

2015 MONTANA WATER SUPPLY INITIATIVE UPPER MISSOURI RIVER BASIN

Industrial Water Uses



Some Examples:

- Mining
- Energy (petroleum) production and refining
- Power Generation
 - Hydropower
- Construction
- Non-agricultural food production
- Paper products



MINING AND ENERGY PRODUCTION

- Water rights required for all *beneficial uses* of water
- Indirect or collateral uses of water usually don't require a water right
- Temporary leasing of water

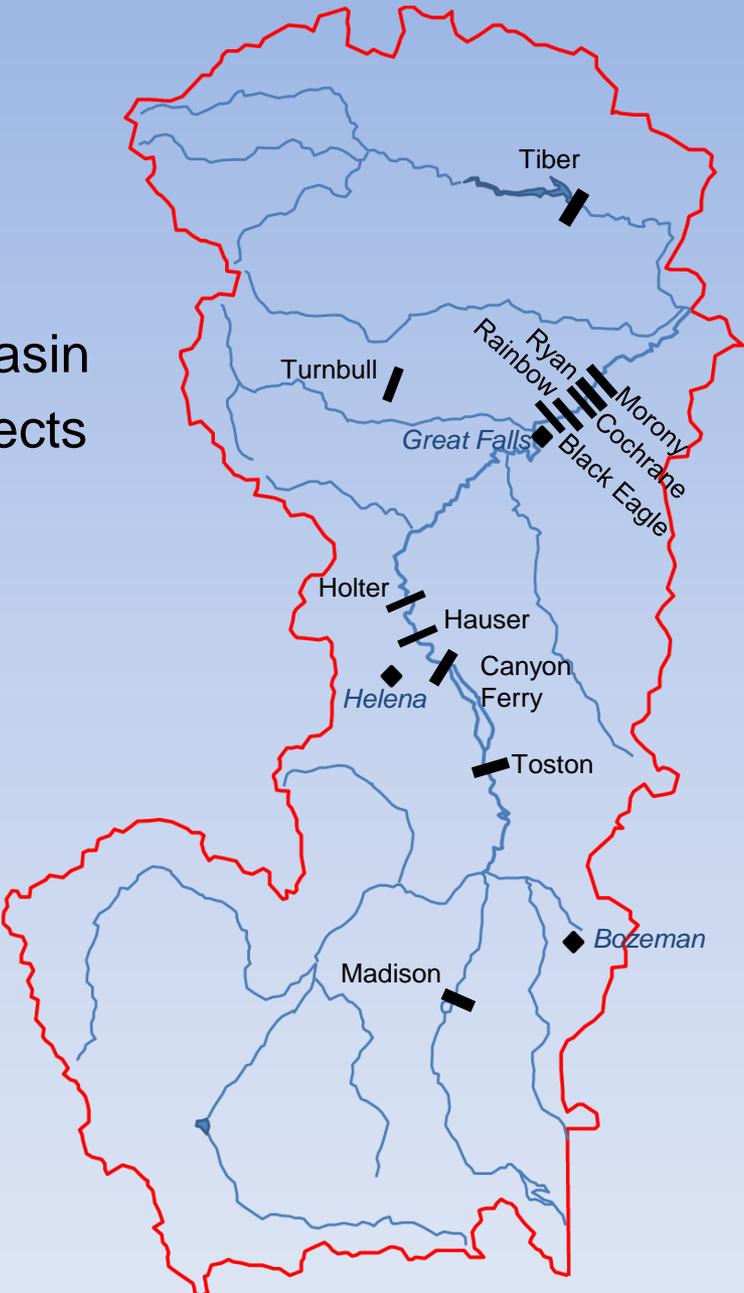


HYDROPOWER



Black Eagle Dam at Great Falls

Upper Missouri River Basin Major Hydropower Projects



Major Hydropower Facilities in the Upper Missouri River Basin

Dam	Stream	Capacity (Megawatts)	Owner or Operator
Madison	Madison River	9	PPL Montana
Toston	Missouri River	10	Montana DNRC
Canyon Ferry	Missouri River	50	U.S. Bureau of Reclamation
Hauser	Missouri River	19	PPL Montana
Holter	Missouri River	48	PPL Montana
Black Eagle	Missouri River	21	PPL Montana
Rainbow	Missouri River	60	PPL Montana
Cochrane	Missouri River	64	PPL Montana
Ryan	Missouri River	60	PPL Montana
Morony	Missouri River	48	PPL Montana
Tiber	Marias River	7.5	Tiber-Montana LLC
Total		396.5	



