

**Big Horn River System Long-Term Issues Group**  
**Fort Smith, Montana**  
**April 12, 2007**

**Power Generation**

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**Role of Power Generation in the Project**

- Yellowtail Generation impacts both Power Marketing and Power Operations at Western Area Power Administration (Western)
- Firm power customers could be impacted either positively or negatively by operational changes which impact costs of power production.
- Approximately 80% of project is paid back via power revenues

**Power Marketing/ Generation**

- Yellowtail is an integral part of marketing plans for both the Rocky Mountain (RMR) and Upper Great Plains (UGPR) Regions of Western.
- 50% of generation is marketed by RMR and 50% is marketed by UGPR.
- Bureau of Reclamation sets water target values and Western determines schedules based on water requirements.
- Power schedules consist of a 24 hour schedule.
- Schedules to UGPR are typically developed on a 2 to 1 ratio of peak hours to off peak hours.
- Power production during peak periods is important from market perspective. Peak time of July & August as well as January & February.
- Marketing perspective- Operational changes impacting power production during peak times would be a concern of power customers and a cost impact to power rates.

**Power Operations**

- Yellowtail is located in the RMR control area. Control area requirements are of greater significance to RMR.
- RMR control area has only two powerplants large enough that they can be used for regulation service.
  1. Mt. Elbert pumped storage—operational during the daytime but not available at night due to return of pumped water.
  2. Yellowtail – Large resource in the RMR area and only resource available during nighttime.
- Yellowtail provides several areas of operational support

1. Regulation service – control area minute to minute following of loads in control area
  2. Reserve requirement- in order to meet FERC criteria's, certain levels of generation need to be made available for emergency situations
  3. Voltage support- generator on the system as needed by system voltage conditions
  4. Transmission support- generation levels can alleviate or impact transmission flows in the area. Generation increases or decreases are necessary to prevent flows across neighboring systems. Large transmission service costs when this occurs.
  5. Energy Imbalance- makes up energy differences when actual vs. schedules amount do not match
- Operating at higher reservoir levels does improve power generation efficiencies. However, review of data could not confirm this due to inaccuracy of river flow measurements and operational factors (unit loading and units on regulation service). High reservoir operations could have some negative impacts if operational flexibility is lost due to water into flood pool.
  - Balancing act to the needs of the power system while operating within the constraints of the river system and constraints of the generation units.
  - Power Operations perspective- Operational changes impacting the flexibility of the Yellowtail units to meet the control area needs would be a concern of power customers and a cost impact to power rates.