

An illustration of various electrical power plugs and a wall outlet. The background shows a white wall outlet with two vertical slots and a ground hole. In the foreground, several power cords with different plug types are scattered. The plugs are labeled with letters: 'A', 'N', 'O', 'R', 'E', 'L', 'I', and 'Z'. The plugs are in various colors: grey, white, brown, blue, yellow, and orange. The text 'Power Supply Outlook Winter Seasons 2003-06' is overlaid on the image in a large, bold, black font with a white outline.

Power Supply Outlook Winter Seasons 2003-06

Northwest Power Planning Council
December 10, 2002

The Dark Ages... they
said it couldn't happen
again.



Reliability is a function of

Supply

Demand

Renewables

Imports

Thermal

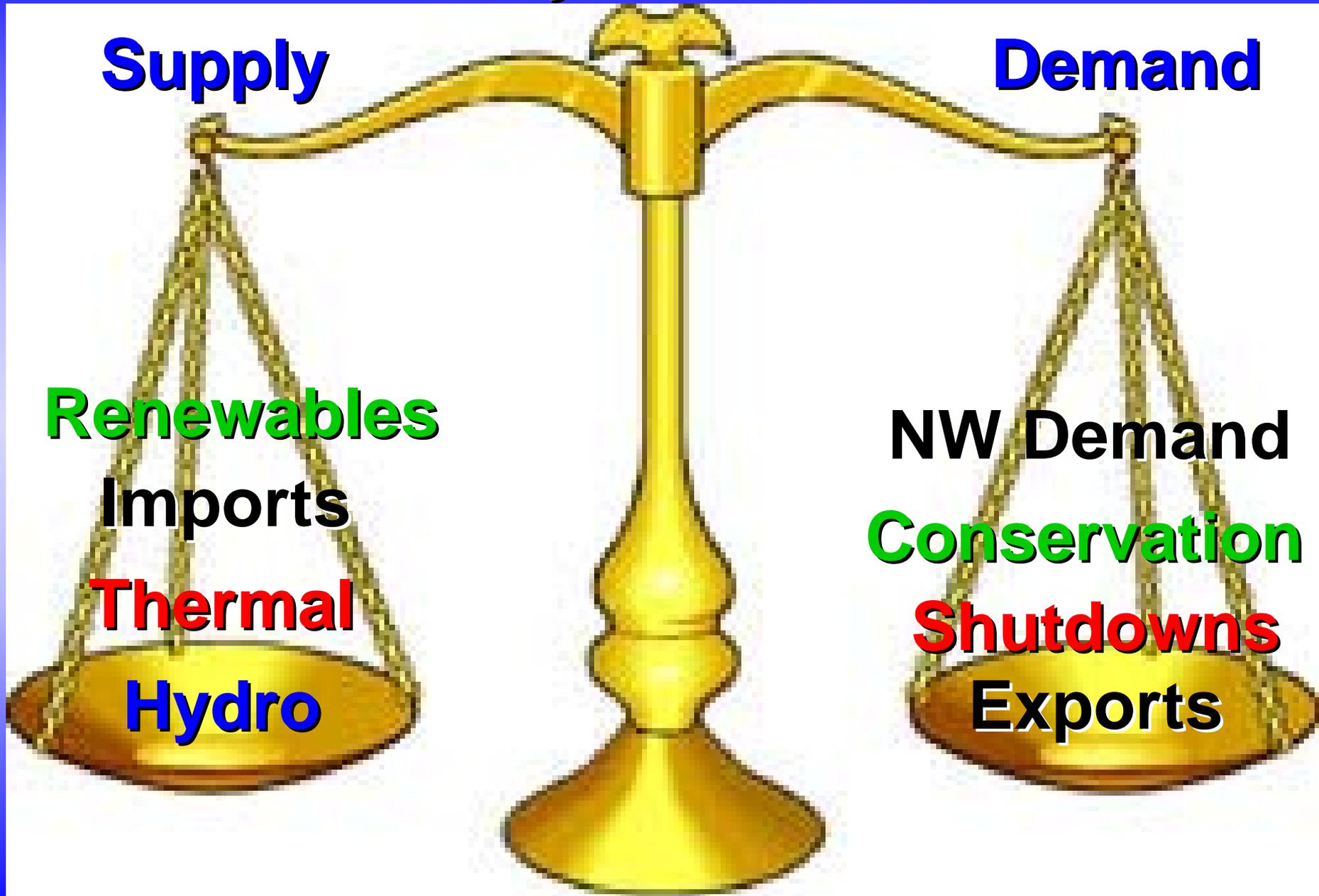
Hydro

NW Demand

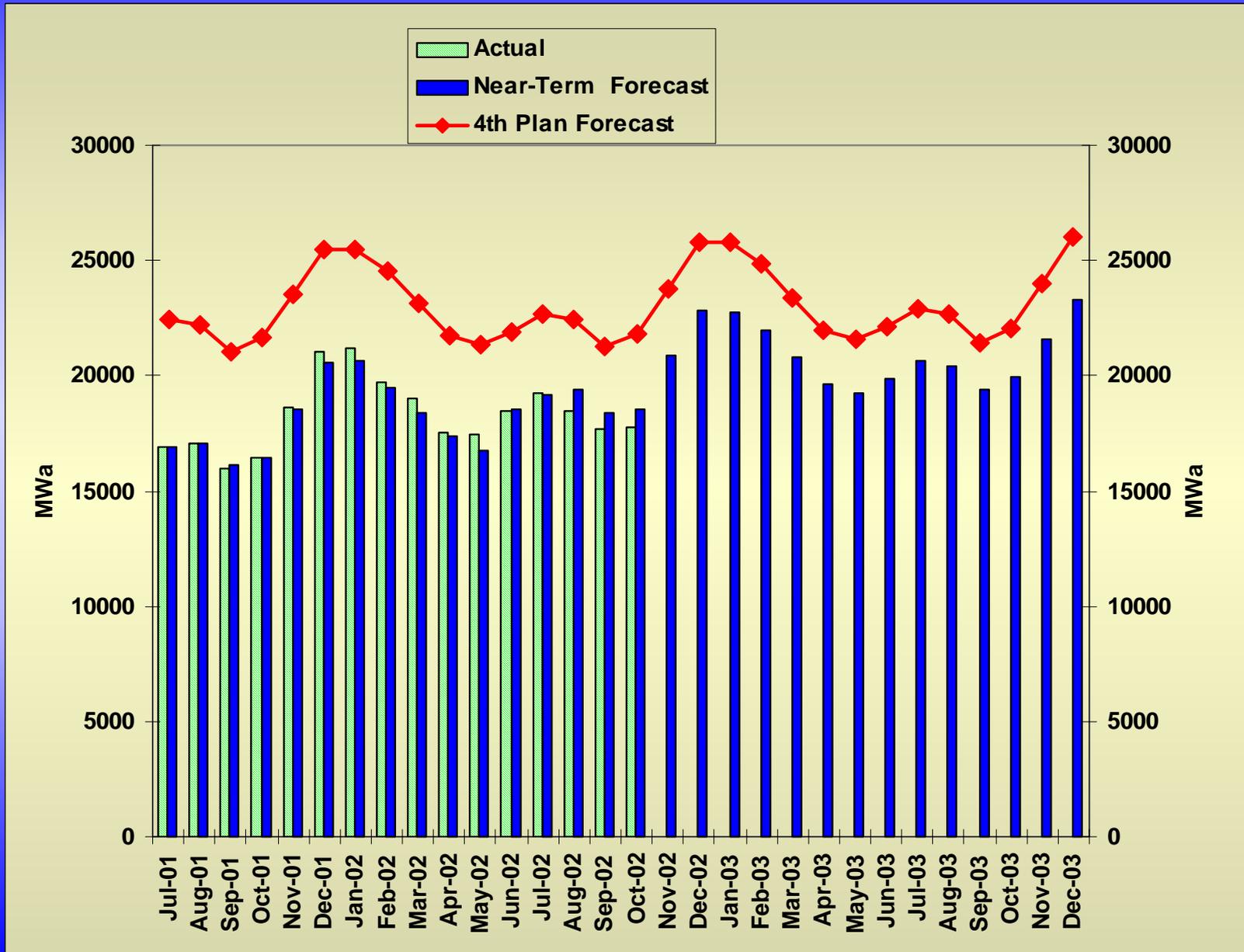
Conservation

Shutdowns

Exports

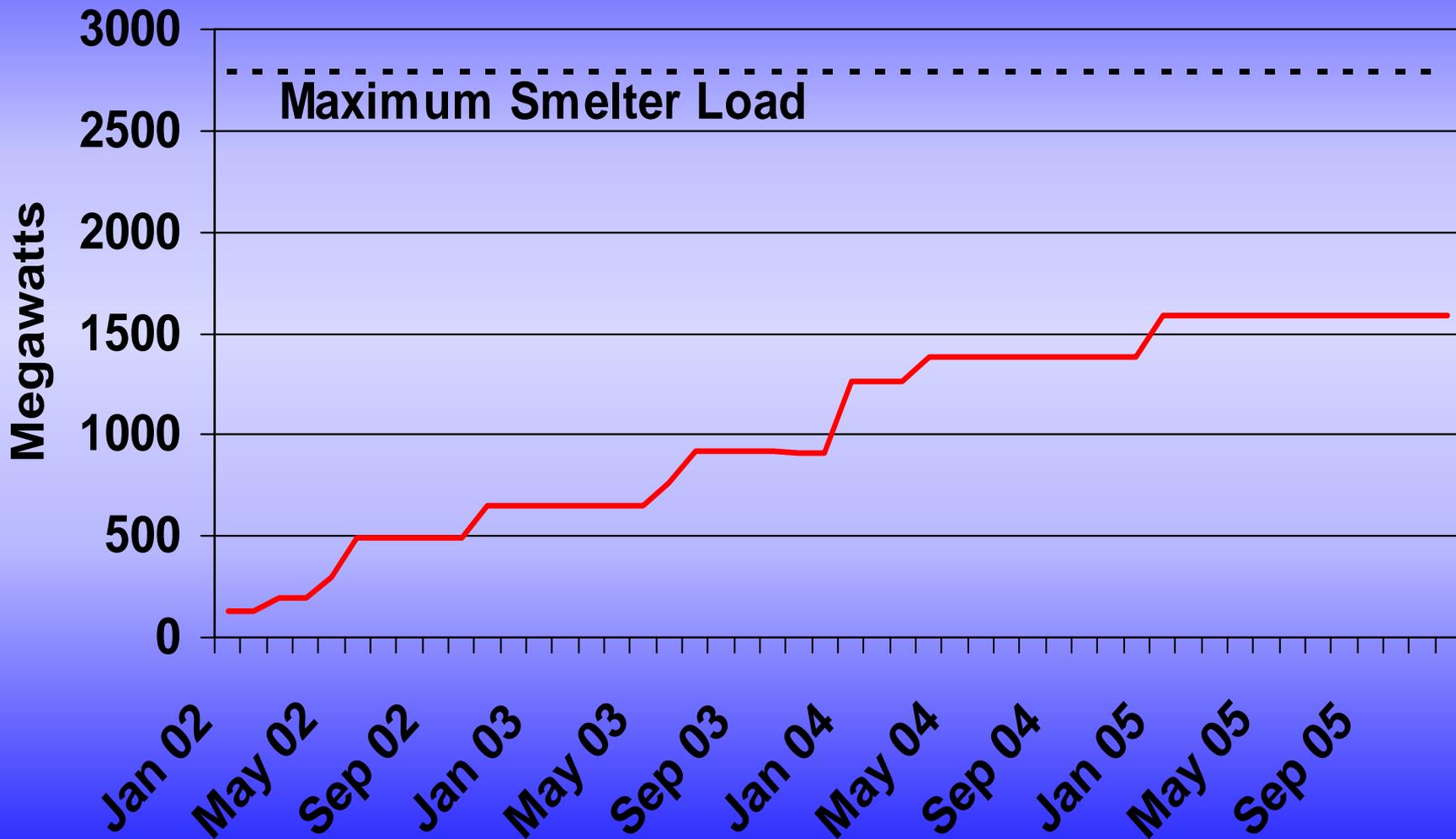


Regional Demand vs. Forecast



DSI Loads

Current Draft Forecast



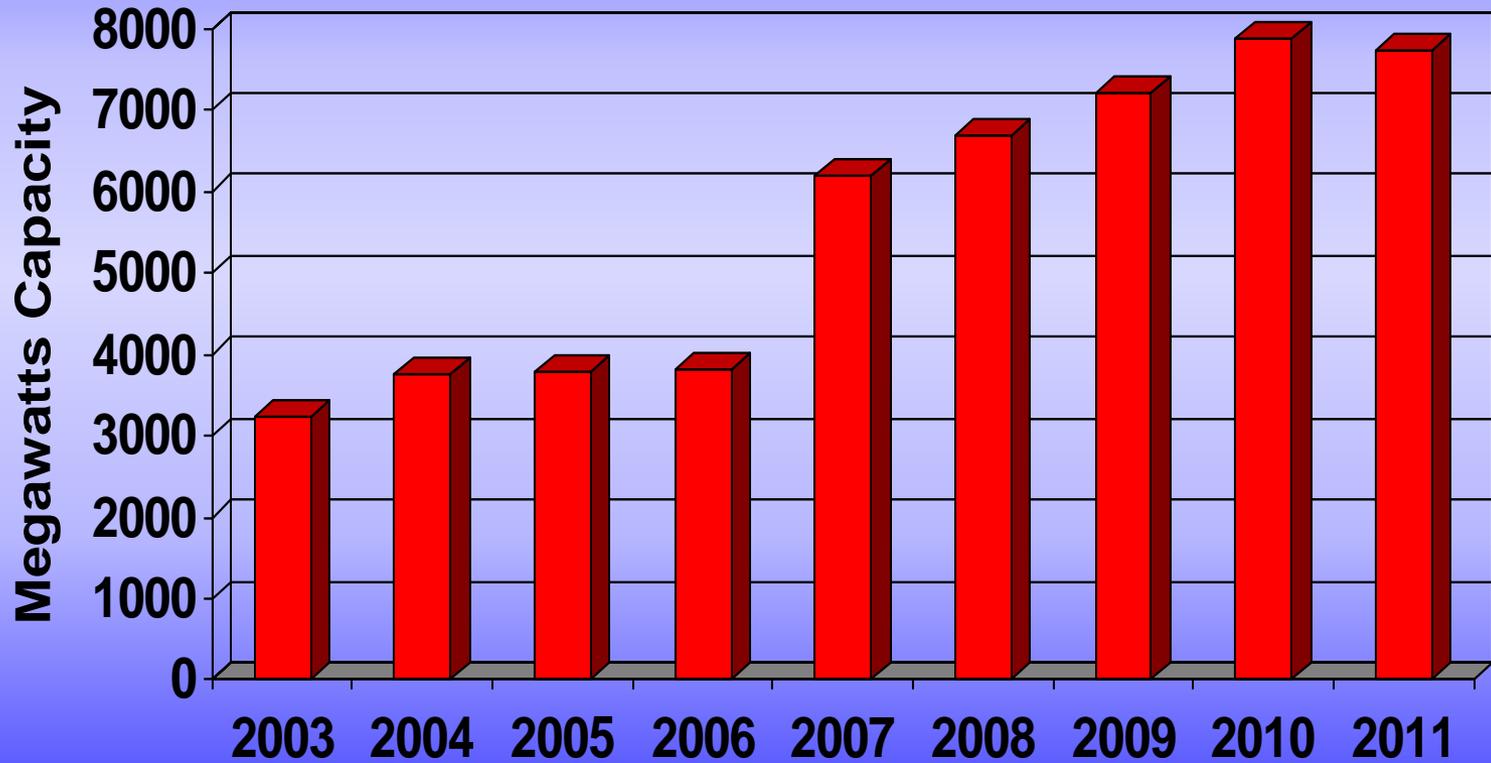
Miscellaneous Assumptions

- DSI load is currently at about 22% of its fully operational level and is forecast to reach about 57% of that value by 2005
- Non-DSI loads increase modestly and return to forecast levels by 2004
- Conservation is a small contributor, growing from 100 aMW in 2004 to 180 aMW in 2006
- Demand reduction programs were not modeled in this analysis

