

Northwest Power Pool

**Federal Energy Regulatory Commission
Standard market Design Outreach
Staff-to-Staff Meeting on Western Operations**

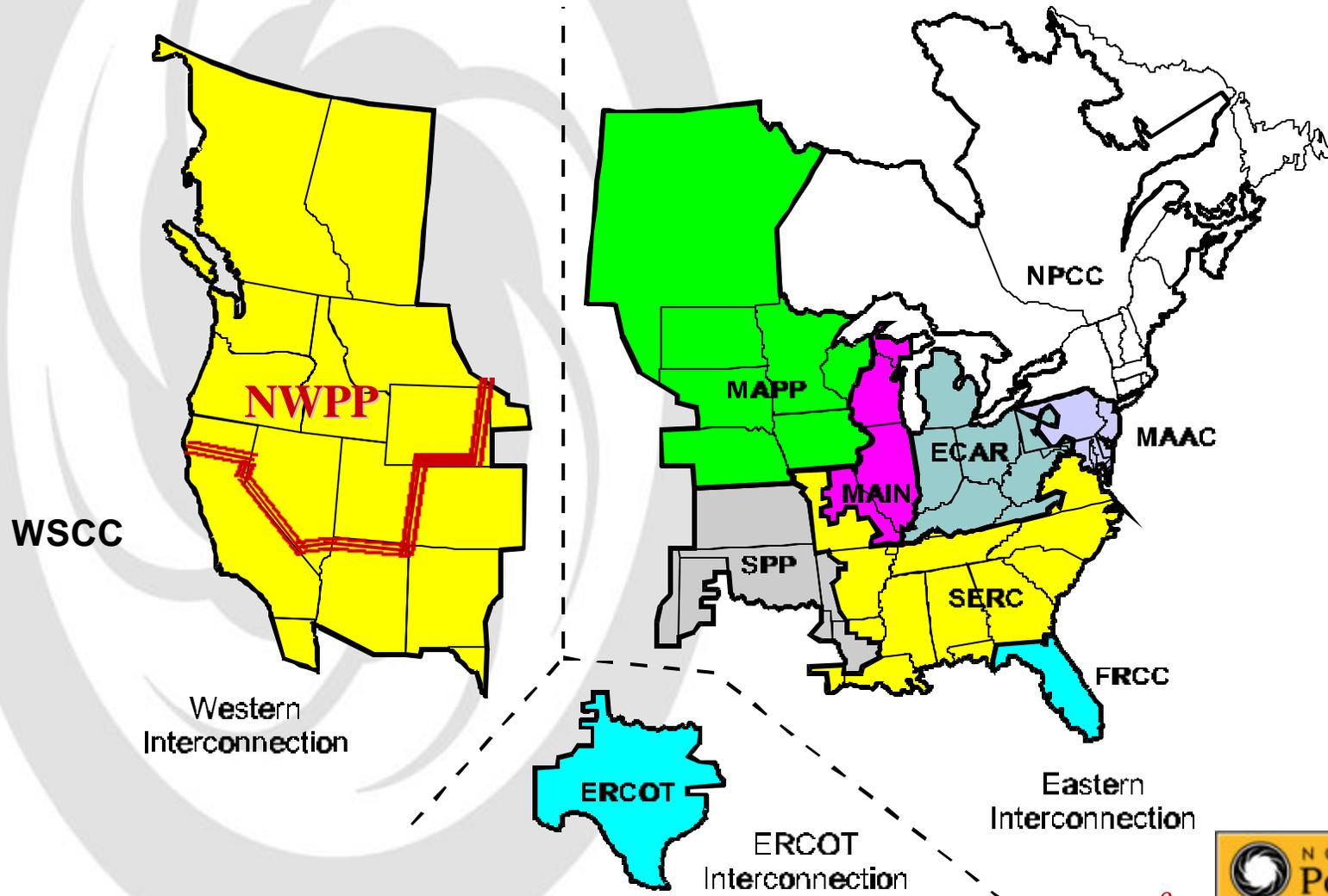
Overview of the Northwest Power Pool Area

