The Challenge of Providing Low Rates, High Reliability & a Healthy Environment

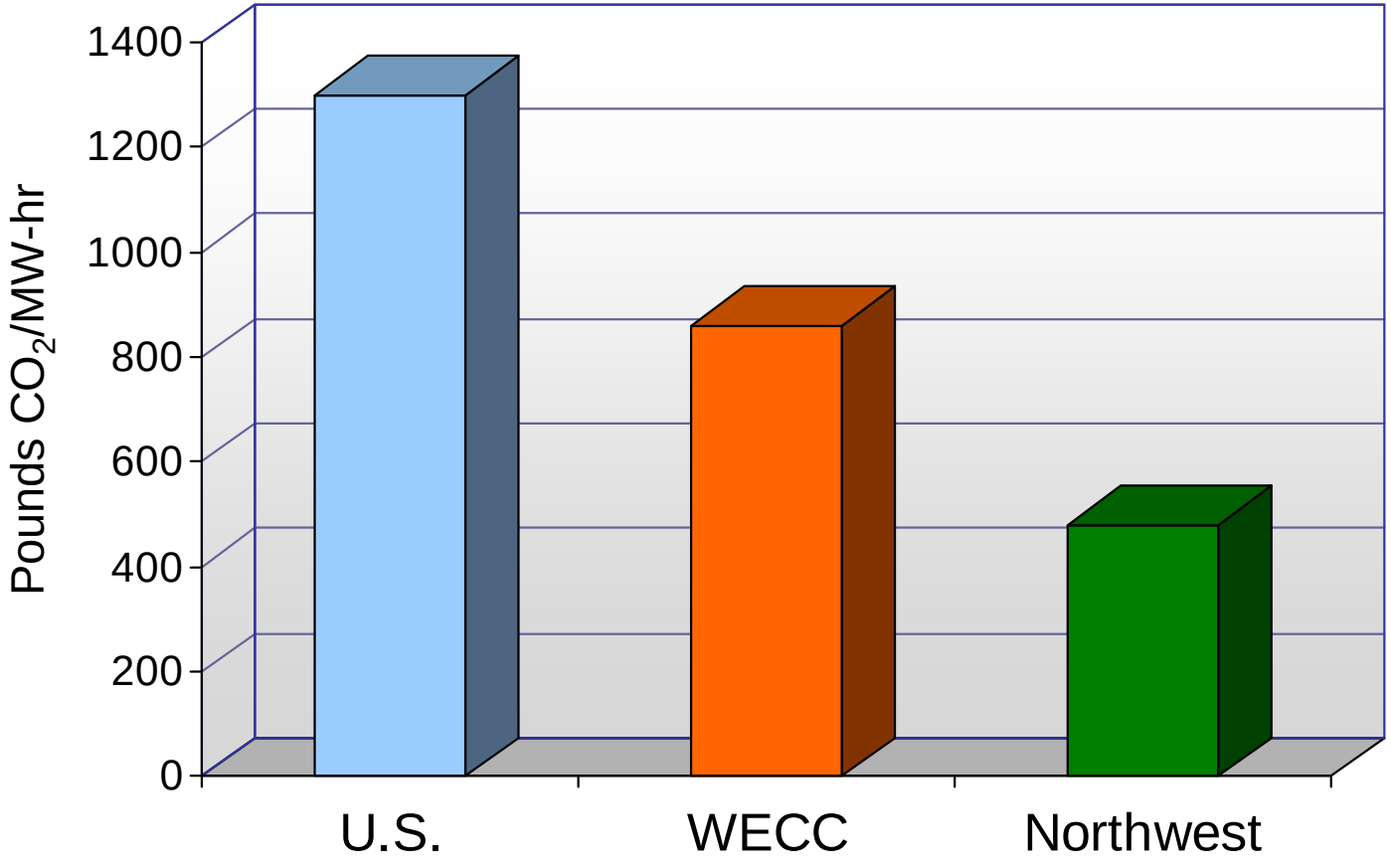
February 2009

- WE WANT YOU TO BE COMPETITIVE:
  - Employment
  - Tax Base
  - More vibrant, diversified PNW economy
  - Environmental protection
- BPA COMMITMENT:
  - Long-term contracts
  - Tiering Rates
  - Process improvement/cost management

