

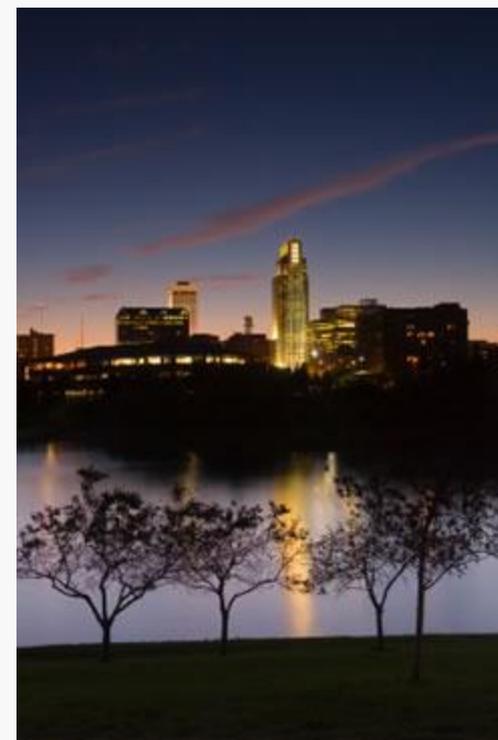


Impacts of Missouri River Flow to Nebraska Electric Utilities

Nebraska Stakeholders - Missouri River Associated of States and Tribes (MoRAST)

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Presented by Russ Baker (OPPD) and John Shadle (NPPD)



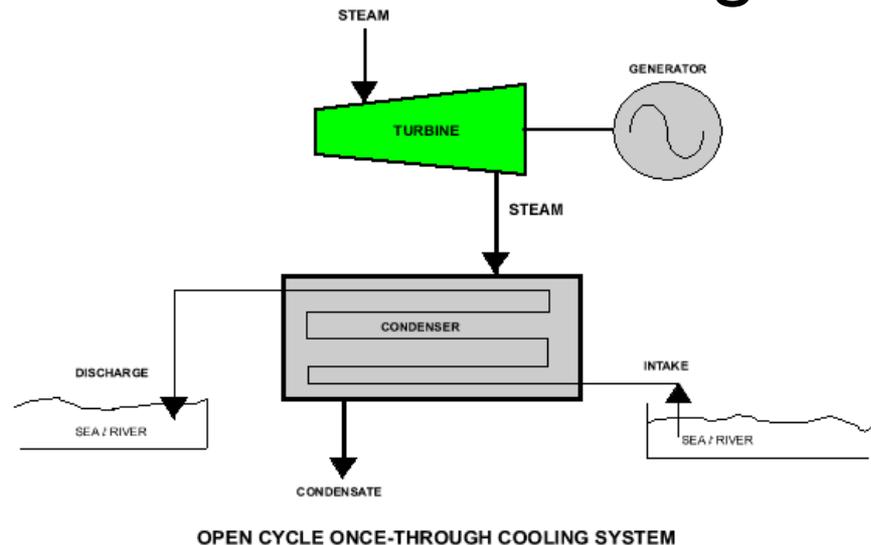
Background



- Nearly 1,600 water intakes exist on the upper Mainstem Reservoir System and Lower River regions.
- Twenty-six coal-fired and nuclear power plants draw cooling water from these two regions with a combined generating capacity of 15,747 megawatts (MW).
- The benefits of these non-hydro power electrical assets may well exceed the benefits of all other uses combined.

Concerns with River Flow

- OPPD's North Omaha, Nebraska City, and Fort Calhoun Stations, as well as NPPD's Cooper Nuclear Station, use Missouri River water for once through cooling



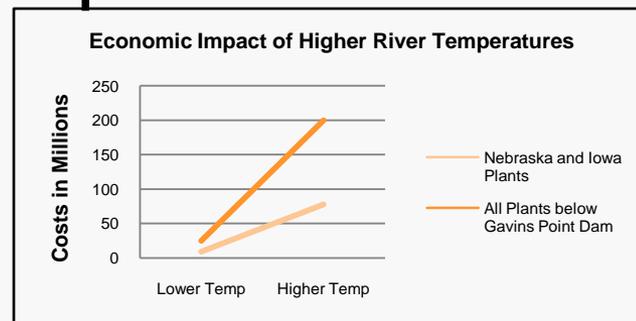
Operational Impacts of Higher Ambient River Temperatures

- Reduced summer flows have resulted in higher ambient river temperature
- Reductions in power plant output or shutdown(s) may be necessary to comply with discharge temperature operating limits.



Economic Impacts of Higher Ambient River Temperatures

- Cost estimates for impacts to Nebraska and Iowa power plants range between \$9 million and \$78 million annually*
- And could total between \$25 million and \$200 million annually for all Missouri River-based plants below Gavin's Point Dam*



Reduced Generation Available from Hydro Electric

- The Western Area Power Administration (WAPA) provides low cost hydro electric power to OPPD, NPPD, and a number of municipal utilities in Nebraska.
- Missouri River flow reductions will result in less hydro power generation by WAPA and increased costs to Nebraska customers.



Difficulty Transporting New Equipment

- Additionally due to the size of power plant equipment and transportation requirements, both OPPD and NPPD have had to utilize barges to bring equipment to the Nebraska power plant sites.



Potential Effects on Plant Operation

- Low winter releases from Gavins Point Dam result in ice jams that can reduce the quantity of water available for generation.
- Low river flows increase sediment and trash at power plant intakes.
- This can result in operational limitations and potential shutdown of power plants.





North Omaha Station



Fort Calhoun Nuclear Station

Thank You



Cooper Nuclear Station



Nebraska City Station