Resource Assumptions

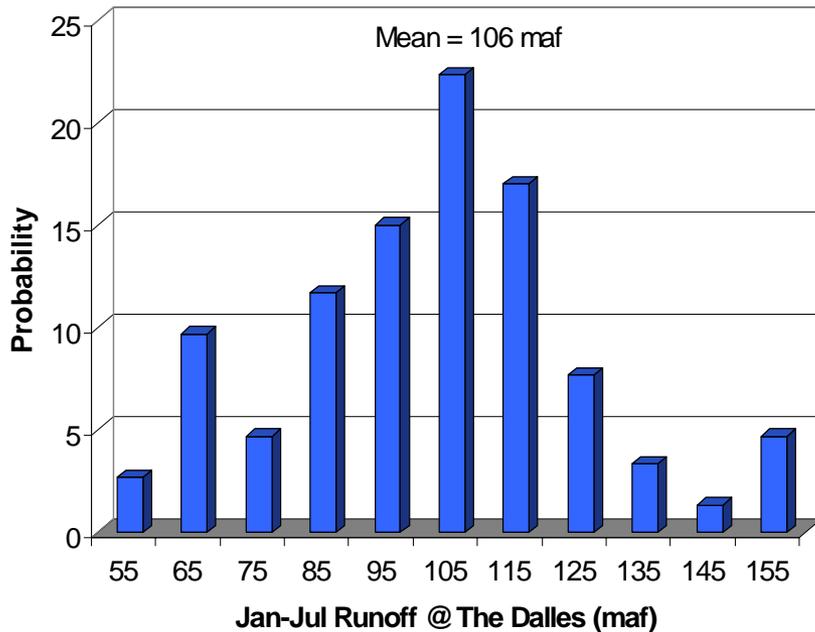
- **Suspended Construction:**
 - About 1,200 MW by 2004
- **Retirements:**
 - About 600 MW
- **New resources projected to be completed:**
 - Just under 3,800 MW by 2004 (since 2001)
 - 1,200 MW fewer than our July 2002 estimate
 - Market-driven capacity additions beyond 2004 not available until 2007 (AURORA)

