



Northwest Hydroelectric Association
February 8, 2006

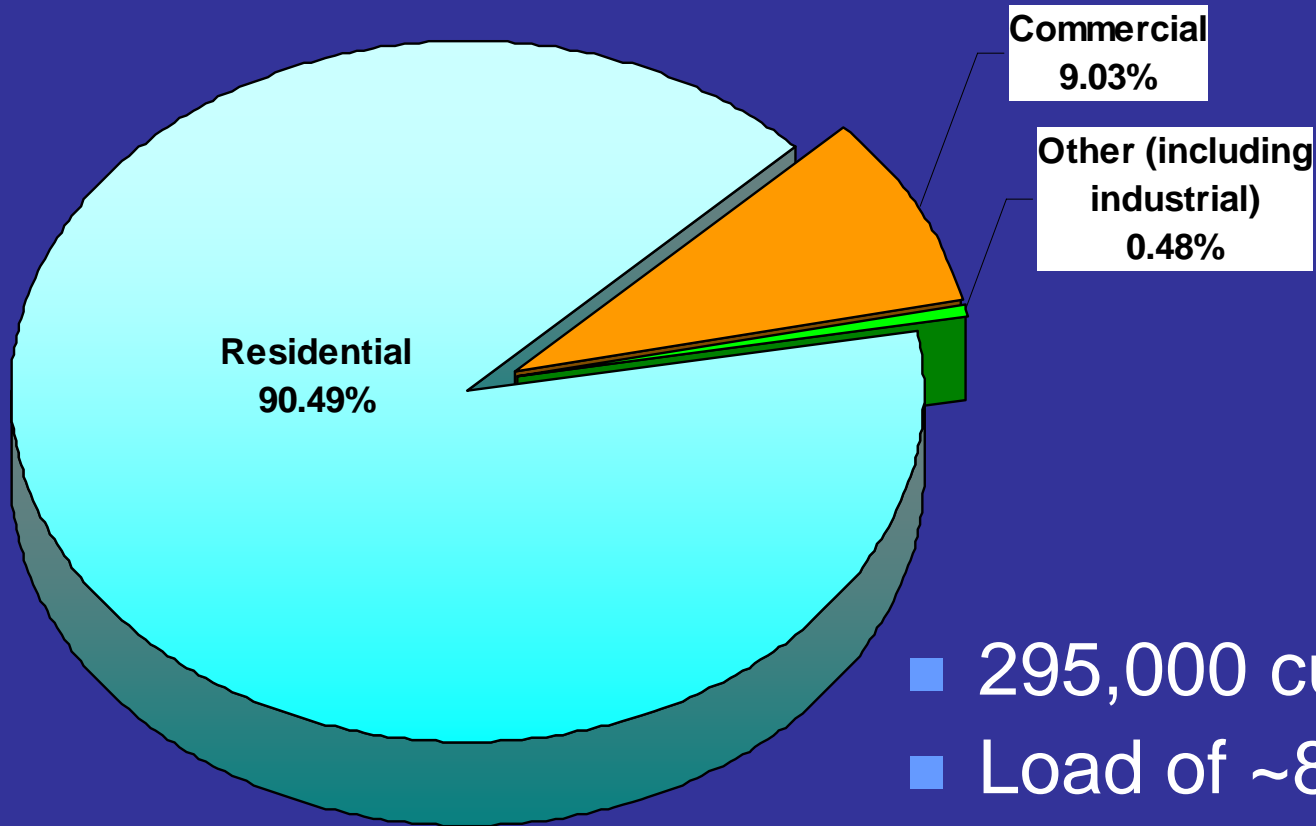
Load Following A Public's Perspective

Anna Miles
Senior Manager Power Scheduling
Snohomish County PUD No.1
Everett, Washington