October 22, 2002

Jerry D. Rust



North American Electric Power Grid



PARTICIPANTS

- 7 U.S. States
- 2 Canadian Provinces
- Federal, Public, Private, Provincial Ownership
- International Border (Treaties associated with water)
- Non-Jurisdictional as well as Jurisdictional
- Preference Act– Public Law 88-552
- 160 Consumer-owned electric utilities
- 16 Control Areas (32 in the Western Interconnection (WI)).
- 62,149 Transmission circuit miles (53.7% WI)
- ~78,000 Megawatts Total Resources (44% WI)
- ~ 45% Winter Peak load of the WI
- ~ 45% Energy load of the WI
- Automated Reserve Sharing Agreement
- Hydro Coordination
- Hydro Thermal Integration
 - *Hydro located on the West (BC, ID, OR, WA)*
 - *Thermal located on the East (AB, MT, NV, UT, WY)*

HISTORIC DATES

- 1923 - City of Seattle and Tacoma Interconnects
- 1942 - NWPP Operating Committee Formed
- 1956 - Bonneville Power Administration (BPA) interconnects with Idaho Power Company
- 1964 - Pacific Northwest Coordination Agreement (PNCA) signed
- 1968 - Columbia Storage Power Exchange and Canadian Entitlement Allocation
- 1980 - Northwest Power Act
- 1990 - Endangered Species Act
- 1997 - Renegotiate PNCA

LOAD/RESOURCE ANNUAL PLANNING - EXISTING RESOURCES

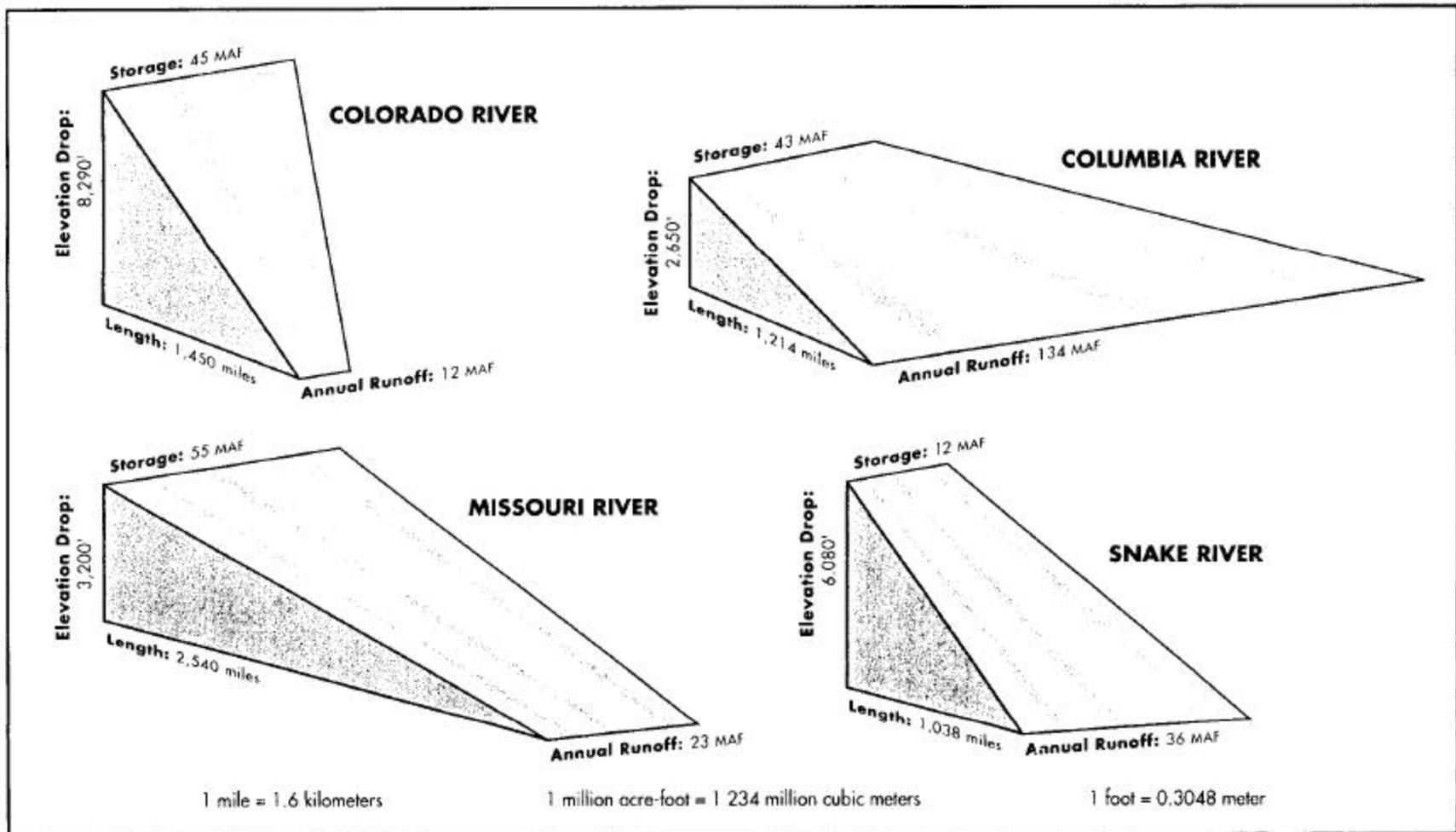
- Resources - Capacity ~ 78,000 MW
 - *Hydro (60%)*
 - *Thermal & Other (40%)*
- Peak Winter Load ~ 53,000 MW
- Energy - Delivered ~ 325,000 GWh
 - *Hydro (40%)*
 - *Thermal & Other (60%)*

