Northwest Power and Conservation Council

Prototype Methodology for a Northwest Regional Capacity Assessment

Resource Adequacy Steering Committee

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Portland, OR

Northwest Power and Conservation Council

Objective

- Design a capacity metric that is transparent and easy to calculate.
- Link the capacity metric to a more sophisticated analysis (e.g. LOLP).
- Calibrate the energy and capacity targets to assure that they yield the same level of resource adequacy.

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Prototype Capacity Metric

- Calculate resource capability in excess of load over a sustained peak period (hours)
- Use sustained peaking capability for hydro
- Average the hourly loads over the peak period
- Compute the surplus sustained peaking capacity (as a percentage over load)

Proposed Capacity Standard

- Metric – Surplus sustained-peaking capacity (%)
  - over the highest load period (for each month)
  - period duration is TBA hours
  - normal weather
  - max generation shaped to load
  - use critical hydro (to be discussed)

- Target – TBA percent (i.e. reserve margin)

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Top-Down Regional Capacity Assessment

January 2006	1-Hour	2-Hour	4-Hour	10-Hour
Hydro ('37)	26,850	21,131	20,541	18,686
Non-hydro	13,760	13,760	13,760	13,760
Uncommitted	0	0	0	0
Firm Imports	-1,218	-1,218	-1,218	-1,218
Spot Imports	0	0	0	0
Total Resource	39,392	33,673	33,083	31,228
Load (Avg)	25,633	25,506	24,847	22,691
Balance	13,759	8,168	8,236	8,537
Reserve	**54%**	**32%**	**33%**	**38%**
Load ('89)	34,533	34,361	33,470	30,555
Balance	4,859	-688	-387	673
Reserve	**19%**	**-3%**	**-2%**	**3%**

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Regional Capacity Assessment
(With spot market assumptions)

January 2006	1-Hour	2-Hour	4-Hour	10-Hour
Hydro ('37)	26,850	21,131	20,541	18,686
Non-hydro	13,760	13,760	13,760	13,760
Uncommitted	0	0	0	0
Firm Imports	-1,218	-1,218	-1,218	-1,218
Spot Imports	3,000	3,000	2,000	1,500
Total Resource	42,392	36,673	35,083	32,728
Load (Avg)	25,633	25,506	24,847	22,691
Balance	16,759	11,168	10,236	10,037
Reserve	**65%**	**44%**	**41%**	**44%**
Load ('89)	34,533	34,361	33,470	30,555
Balance	7,859	2,312	1,613	2,173
Reserve	**23%**	**7%**	**5%**	**7%**

Observations

- Single hour reserve is misleading for NW
- Covering a cold snap under critical hydro requires a high percentage of reserves
- 4-hour or 10-hour duration may be good candidates for the capacity metric
- Target reserve margin would not be based on worst case situation (e.g. February ‘89 cold snap & critical hydro), but rather on reserve margin needed for LOLP of 5%

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Data Requirements

- Individual utilities would assess their own sustained peaking capacity and load.
- That data will be collected and aggregated to assess the regional status.
- The bottom-up approach will be compared to the top-down approach as a means of verification.