Capacity Additions for the Northwest

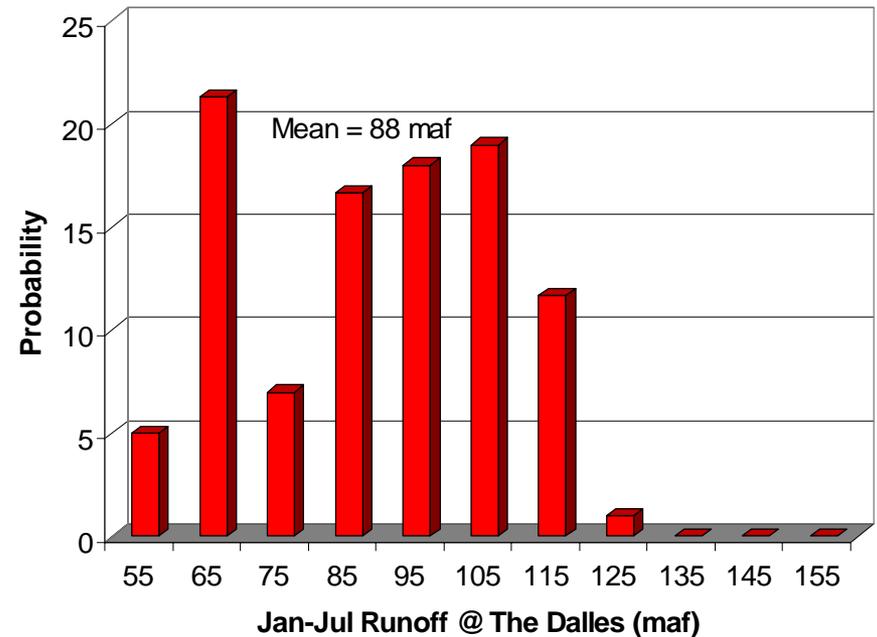


Forecast Runoff Distribution for 2003

Historical Runoff Distribution

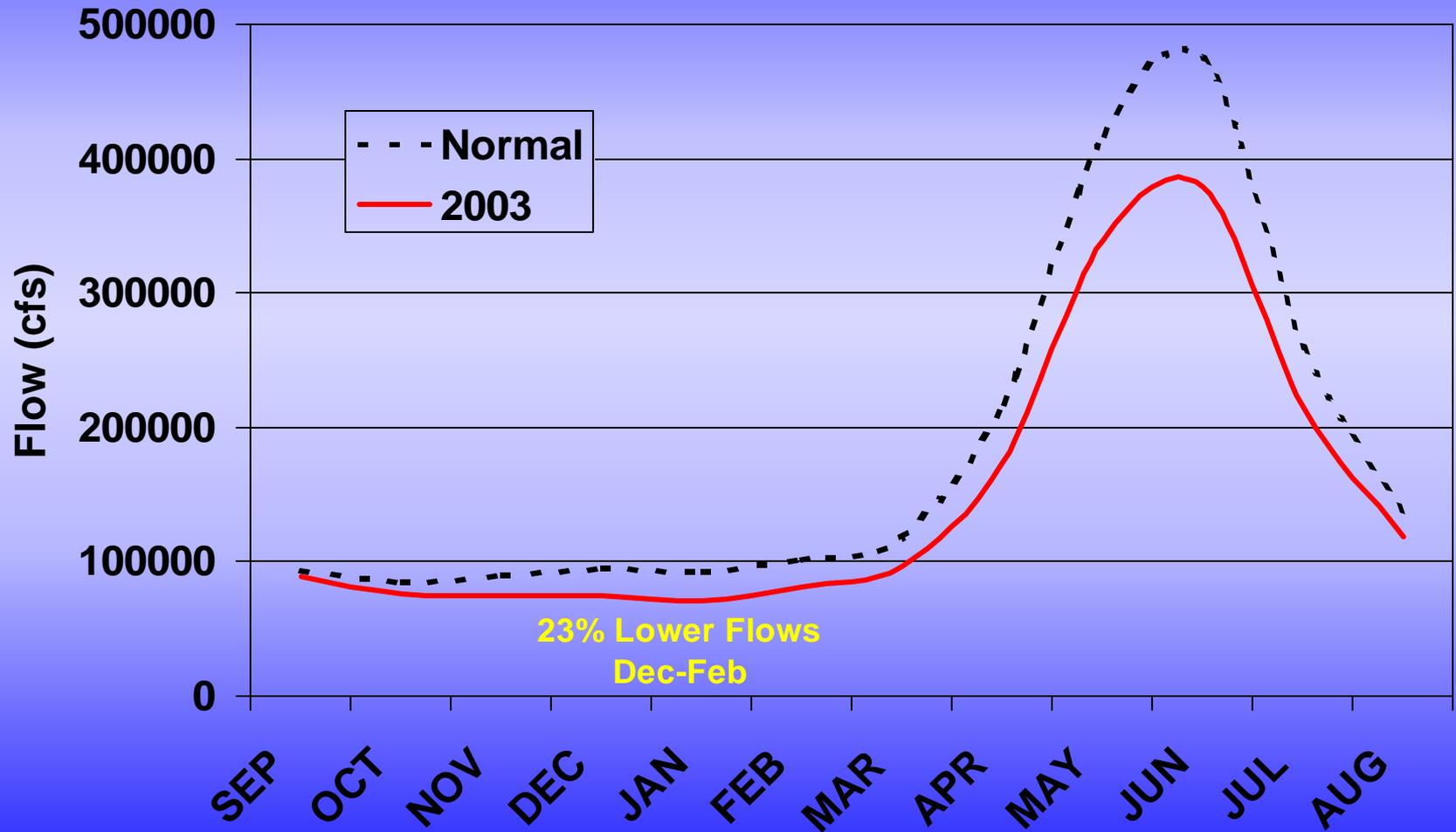


2003 Forecast Runoff Distribution



Water Supply for 2003

(82% of Average ?)

