Northwest Power and Conservation Council

July 2, 2008

MEMORANDUM

TO: Council Members

FROM: Jim Ruff – Manager, Mainstem Passage and River Operations
John Fazio – Senior Power Systems Analyst

SUBJECT: Revised Analysis of the NMFS 2008 FCRPS Biological Opinion

Summary

Council staff has revised its initial analysis of the NOAA Fisheries' final 2008 FCRPS Biological Opinion (BiOp). Mainstem hydroelectric operations proposed in the 2008 BiOp are expected to cost the region an estimated $15 million per year but could be as high as $60 million in some years (relative to the 2004 BiOp). This increase in cost is mostly attributed to increased bypass spill levels for juvenile fish over the levels in the 2004 BiOp, which included no fish spill during the summer months at the four collector projects.[1]

On average, river flows in both the Snake and Columbia rivers are minimally affected, with slightly higher spring flows and slightly lower summer flows. The 2008 BiOp includes actions consistent with the Council's 2003 Mainstem Amendments to provide steady and declining summer outflows at Libby and Hungry Horse dams. Annual average hydroelectric generation is estimated to decline by about 20 average megawatts, again mostly attributed to increased bypass spill.

Bypass spill for juvenile fish is generally greater than under the 2004 BiOp but is somewhat less than what has been ordered by the court and implemented from 2005 through 2008. More specifically, the 2008 BiOp includes summer spill at McNary Dam -- an operation that was not in the 2004 BiOp. The 2008 BiOp, however, reduces bypass spill at Ice Harbor Dam, primarily due to expectations of the efficiency of its removable spillway weir. Also, in some cases, the timing of the spill is dependent on the number of fish being collected. For example, in the 2008 BiOp summer spill is proposed to be curtailed at each Snake River project in the month of August when the juvenile fish count falls below 300 fish for three consecutive days.

[1] The four transport projects are Lower Granite, Little Goose and Lower Monumental dams on the lower Snake River and McNary Dam on the Columbia River.

Dworshak and Brownlee elevations are unaffected; however, releases for salmon flows from the Upper Snake Basin have been shifted to provide slightly more water in the spring and slightly less water in the summer months, with no change in total volume of water provided. Due to implementation of the State of Washington's Columbia River Water Management Program, the elevation of Grand Coulee reservoir (FDR Lake) is likely to be about a foot lower by the end of summer, ranging from 1,279 to 1,277 feet depending on runoff conditions. However, Libby and Hungry Horse elevations will be about 7 and 10 feet higher respectively, on average, at the end of September as a result of operations consistent with the Council's program to provide less draft with steady and declining summer outflows at those two projects.

A more detailed summary of the analysis is provided in the attached PowerPoint© file and will be presented to the Council at its July meeting.

Background

The NOAA Fisheries' final 2008 BiOp on the Federal Columbia River Power System (FCRPS) was released on May 5, 2008. Analytical data used to simulate the proposed mainstem operation included in the new BiOp was obtained from the federal action agencies and Council staff was able to complete its initial assessment of the power system impacts.

This is an initial analysis of 2008 BiOp operations, in part, because there remains some uncertainty among the federal agencies concerning future bypass spill and juvenile transport operations.[2] The levels of bypass spill assumed for projects with removable spillway weirs in the BiOp are based on the federal agencies' best estimates of what is needed to meet biological performance standards.[3]

Based on monitoring and evaluation results, the spill levels in the 2008 BiOp could change in the future. That is because several mainstem projects are or will be evaluating different operational alternatives to confirm the performance standards are being met. It is possible that the outcomes of those biological studies will show that higher spill levels will be required to meet those standards. Due to these reasons, it would be fair to characterize our power system analysis as conservative.

Staff will continue to monitor developments related to mainstem hydroelectric operations and report them to the Council. Staff will also continue to review and appraise the data set provided to us, which was used to simulate the proposed hydroelectric operation in the draft 2008 BiOp.

Attachment

[2] Transport operations in the 2008 BiOp may be adjusted in the future for research purposes, due to conditions at the collection facilities, or through the adaptive management process based on new information.

