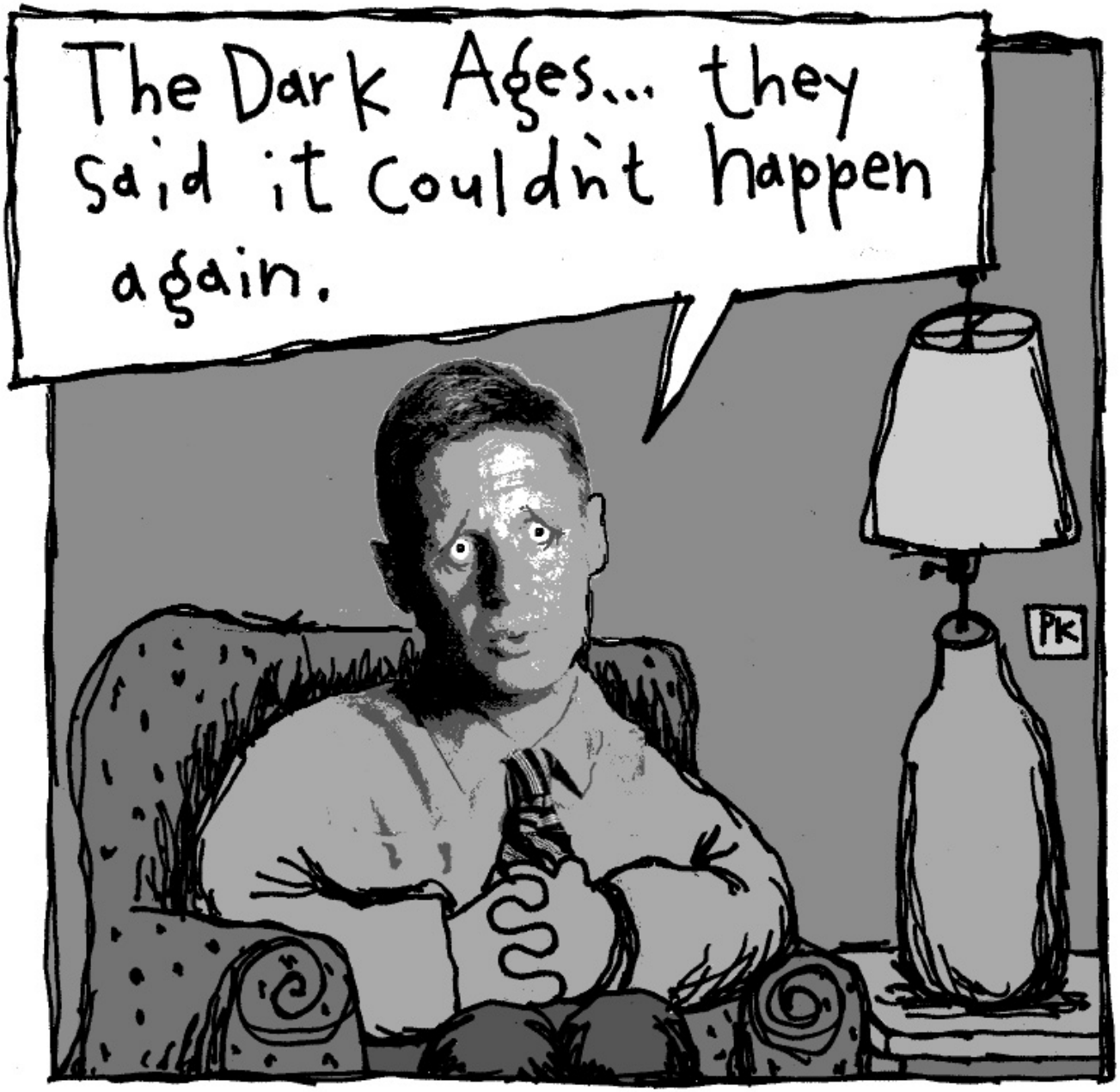
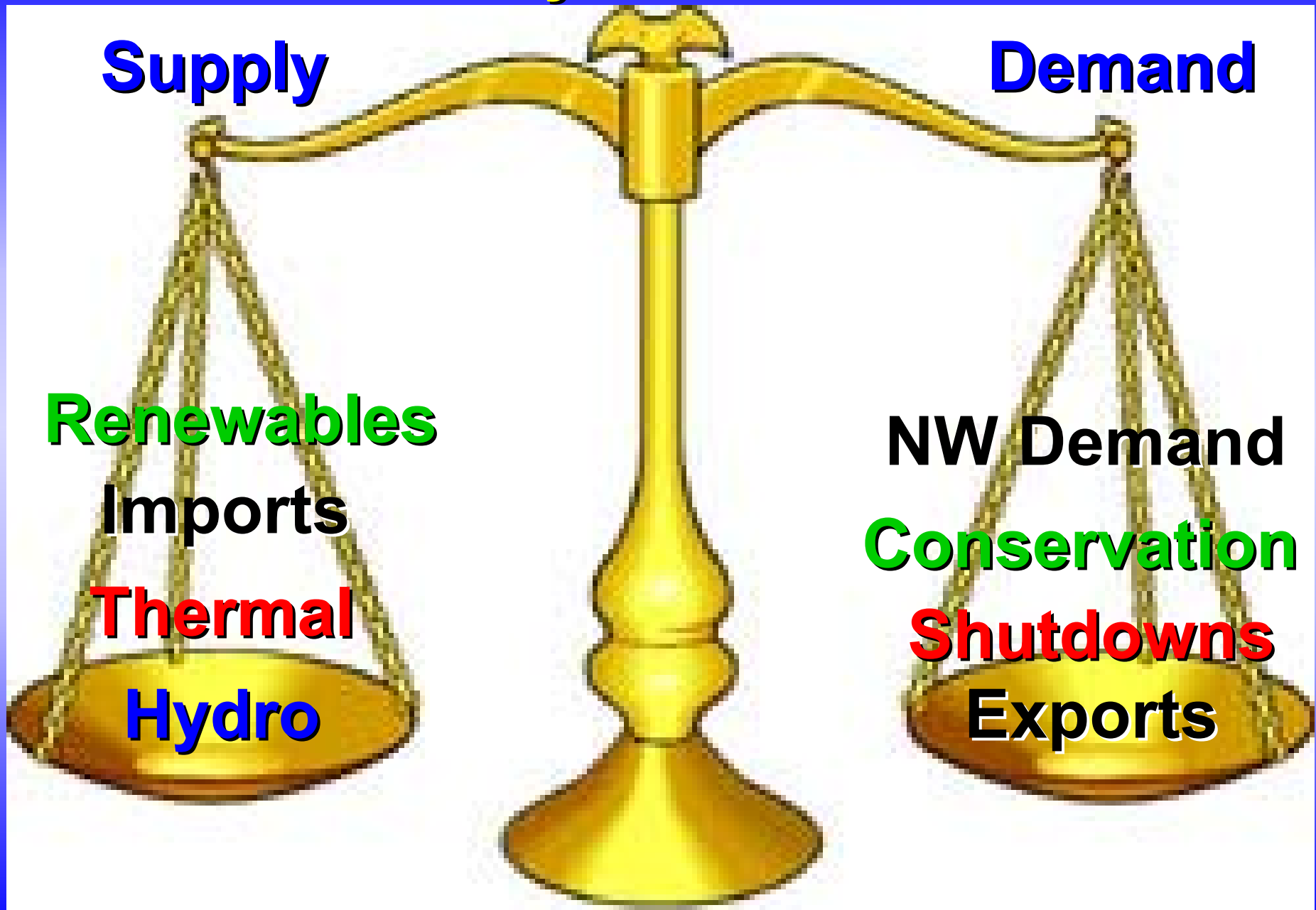
Power Supply Outlook Winter Seasons 2003-06