Snohomish PUD

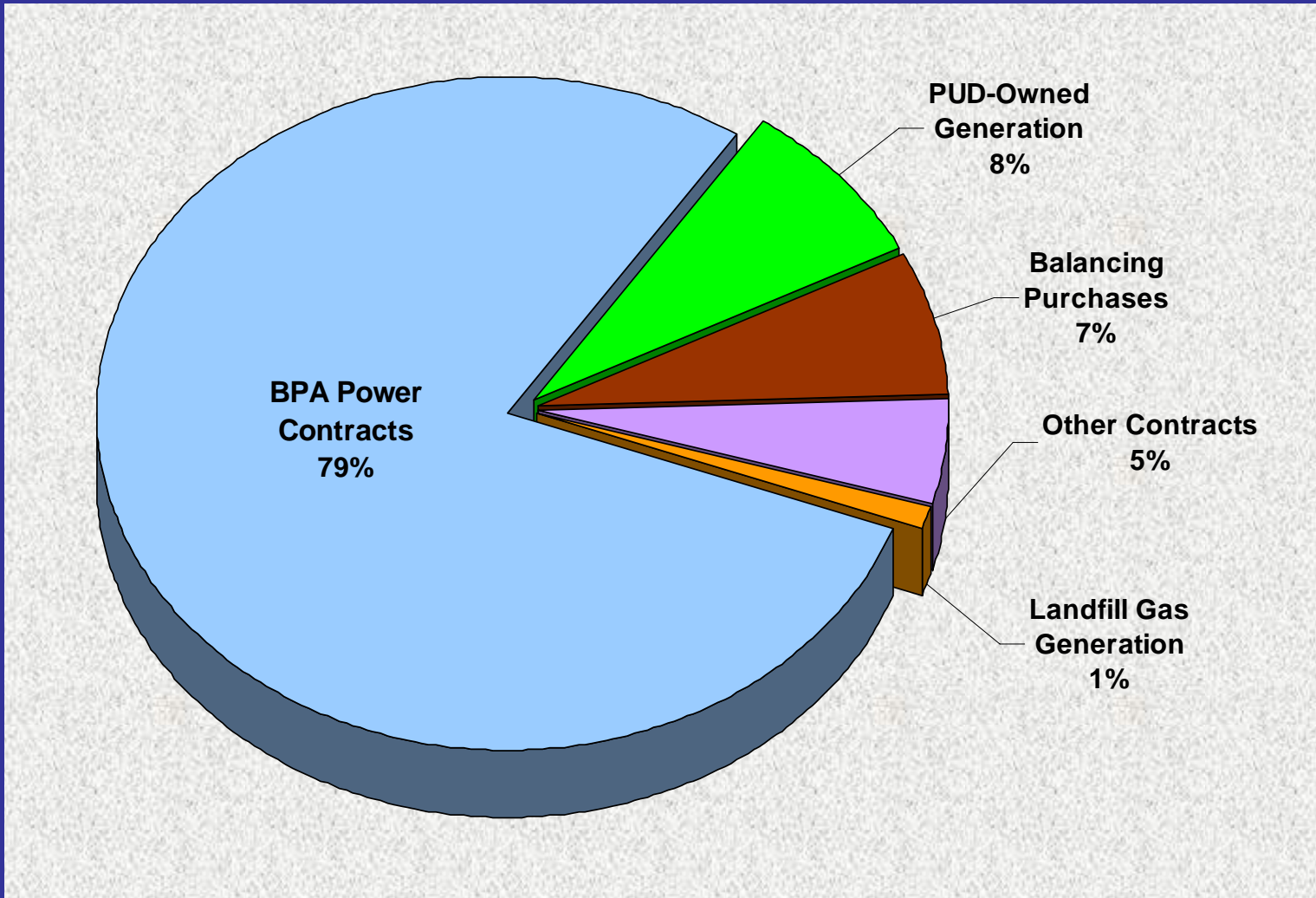
- Municipal corporation formed by a majority vote of the people
- Service area covers all of Snohomish County and Camano Island
- Second largest utility in the Pacific Northwest
- 12th largest utility in the nation in terms of customers served
- Inside the BPA Control Area

