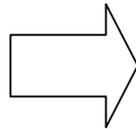
(Based on Weekday Average Regional Loads)

Jan	Feb	Jul	Aug
15%	13%	9%	6%

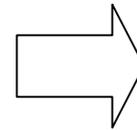
\* Reserve margin is equal to the load deviation divided by the average daily load, rounded up.

# Proposed Capacity Target

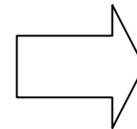
**Target:**  
**21% Jan**  
**15% Jul**  
for the  
Sustained  
Peaking  
Capacity  
Reserve  
Margin



## Components

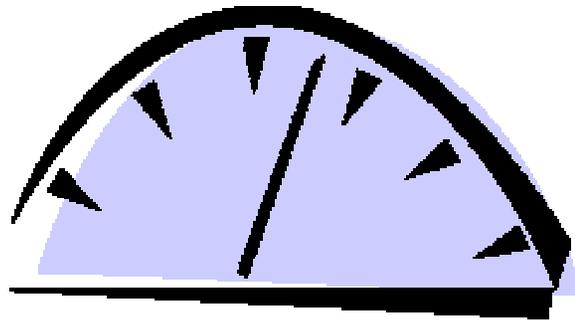


**15%** (January)  
**9%** (July) for  
Adverse Temperature



**6%** for  
Contingency and  
Supplemental Reserves  
(7% for Thermal and  
5% for Hydro)

# Current Reserve Margins



# Reserve Margins - January

<b>Jan 2007</b>	<b>1-Hour</b>	<b>2-Hour</b>	<b>4-Hour</b>	<b>10-Hour</b>
<b>Hydro</b>	28,646	24,373	23,243	19,419
<b>Non-Hydro</b>	14,541	14,541	14,541	14,541
<b>Firm Imp</b>	-934	-934	-934	-934
<b>Spot Imp</b>	3,000	3,000	3,000	3,000
<b>Total Res</b>	45,253	40,980	39,850	36,026
<b>Demand</b>	28,511	28,464	27,692	25,670
<b>Balance</b>	16,742	12,517	12,158	10,356
<b>Reserve</b>	<b>59%</b>	<b>44%</b>	<b>44%</b>	<b>40%</b>

# Reserve Margins - July

<b>Jul 2007</b>	<b>1-Hour</b>	<b>2-Hour</b>	<b>4-Hour</b>	<b>10-Hour</b>
<b>Hydro</b>	27,957	24,835	24,474	23,339
<b>Non-Hydro</b>	14,034	14,034	14,034	14,034
<b>Firm Imp</b>	-2,525	-2,525	-2,525	-2,525
<b>Spot Imp</b>	0	0	0	0
<b>Total Res</b>	39,466	36,344	35,983	34,848
<b>Demand</b>	22,349	22,320	22,304	22,101
<b>Balance</b>	17,117	14,024	13,679	12,747
<b>Reserve</b>	<b>77%</b>	<b>63%</b>	<b>61%</b>	<b>58%</b>

# 10-Hour Sustained Peak Capacity Reserve Margin

<b>2007 10-hour peak</b>	<b>January (Current)</b>	<b>January (LOLP 5%)</b>	<b>July (Current)</b>	<b>July (LOLP 5%)</b>
Hydro ('37)	19,419	19,419	23,339	23,339
Non-hydro	14,541	10,541	14,034	10,034
Firm Imports	-934	-934	-2,525	-2,525
Spot Imports	3,000	3,000	0	0
Total Resource	36,026	32,293	34,848	30,848
Load (Avg)	25,670	25,670	22,101	22,101
Balance	10,356	6,356	12,747	8,747
<b>Reserve</b>	<b>40%</b>	<b>25%</b>	<b>58%</b>	<b>40%</b>

# Observations

- If the region's power supply were just barely meeting its energy needs, the capacity reserve margins for both winter and summer would still be higher than the proposed targets.
- Although in February it is close.
- The northwest is still an energy limited region.

# Pilot Capacity Standard

- **Metric** – Surplus sustained-peaking capacity (%)
  - Over the 10 peak-load hours of the day for a 5-day period, calculated for each month
  - Assuming 3,000 MW of available out-of-region capacity per hour in winter and 0 MW in summer
  - Using loads derived from normal temperature conditions
  - Using hydro generation based on critical hydro ('37 water)
- **Target** – 21 percent for Winter (January)  
15 percent for Summer (July)