Northwest Power Planning Council

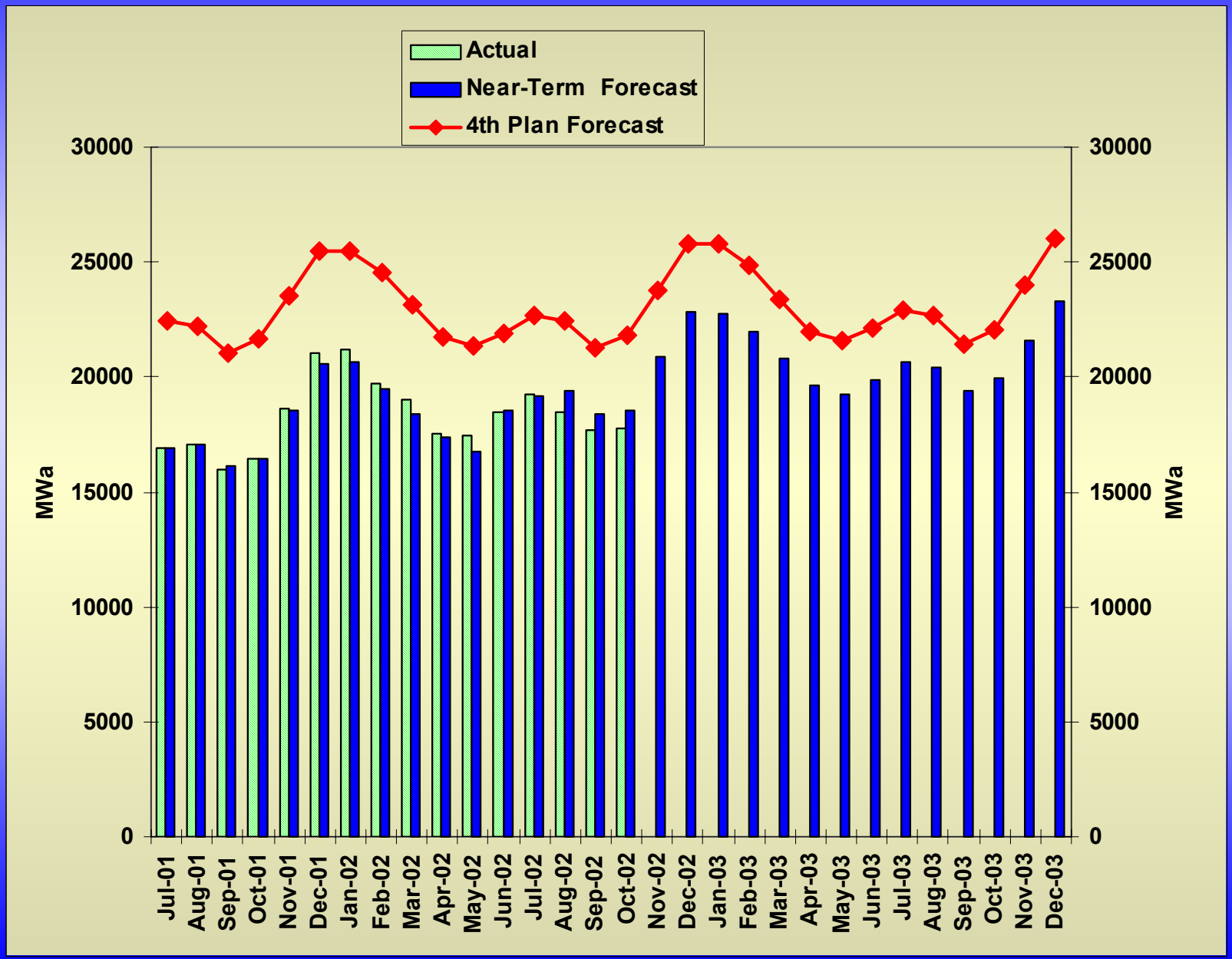
December 10, 2002


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

Reliability is a function of

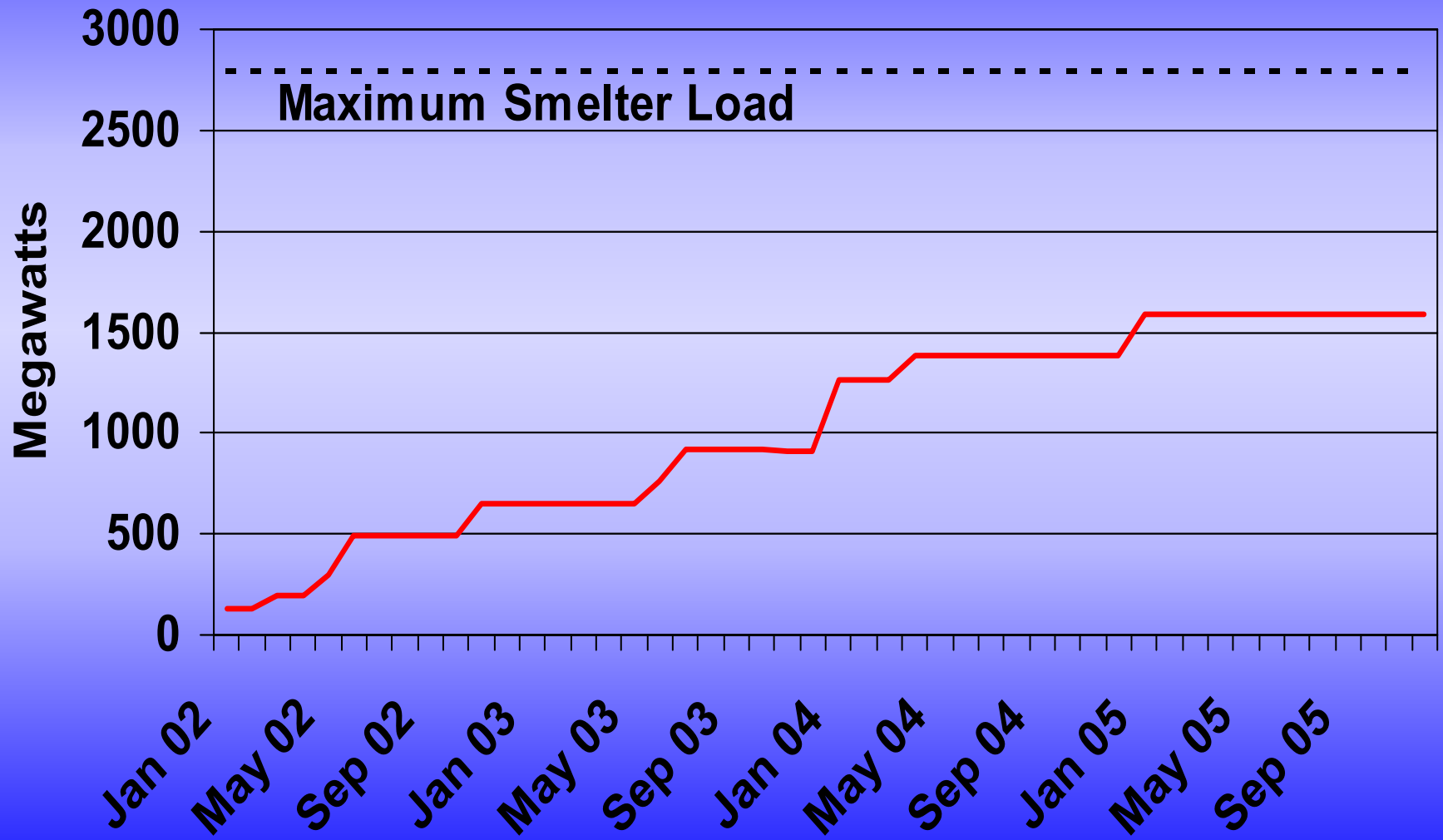


Regional Demand vs. Forecast



DSI Loads

Current Draft Forecast