LOAD/RESOURCE ANNUAL PLANNING – COORDINATION

- Two reasons to annually plan
 - *Determine how much water will be available for power production*
 - *To coordinate and integrate all generation to increase the amount of power that can be generated*
- Coordination and Integration
 - *Enables utilities to exchange power*
 - *Address emergencies*
 - *Operate more efficiently*
 - *Enhances firm load carrying capability*
 - *Meet Seasonal requirements*

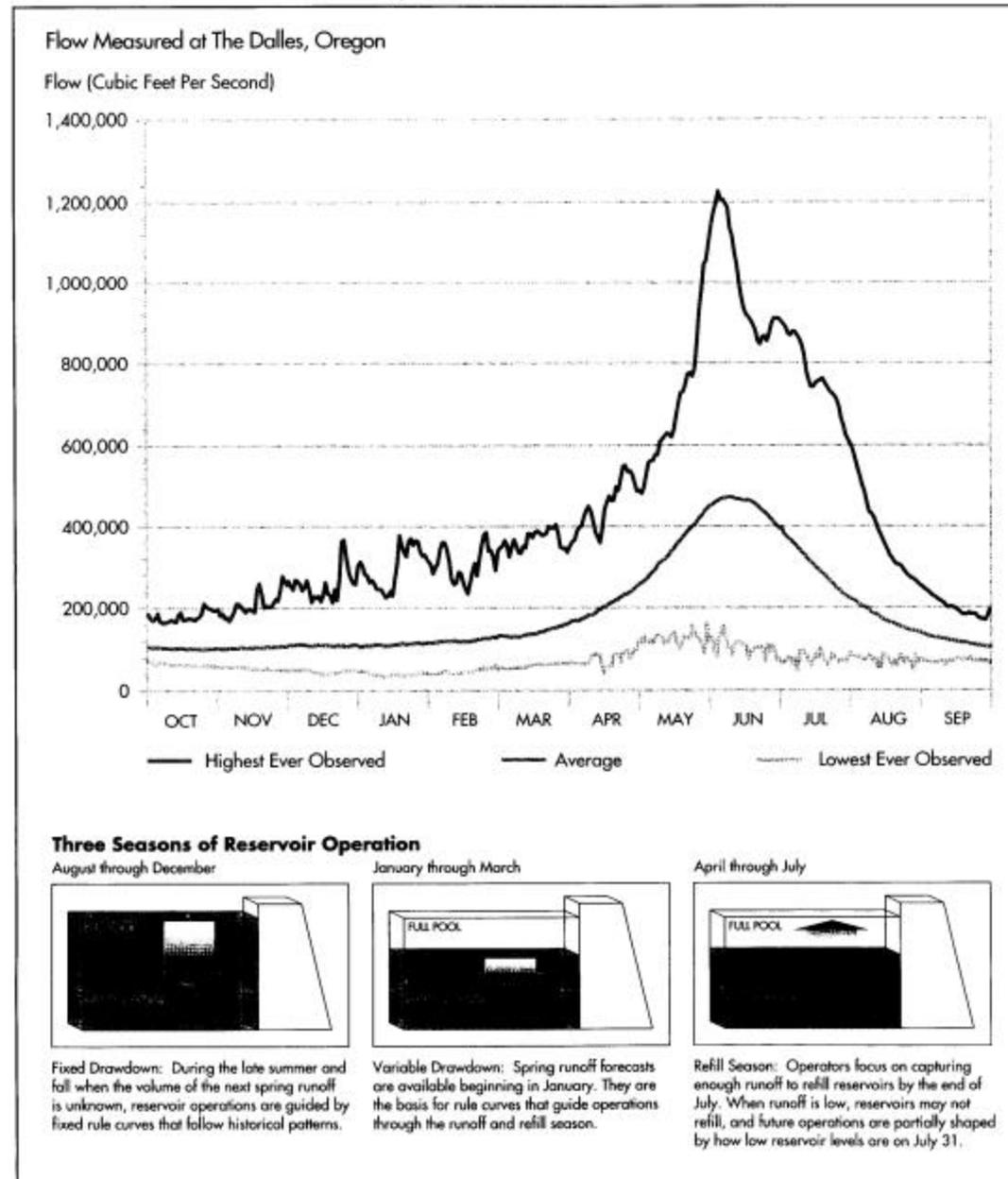
LOAD/RESOURCE ANNUAL PLANNING – STUDIES

- Annual Planning Studies
 - Single Owner Concept
 - *Maximize power production*
 - *Annual Planning period*
 - *Firm Energy Load Carrying Capability (FELCC)*
 - *Refill Requirements*
 - *Shifting and Shaping of FELCC*
 - *Reliability Standards meeting of firm load (Winter & Summer Assessments)*