Load Profile



- 295,000 customers
- Load of ~800aMW
- Winter peaking

Total Resources



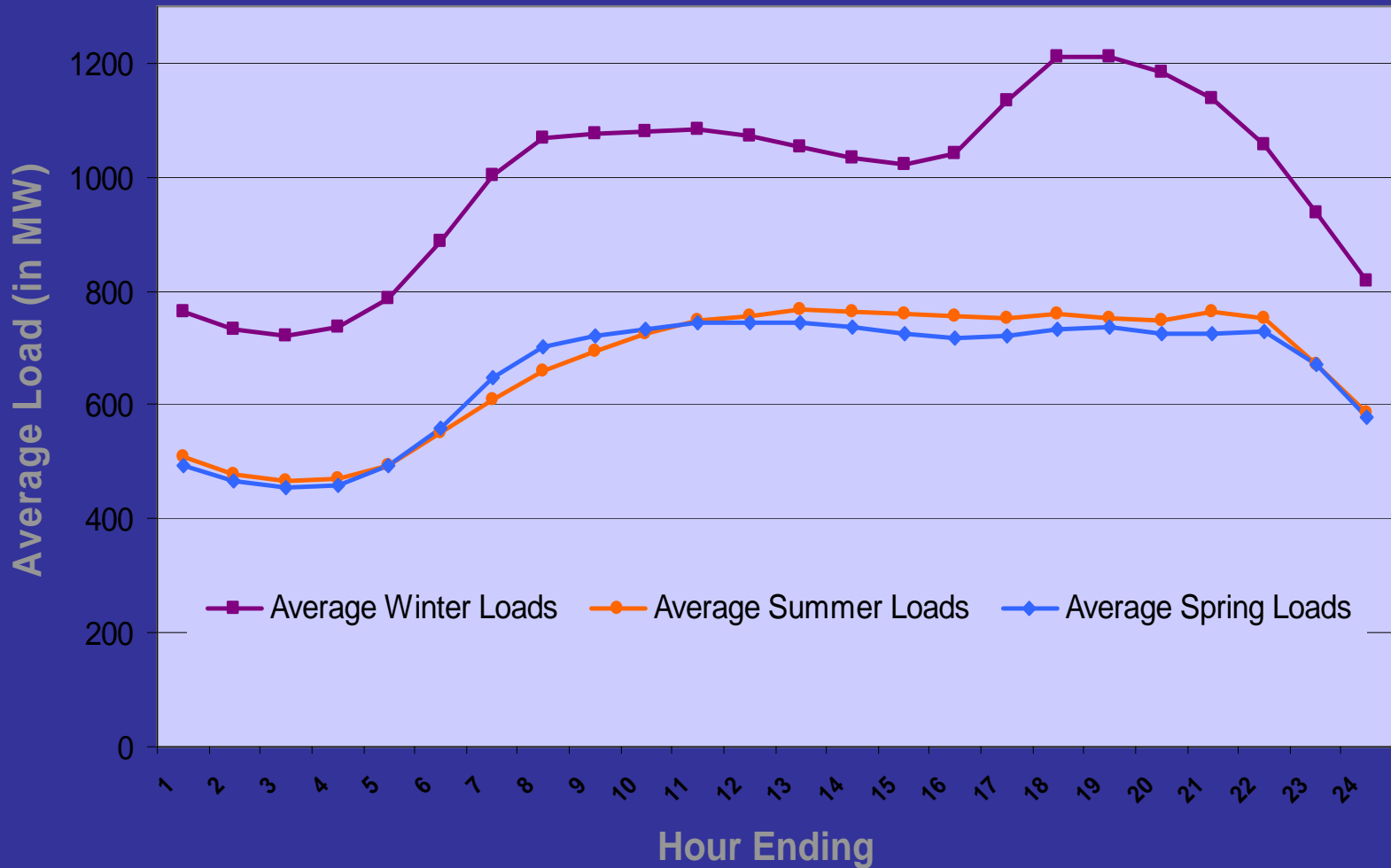
BPA Power Contracts

- Block and Slice customer
- Largest Slice share, ~5% of Federal system
- Subject to hydro and operating risks (and costs)
- Contract limits:
 - ✓ Next hour scheduling changes only (no in-hour)
 - ✓ Scheduling and ramping constraints
 - ✓ Potential for financial penalties