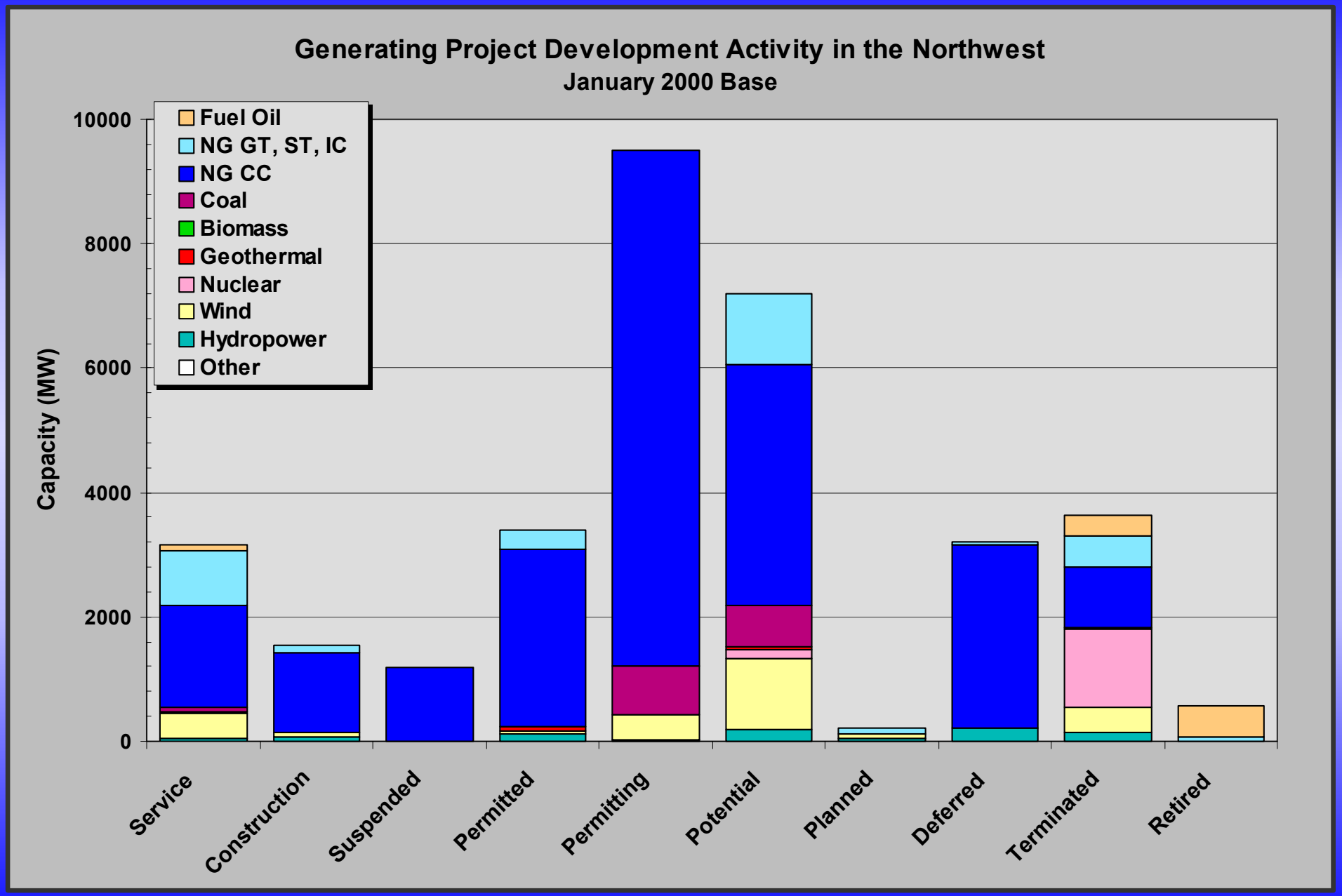


Miscellaneous Assumptions

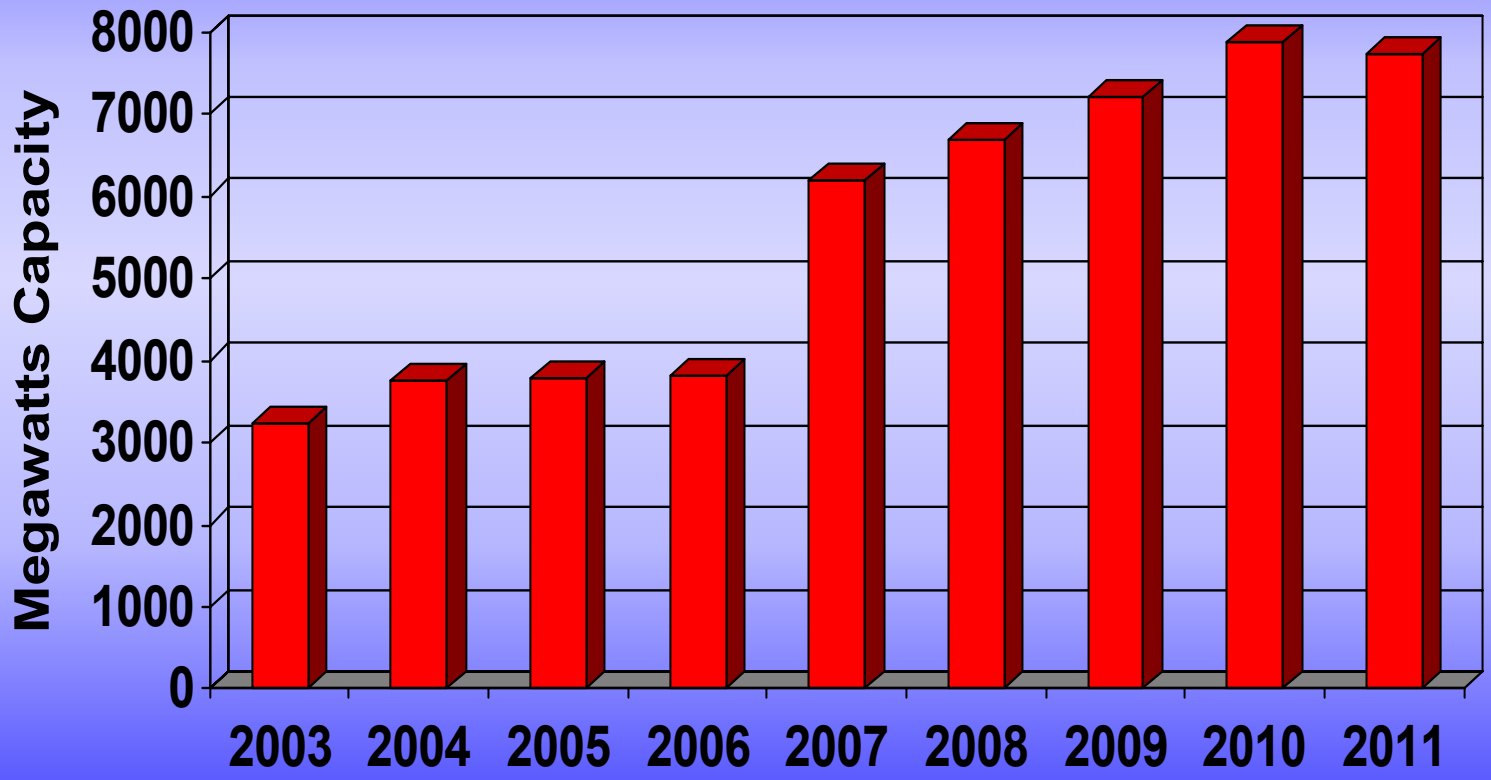
- DSI load is currently at about 22% of its fully operational level and is forecast to reach about 57% of that value by 2005
- Non-DSI loads increase modestly and return to forecast levels by 2004