 - *Integration of all Resources including maintenance*
 - *Outage Coordination (Transmission Facilities)*
 - *Address all non-power issues*
 - *Increase flexibility*



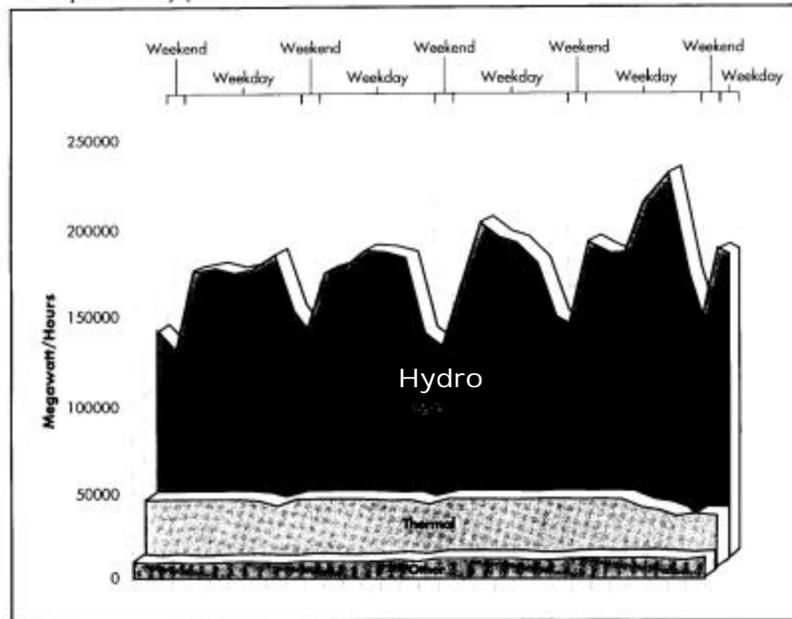
It is the large volume of water passing given points along the Columbia-Snake Rivers that is so valuable to river planners and users. Although the Columbia River total storage compares favorably with other large U.S. rivers, its runoff is significantly larger than its storage capacity as compared to the Colorado or Missouri which have annual flows less than storage capacity.

Three Seasons of Reservoir Operation



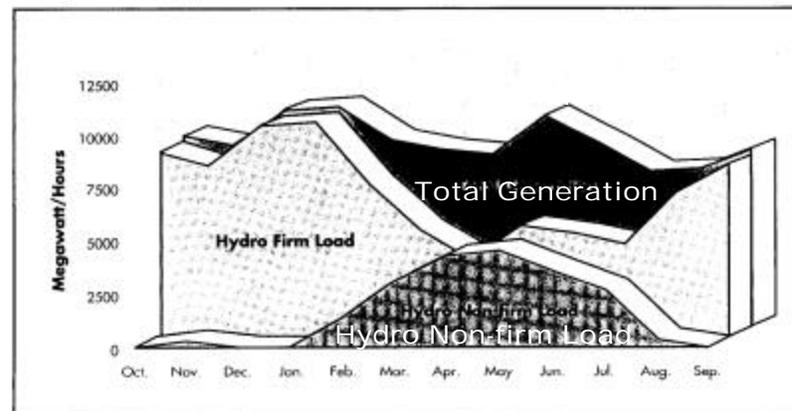
Operations on the Columbia River system are built around seasonal streamflow conditions. The water in the river can vary dramatically from month-to-month, depending upon precipitation and snowmelt.