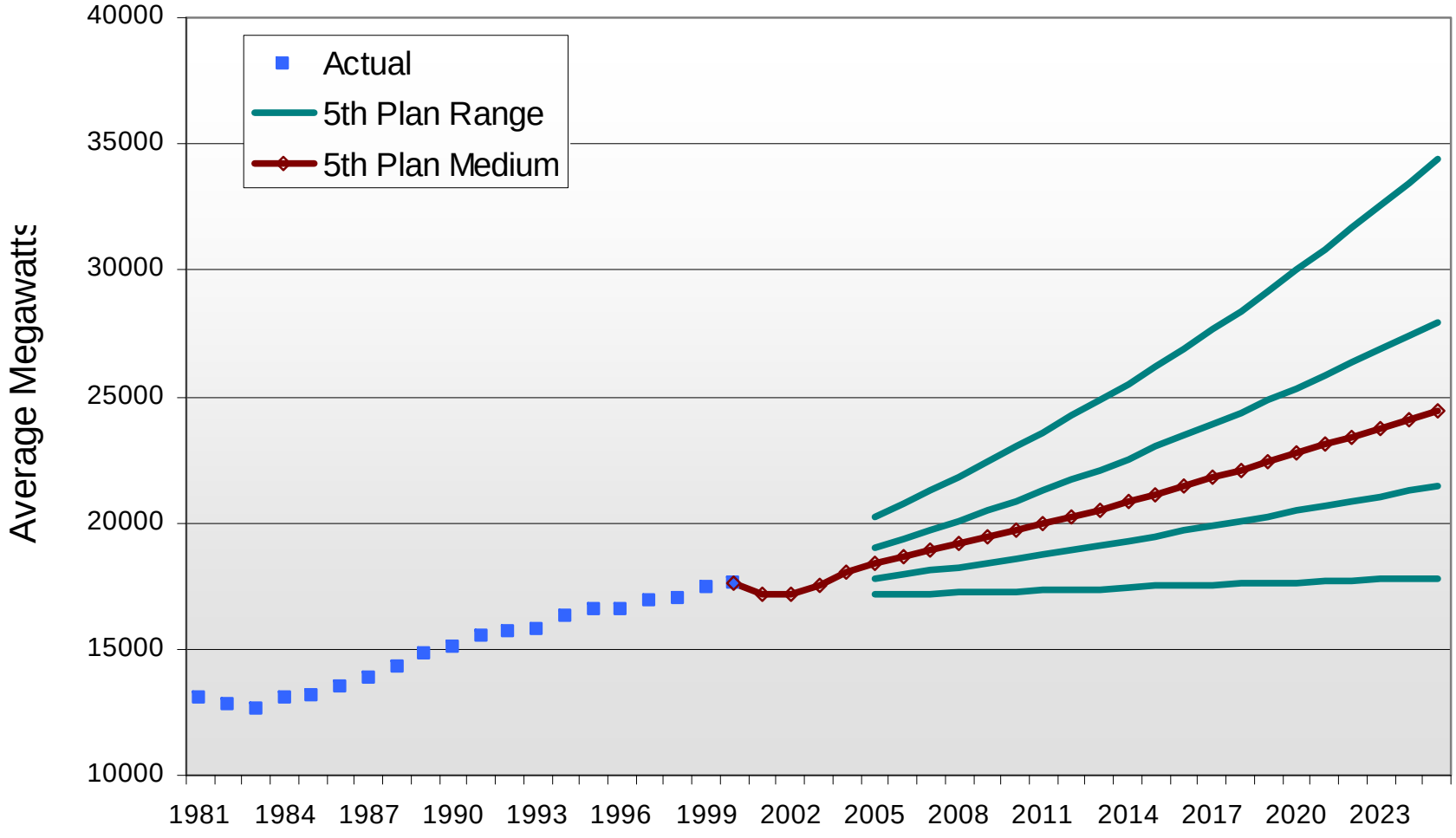
PNW Rates

	Cents/Kwh	Rank
Idaho	5.47	2
Washington	6.62	10
Oregon	7.34	15