- Conservation is a small contributor, growing from 100 aMW in 2004 to 180 aMW in 2006
- Demand reduction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

Resource Assumptions

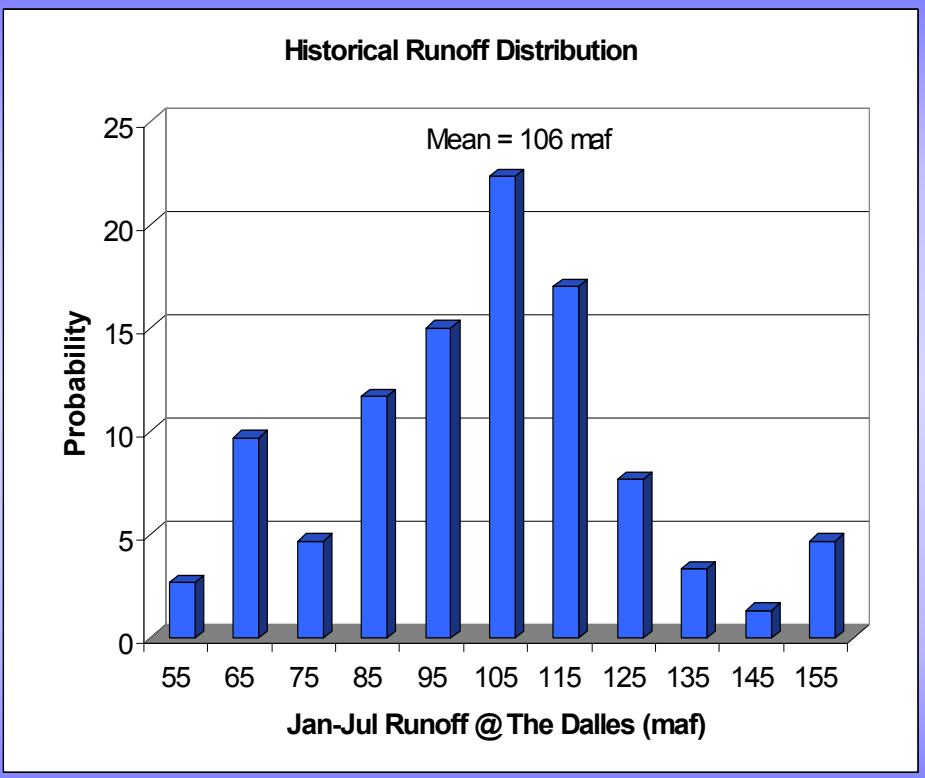
- **Suspended Construction:**
  - About 1,200 MW by 2004
- **Retirements:**
  - About 600 MW
- **New resources projected to be completed:**
  - Just under 3,800 MW by 2004 (since 2001)
  - 1,200 MW fewer than our July 2002 estimate
  - Market-driven capacity additions beyond 2004 not available until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