Ancillary Services

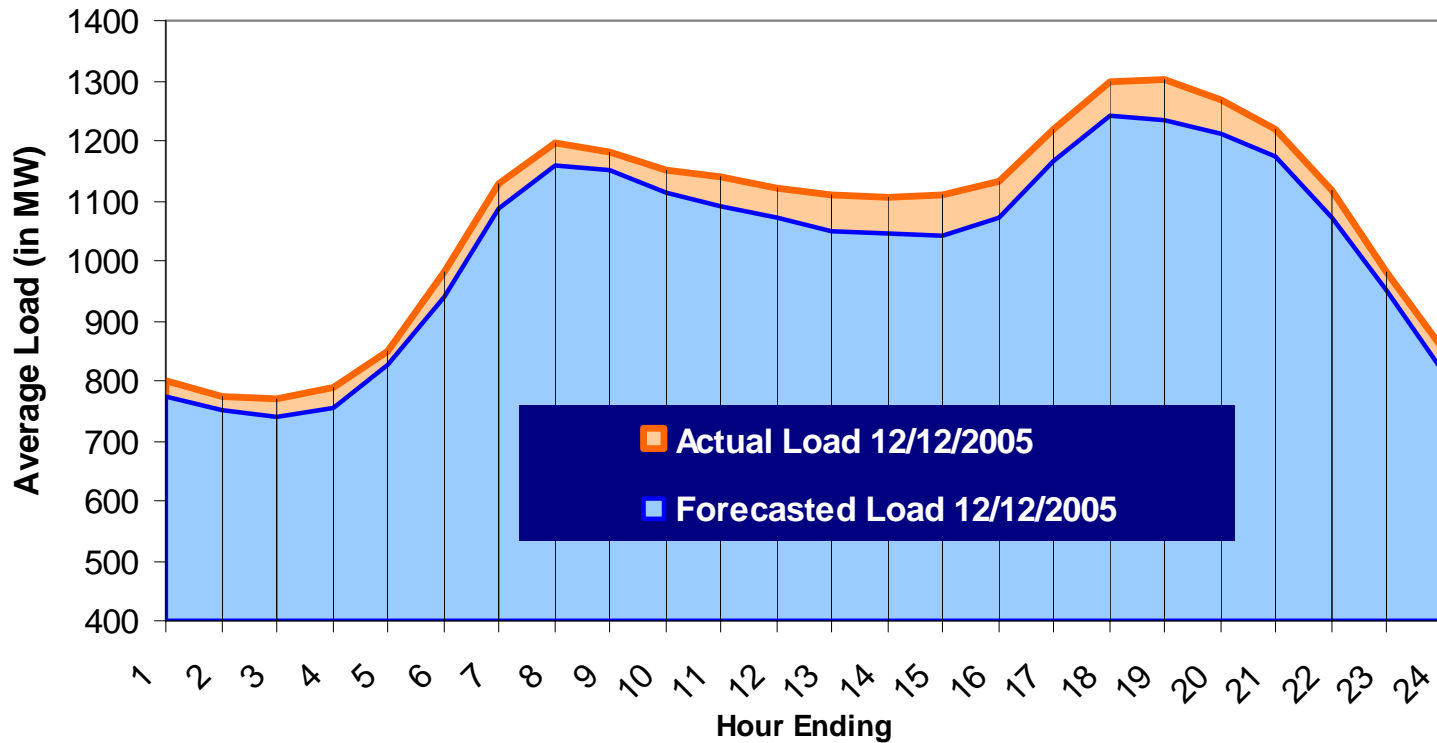
- Snohomish pays BPA for regulation, frequency response, and certain other control area services.
- A “load following” (shaping) service only provided to full requirements customers.
- BPA uses their on-line generation to follow moment-to-moment changes in load.

Seasonal Load Variability



Load forecasting

Forecast vs. Actual Load



Good News-Bad News

- Hydro responds quickly to load variability
- Flow augmentation for fish migration can limit hydro flexibility
- Spring runoff reduces the amount of flexible hydro on a system (high flows and/or spill)
- Able to integrate new resources, but this may increase variability of remaining loads, and the associated costs for load following

The Challenges

- Increasing costs for BPA to balance system operations with flood control, fish migration and power production needs
- Future is riddled with uncertainty
 - ❖ Supply uncertainty
 - ❖ Impacts of fish, other non-power constraints
 - ❖ Politics
 - ❖ Load growth
- Addition of new resources (e.g., wind)
- Impacts of transmission constraints

Our Initiatives

- PUD staff are working in various regional forums with BPA and others entities to:
 - ✓ Evaluate and formulate BPA's products post-2011
 - ✓ Review BPA rate case and cost reviews
 - ✓ Stay apprised of regional transmission issues
- Evaluate resource portfolio strategies through Integrated Resource Plan process