U.S. Average	9.36	

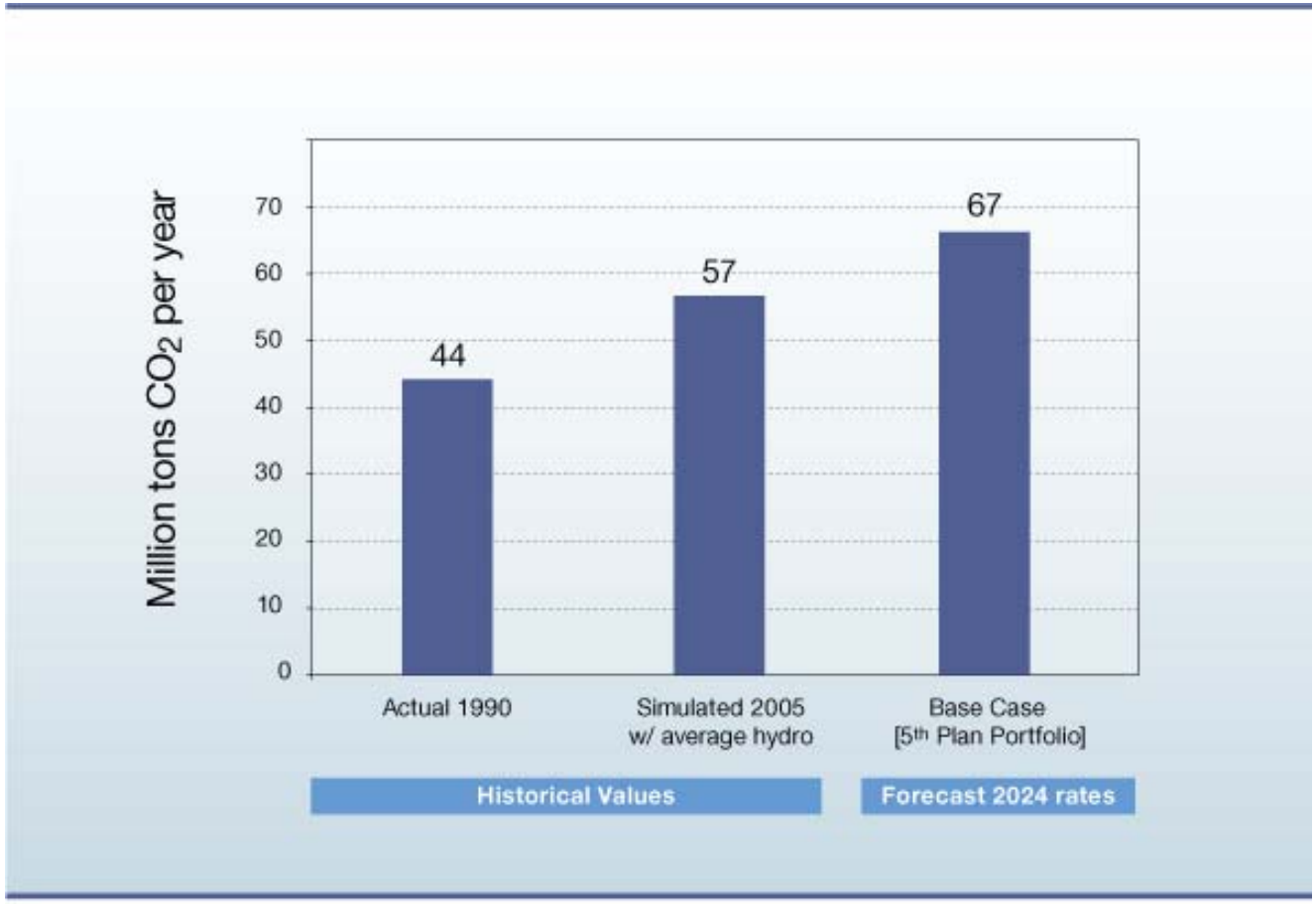
Carbon Emission Rates for Electric Production