[3] The 2008 BiOp's juvenile fish dam passage performance standards across Snake River and lower Columbia River dams are 96 percent average dam passage survival for spring Chinook and steelhead and 93 percent average survival across all dams for Snake River subyearling Chinook salmon. There are also juvenile system survival performance targets, which measure juvenile in-river survival through the FCRPS.

Northwest Power and Conservation Council

Power System Impacts of the Final 2008 Biological Opinion

Revised

Council Meeting
July 14, 2008
Kalispell, Montana

Items for Discussion

Northwest Power and Conservation Council

Caveats

- Analysis is based on 2008 BiOp operation compared to 2004 BiOp (without additional court-ordered bypass spill)
- Cost estimates do not take into account price fluctuations due to changes in hydro generation
- Cost estimates also do not account for peak vs. off-peak price differences
- Cost estimates only provide order-of-magnitude values

Northwest Power and Conservation Council

Summary

River Flows (all changes are relatively small)

- Snake: increase in spring and decrease in summer
- Columbia: increase in winter & spring and decrease in summer
- More levelized summer outflows from Libby and Horse

Reservoir Elevations

- 5 to 10 feet higher summer elevations at Libby and Horse
- Less than 1 foot lower summer elevations at Coulee

Spill Changes

- More spill at Snake dams except a reduction at Ice Harbor
- Summer spill now provided at McNary

Generation

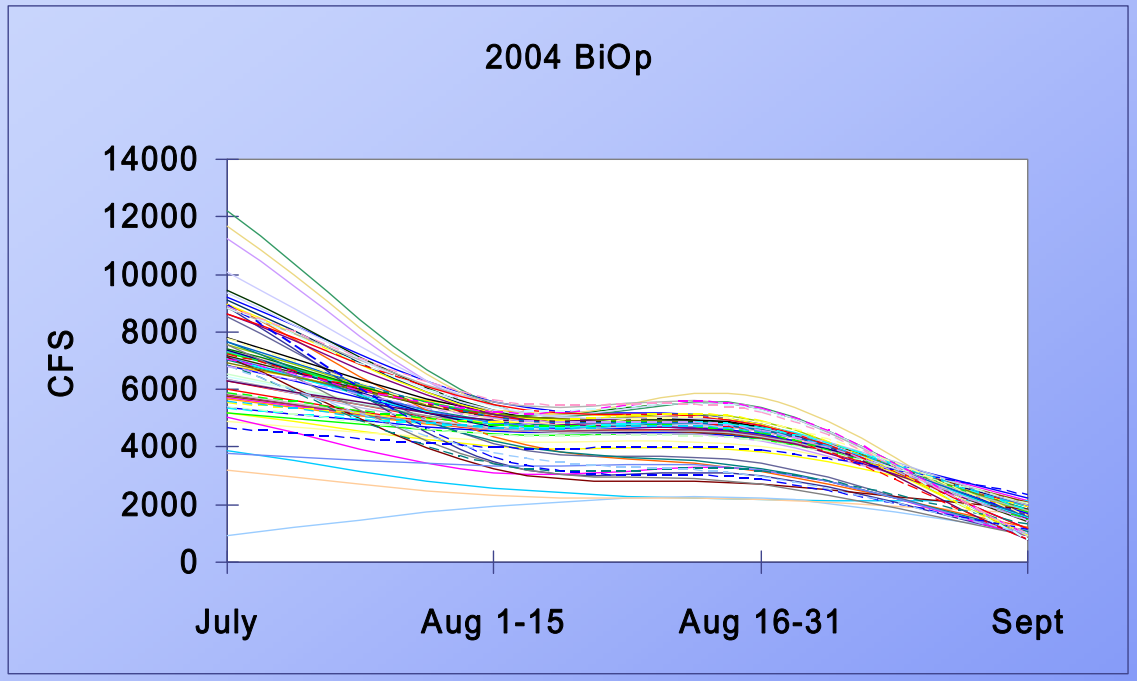
- Slight increase in winter and spring
- Larger decrease in summer