Graph of Typical Month



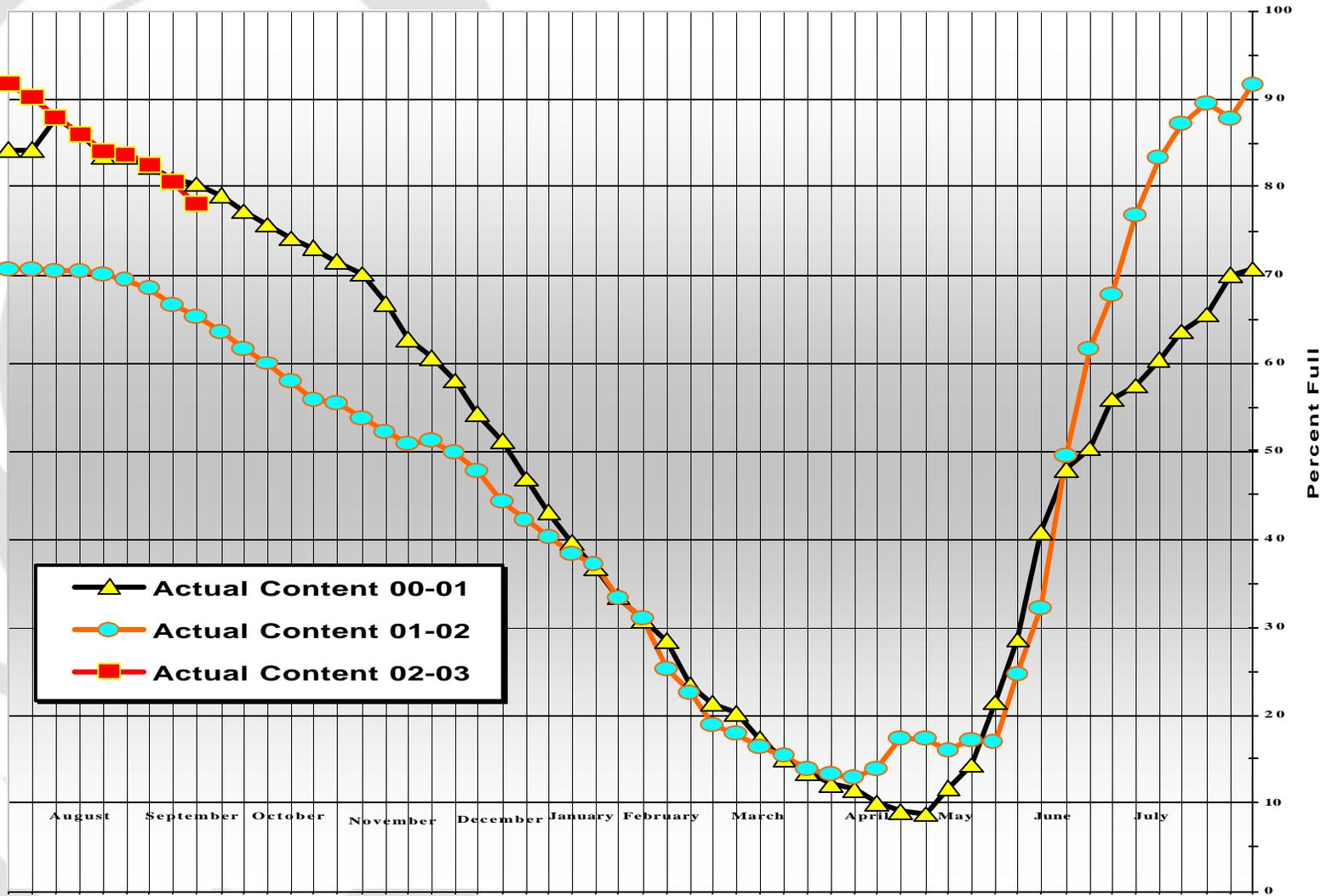
Loads are significantly lower on weekends, especially on Sundays, than on weekdays when most people are at work. The hydro system responds to changing loads, with thermal and other resources providing power to meet the relatively stable baseload.