Northwest Power & Conservation Council's 5th Power Plan Demand Forecast

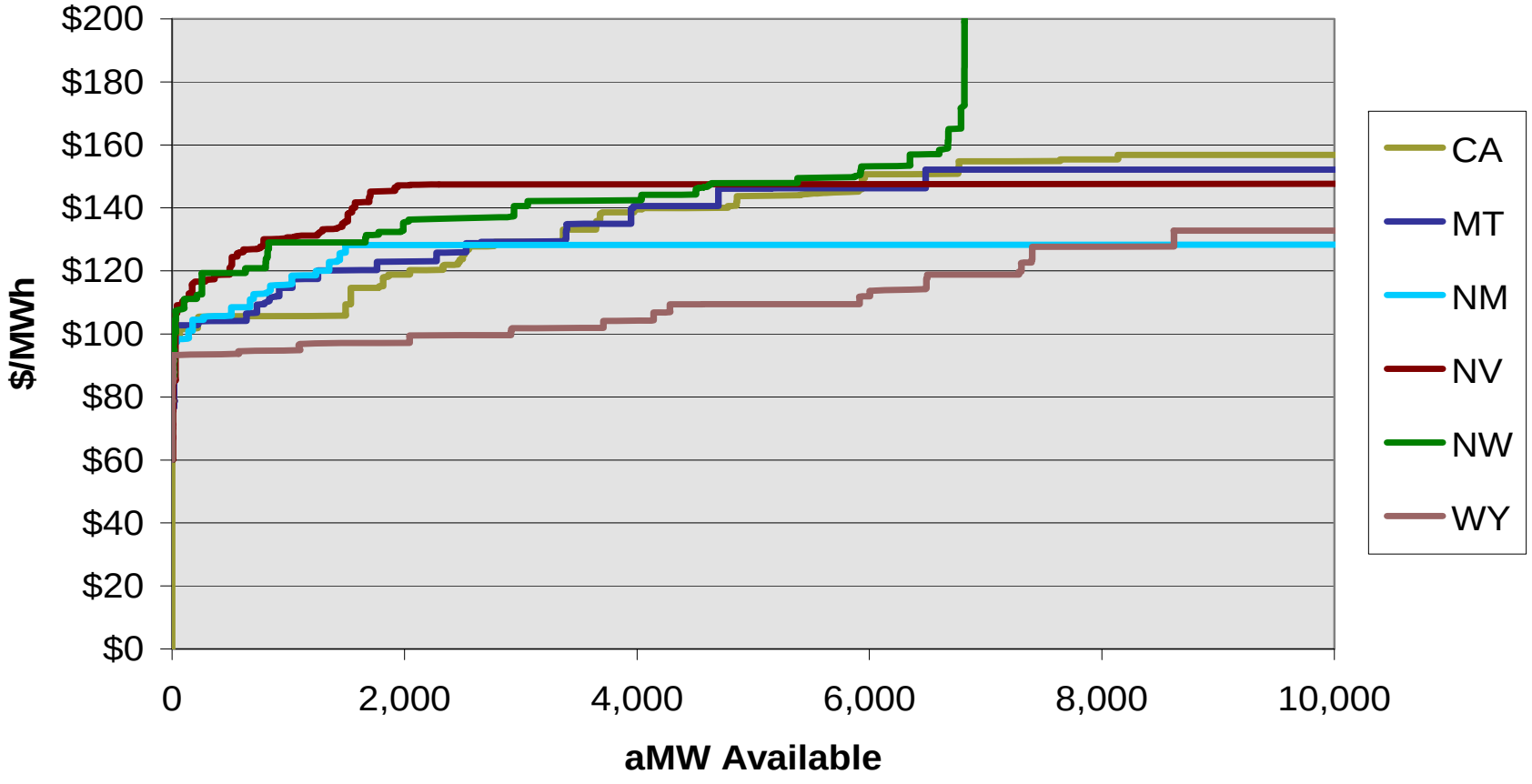


Historical & Projected CO_2 Projection

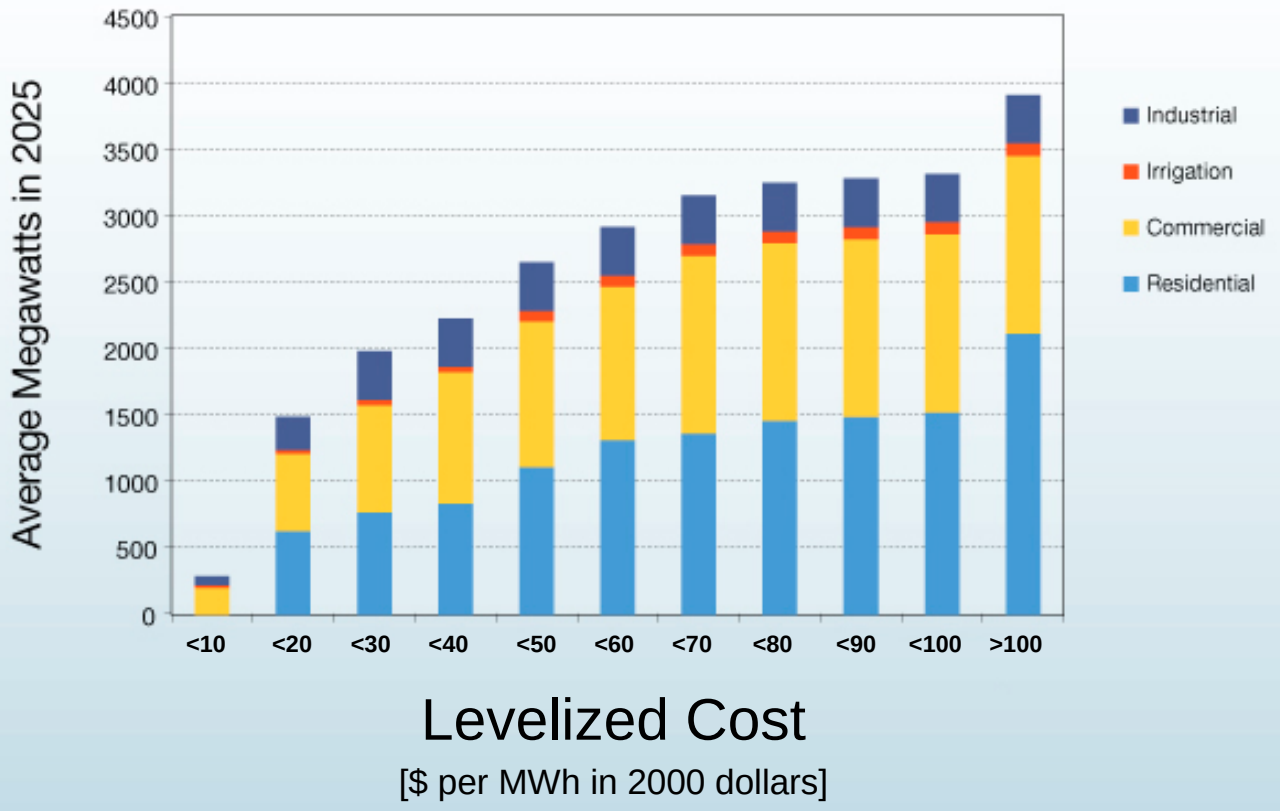


NWPCC Carbon Dioxide Footprint of the Northwest Power System, 11/07

Renewable Energy Supply Curves for Major Potential Supply Regions in the Western U.S.