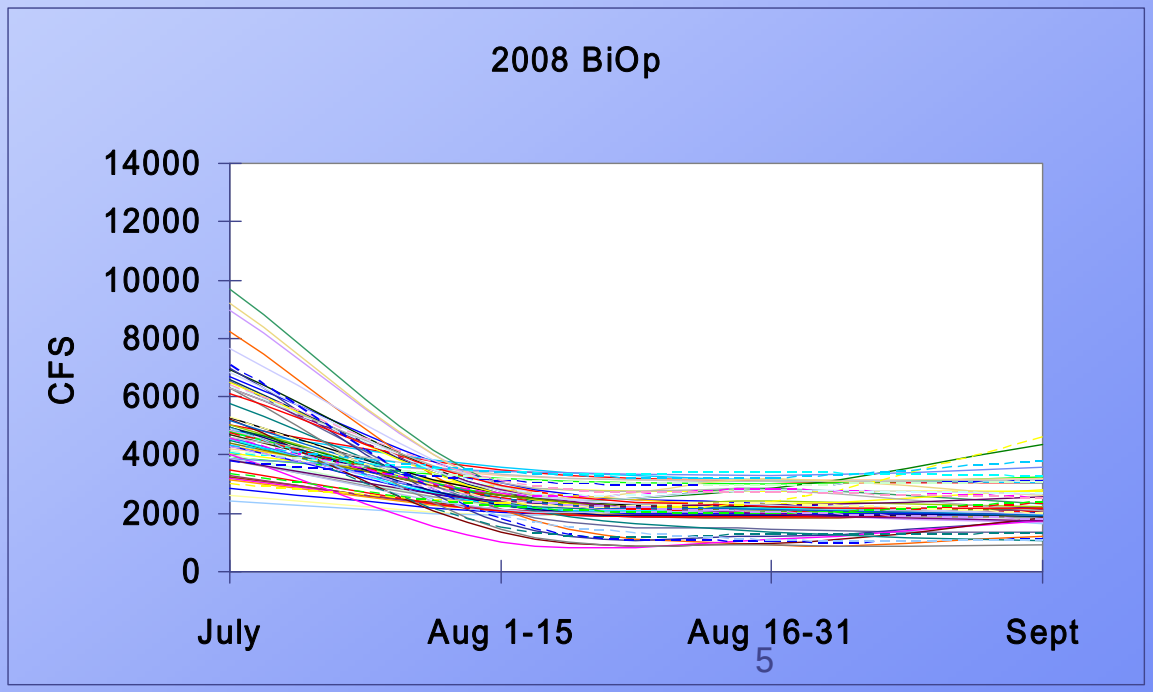
Cost (relative to the 2004 BiOp)

- On the order of $10 to $20 million/year
- Some years could be as high as $60 million
- Some years could have little or no cost