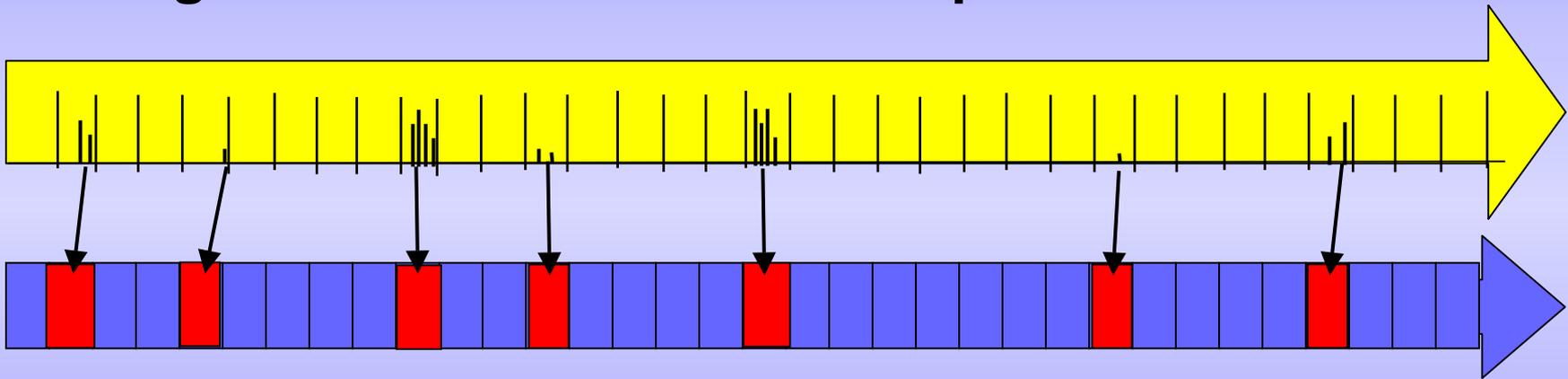


GENESYS Program

- Simulates the operation of generating resources over many potential futures.
- Varies temperature, demand, water condition and resource performance.
- Models transactions with other regions and transmission limitations.
- Calculates reserve violations and failures to meet demand.

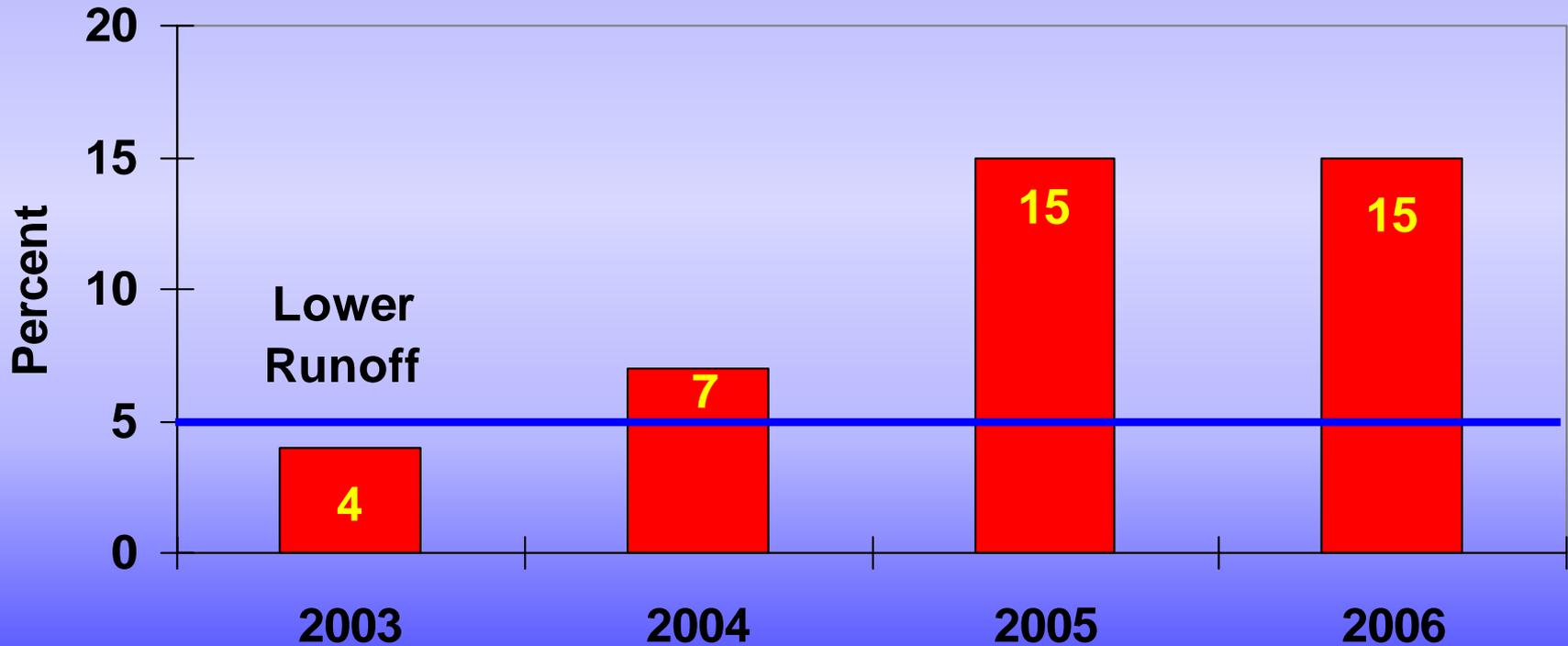
Loss of Load Probability

Simulated winter (Dec-Mar) operations
for each of the next four years (2003-06)
using 300 random water and temperature conditions