NWPCC 5th Plan's Achievable Conservation in 2025 by Sector and Levelized Cost

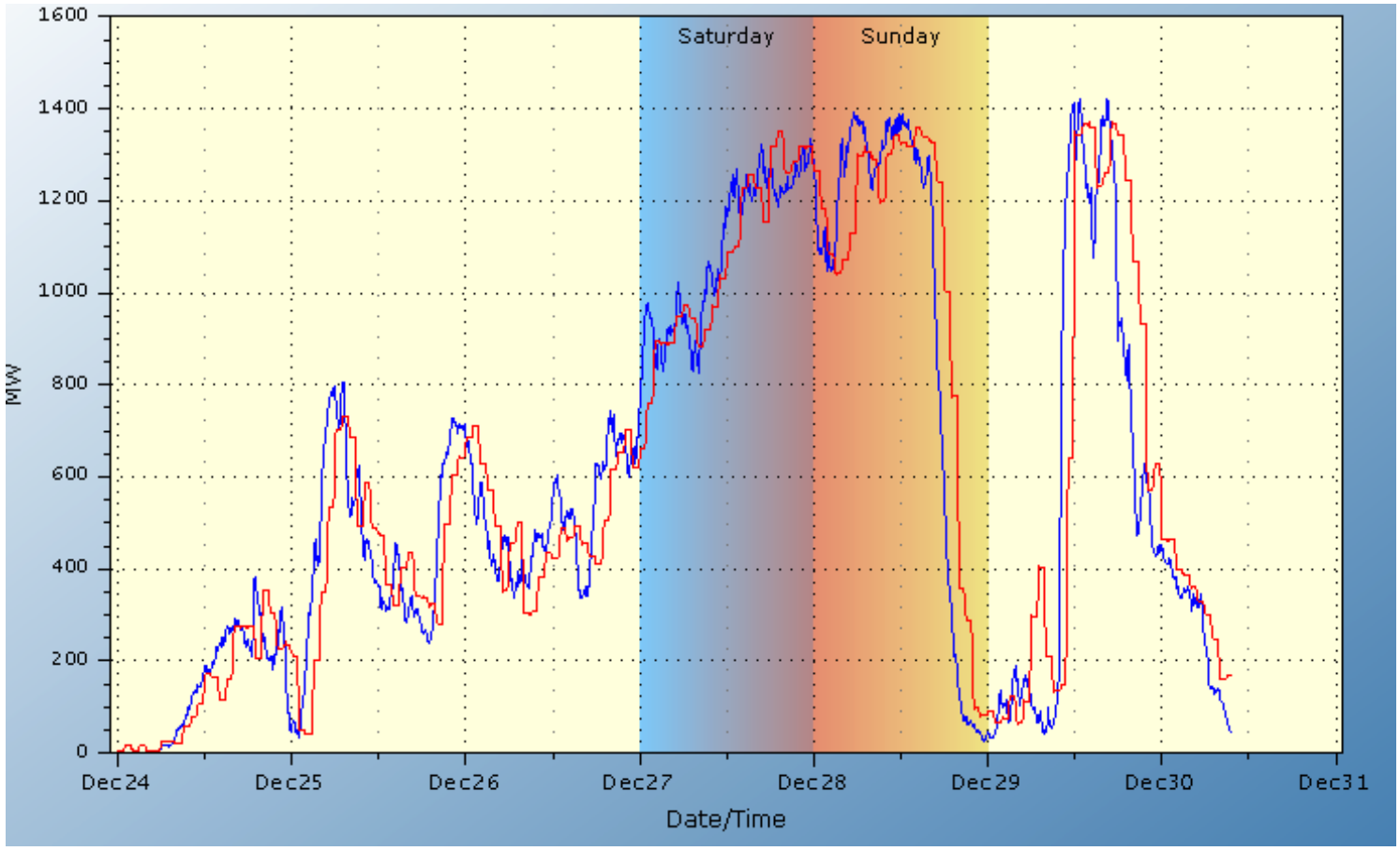


Making Wind Work

Utility	(A) Installed Wind	(B) Peak Load	Wind Penetration (A/B)
PacifiCorp East	858	5,689	15%
PacifiCorp West	251	3,555	7%
PNM	204	2,500	8%
Northwestern Energy	146	1,724	8%
CAISO	2,800	49,071	6%
ERCOT	5,812	62,400	9%
BPA	3,130	10,500	30%
BPA FY 2010	4,130	10,500	**39%**