New Hydropower Projects

Recently Completed

- Rainbow Dam Upgrade: 37 MW to 62 MW
- Turnbull: Greenfield Irrigation District 13 MW

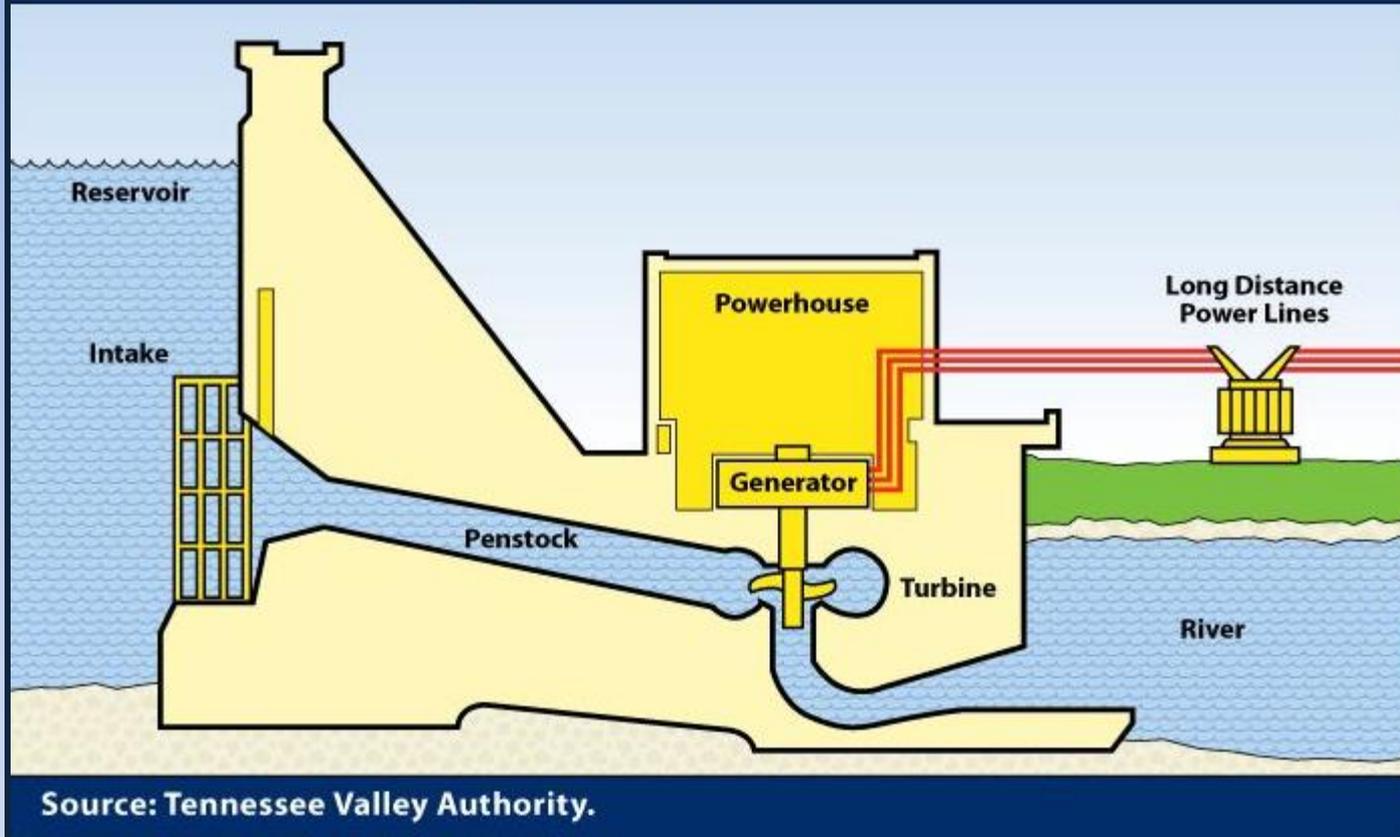
Planned

- Gibson Dam: 15 MW
- Clark Canyon Dam: 4.7 MW

The Generator Floor at Holter Dam, Missouri River near Helena

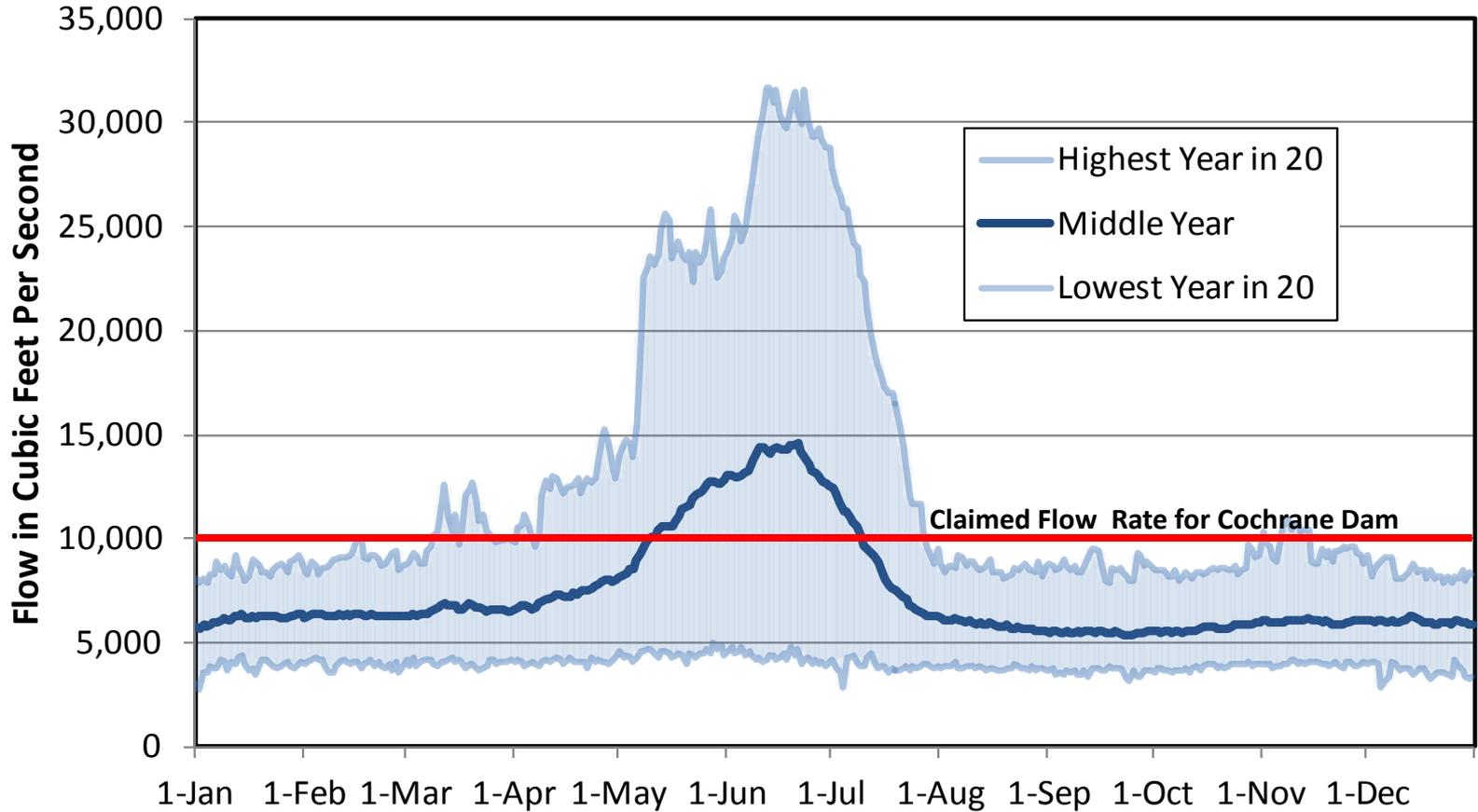


Schematic of a Hydroelectric Dam



Water passes through the penstock and drives the turbine, which turns the generator and produces electrical power. The amount of power produced is proportional to the Head (height of the water above the turbine), and the discharge of water through the penstock. If water surface elevations in the river downstream of the dam become too high, power production will be reduced.

Missouri River at Great Falls Normal Range of Flow



FOOD PROCESSING



The International Malting Company plant in Great Falls, shown under construction (summer 2004), plans to process 12 million bushels of barley each year. Manager Mark Black said the plant will purchase barley as close to the facility as possible.

Questions?