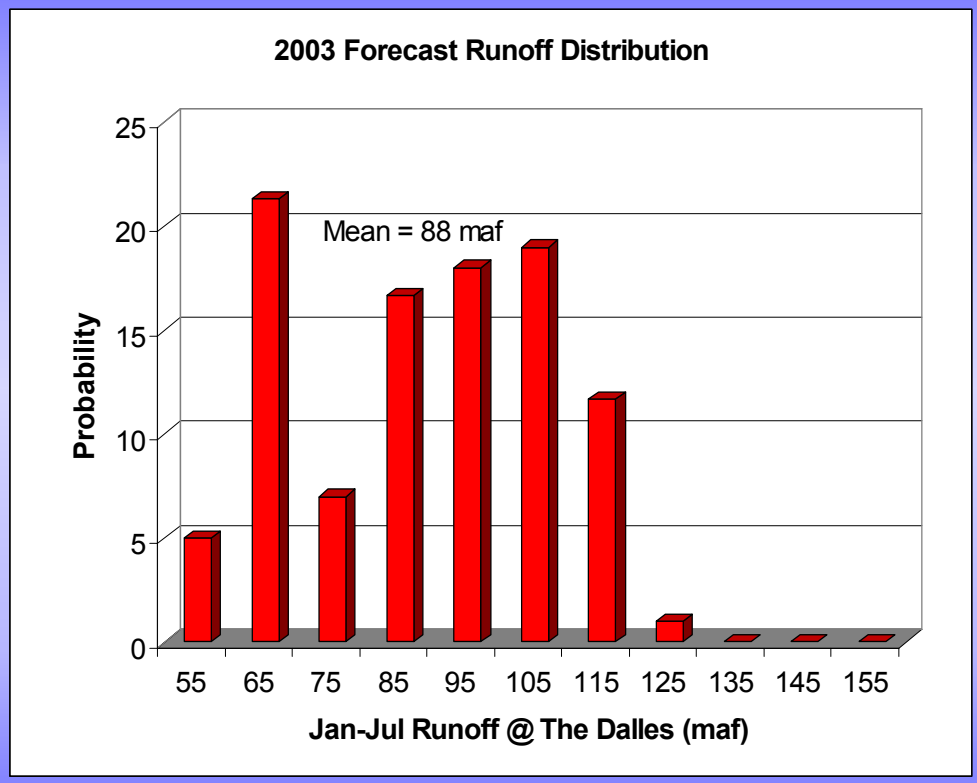

Generating Project Development Activity in the Northwest
January 2000 Base
Capacity (MW)
10000
8000
6000
4000
2000
0
Fuel Oil
NG GT, ST, IC
NG CC
Coal
Biomass
Geothermal
Nuclear
Wind
Hydropower
Other
Service
Construction
Suspended
Permitted
Permitting
Potential
Planned
Deferred
Terminated
Retired