Graph of Typical Year

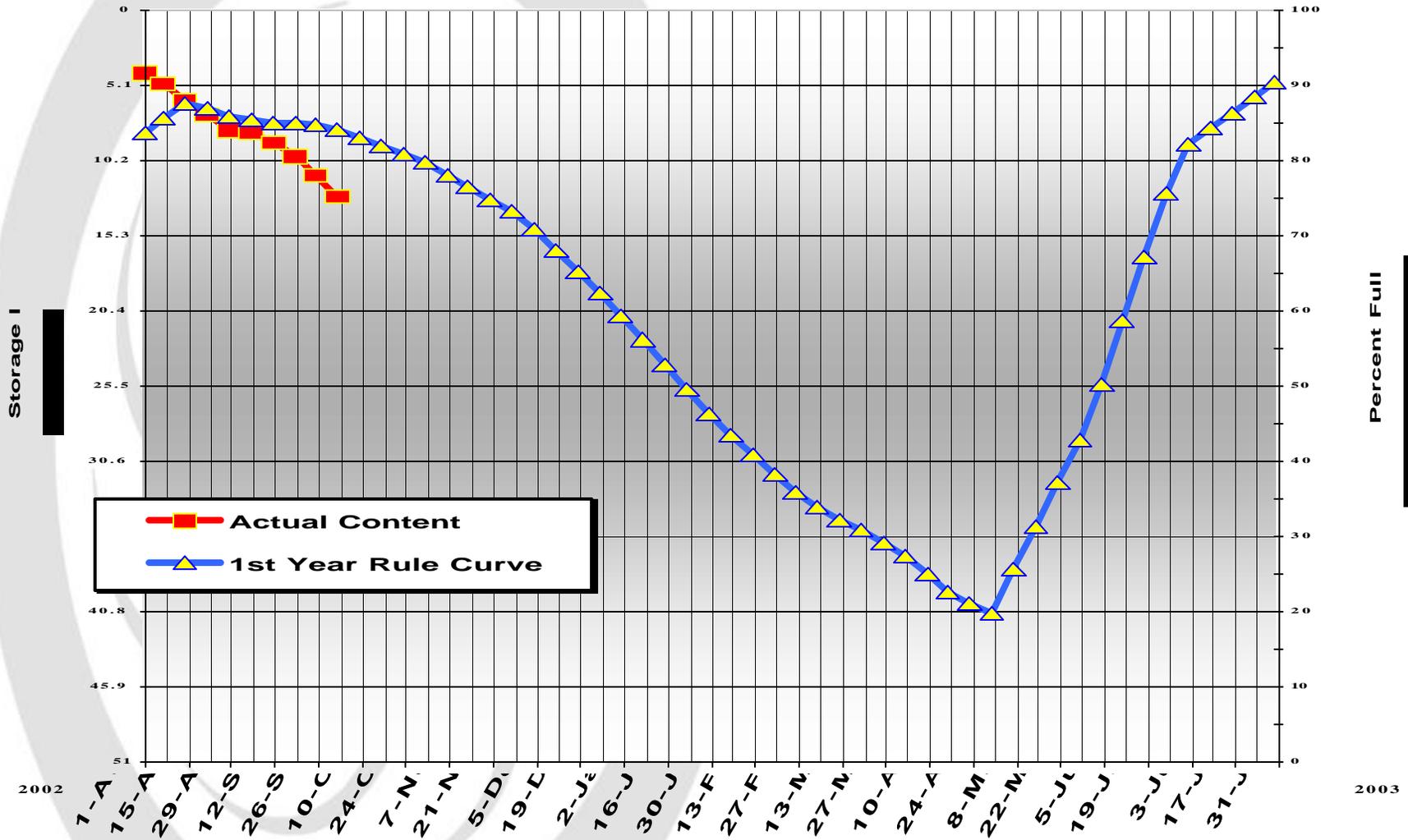


Loads and power production also vary significantly during the year. Hydro projects are fueled by water flows, which are higher during the spring and summer as snowpack melts. Loads are highest in the winter in the Northwest, as people turn up their thermostats to keep warm. Surplus energy can be either sold in the Northwest or sent to California, which has higher loads in the summer, and California utilities can send energy back to the Northwest in the winter, when we need it.

Coordinated System Reservoir Energy Content Year-by-Year Comparison



2002-03 Coordinated System Reservoir Energy Content



TODAY'S OVERALL EXPECTATIONS

Continue cooperation and coordination between the entities to ensure the reliability is maintained, if not enhanced, to meet current and future requirements of consumers in the area.

QUESTIONS?