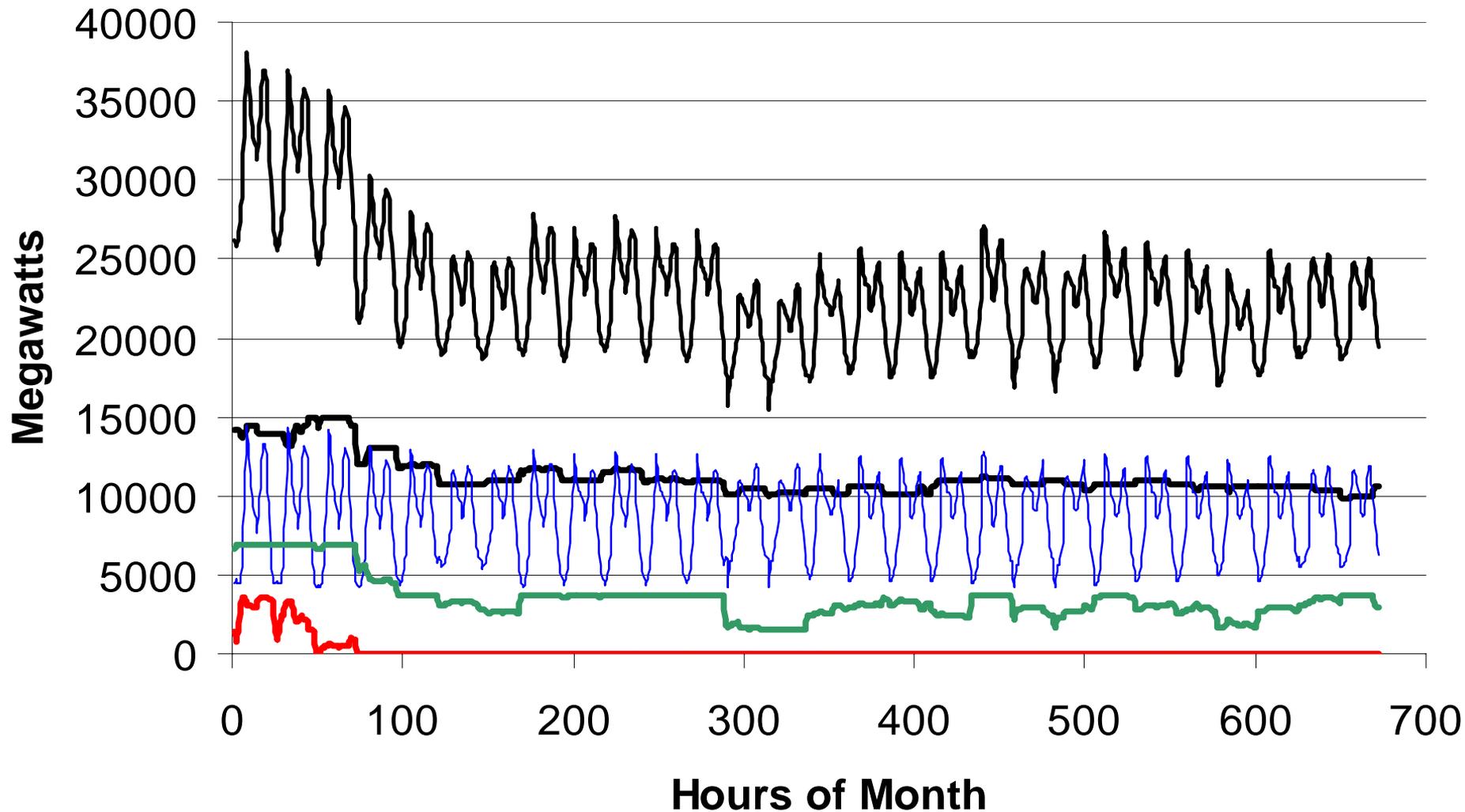


In 2003-04, for example, out of 300 simulations,
27 had an average curtailment greater than 10 MW-seasons,
thus the Loss of Load Probability (LOLP) = $27/300 = 9$ percent

Loss of Load Probability (Work in Progress)



Impacts of Dry - Cold Weather February 2003



— Net Demand — NW Thermal — NW Hydro — Unserved — Net Imports

Conclusions

- Acceptable risk for this winter
- There may be a 3 year gap in resource development (2004-2006)
 - During this period market incentives may not be sufficient to stimulate additional resource development
 - Will expose the NW to higher than desired risk of curtailment (and high electricity prices)
- Do we need to do anything? If so, what?