Capacity Additions for the Northwest

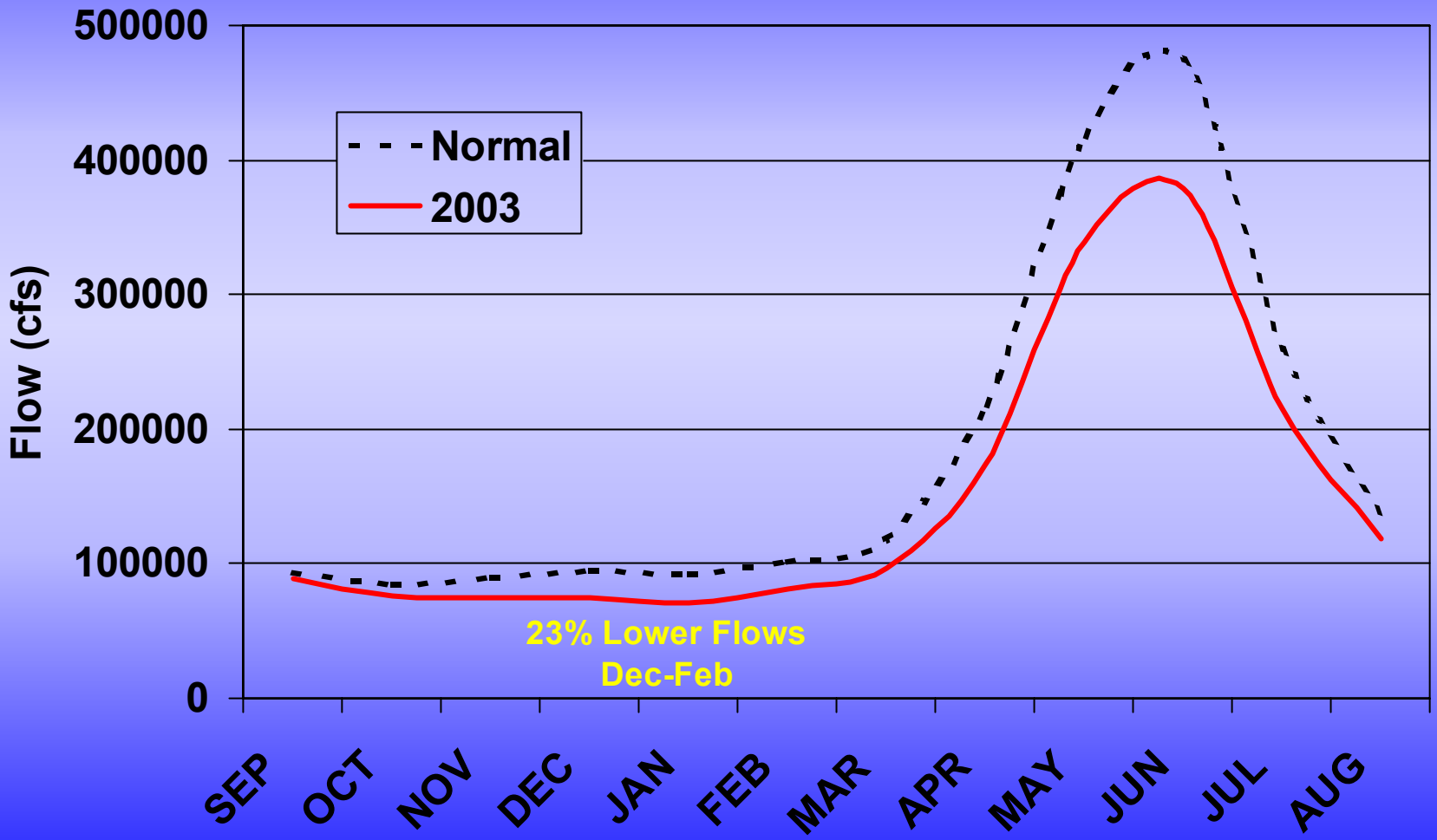


Forecast Runoff Distribution for 2003





Water Supply for 2003
(82% of Average ?)

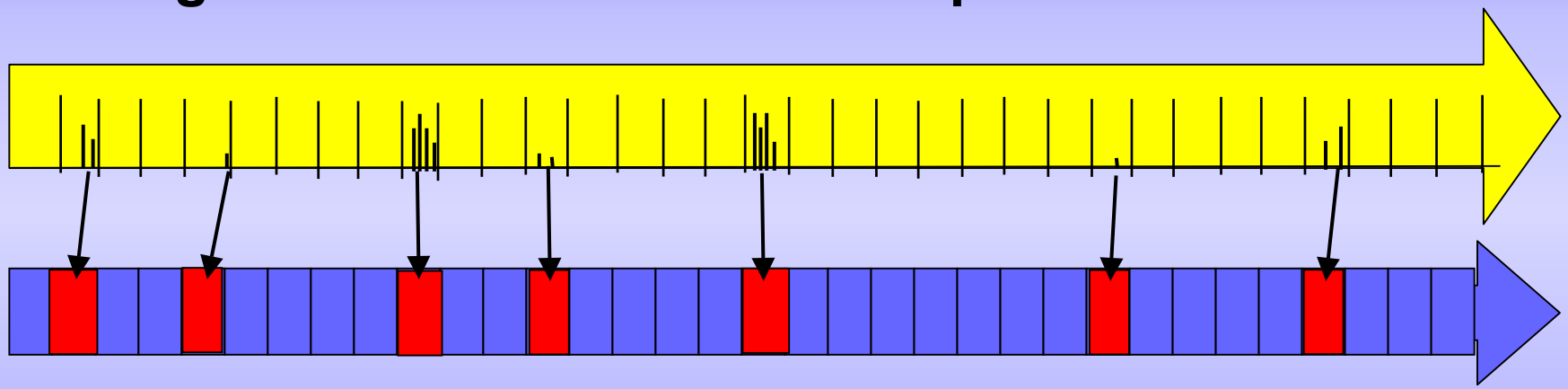


GENESYS Program

- 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.