BPA Balancing Authority Total Wind Generation and Wind Basepoint, Last 7 days

24 Dec 2008 – 31 Dec 2008 (Last updated 30 Dec 2008 09:36:35)

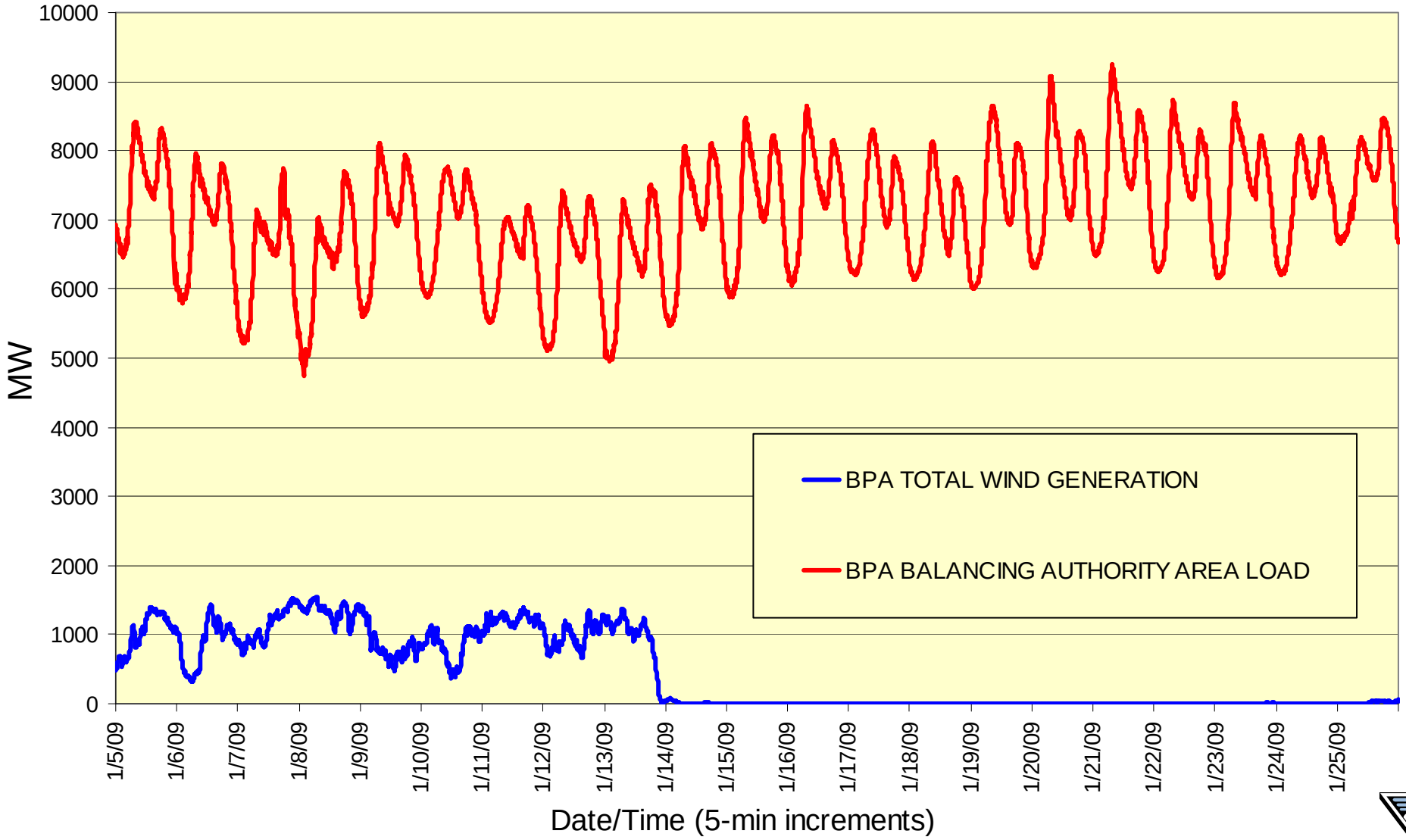


Based on 5-min. readings from the BPA SCADA system for points 79687, 103349

Balancing Authority Wind Generation in **Blue**, Wind Basepoint in **Red**; Installed Wind Capacity = 1592 MW

BPA Technical Operations: Roy Ellis (rcellis@bpa.gov)

BPA Balancing Authority Area Load & Total Wind Generation
Jan. 5-25, 2009



Salmon Mitigation Impacts on CO_2 Emissions:

- Reduced electricity output must be replaced
  - Spill
  - Dam breaching
- Reduced system flexibility increases wind integration challenges
  - Hourly spill requirements
  - Reservoir elevation requirements
  - Flow targets

Conclusions

- PNW has a comparative advantage in electric rates.
- PNW has a comparative advantage in terms of CO_2 emissions.

How do we maintain/enhance that position?

- Invest in energy efficiency
- Explore demand management
- Support widespread commitment to energy efficiency
- Invest in wind power and integration strategies
- Preserve hydro system:
  - Integrate intermittent renewables
  - Research & Development