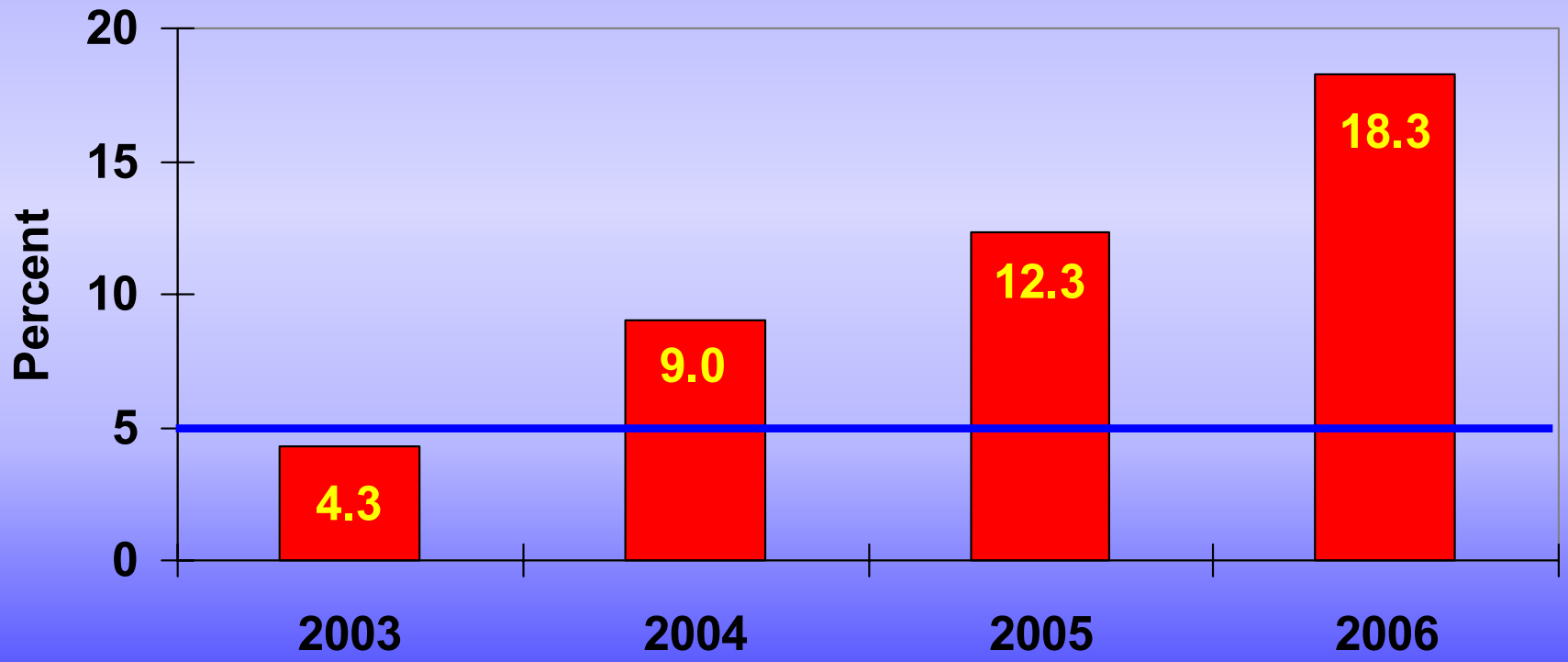
Loss of Load Probability

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

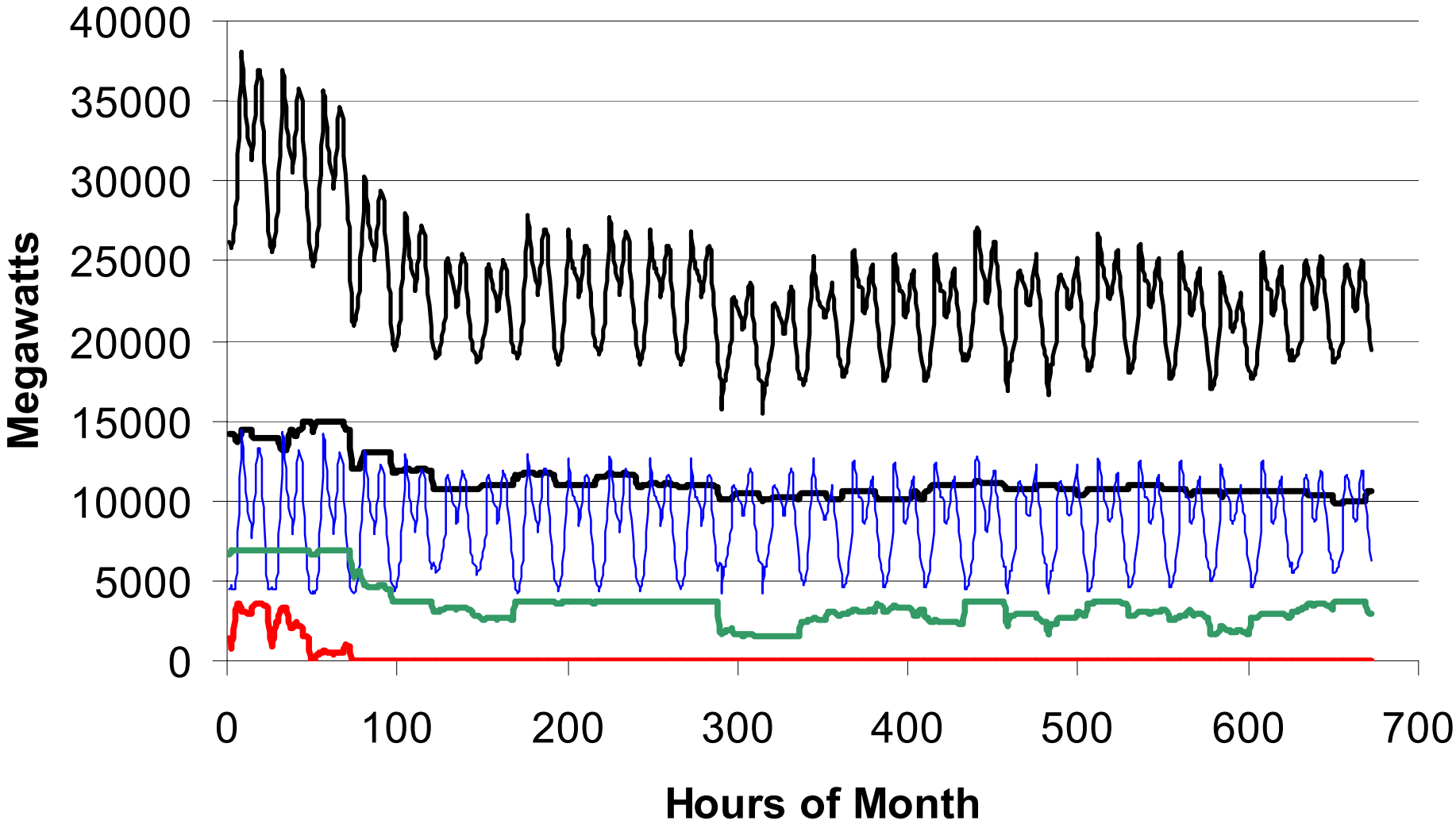


In 2003-04, for example, out of 300 simulations, 27 had an average curtailment greater than 10 MW-seasons, thus the Loss of Load Probability (LOLP) = 27/300 = 9 percent

Loss of Load Probability
(Work in Progress)



Impacts of Dry - Cold Weather
February 2003



Conclusions

- Low 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?