Northwest Power and Conservation Council

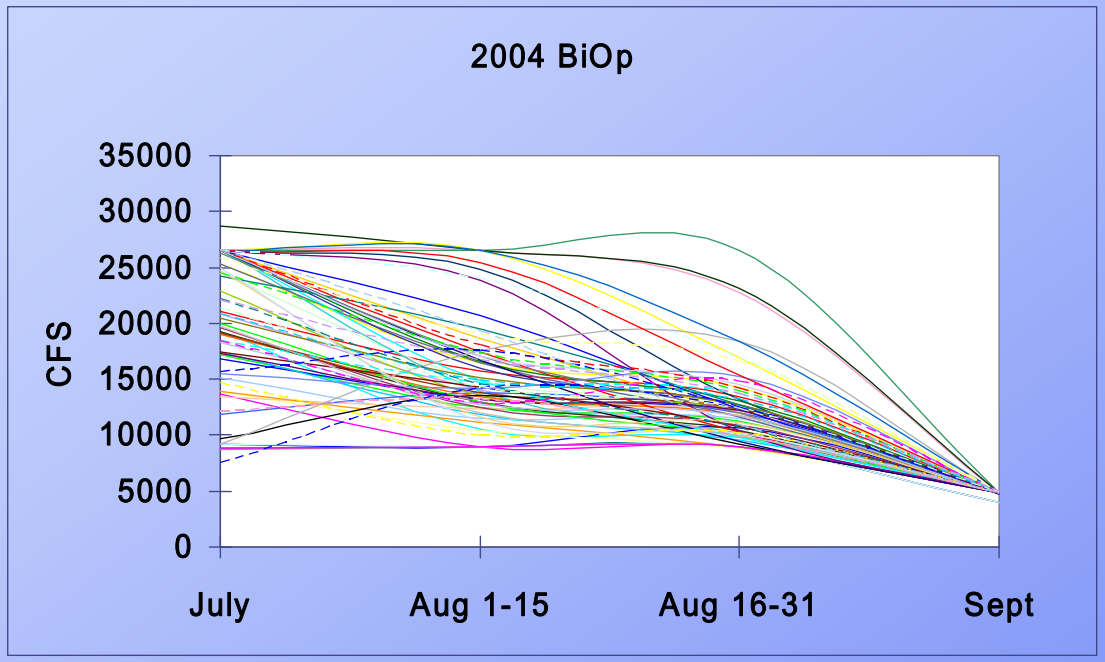
Summer Flows at Hungry Horse

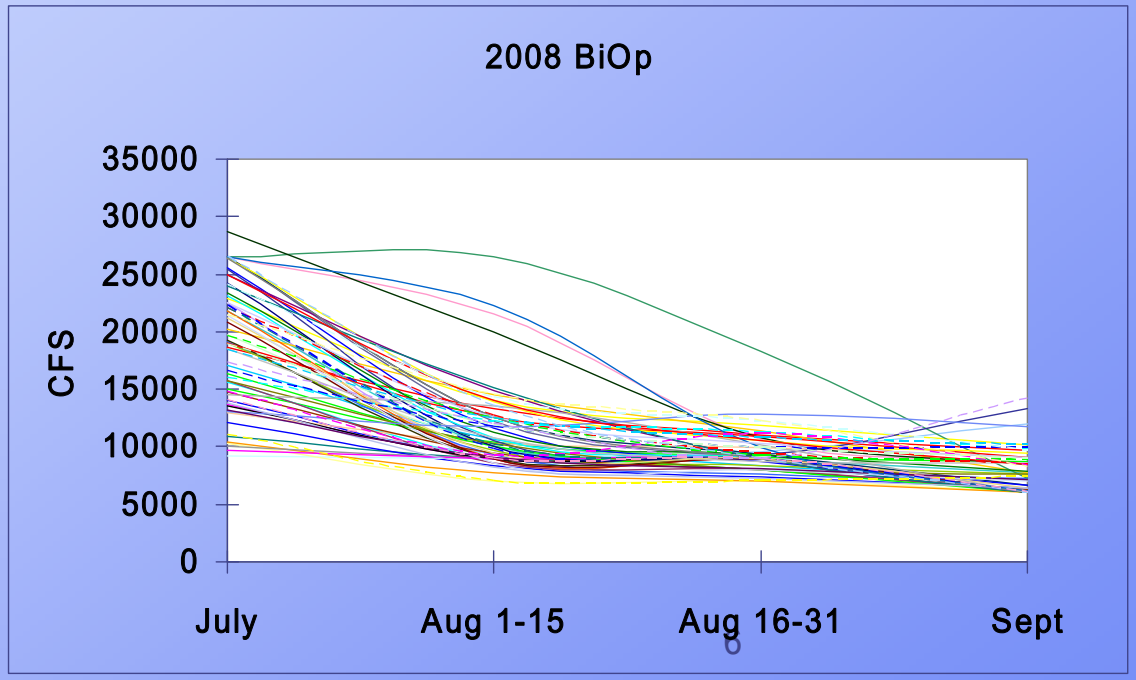




Northwest Power and Conservation Council

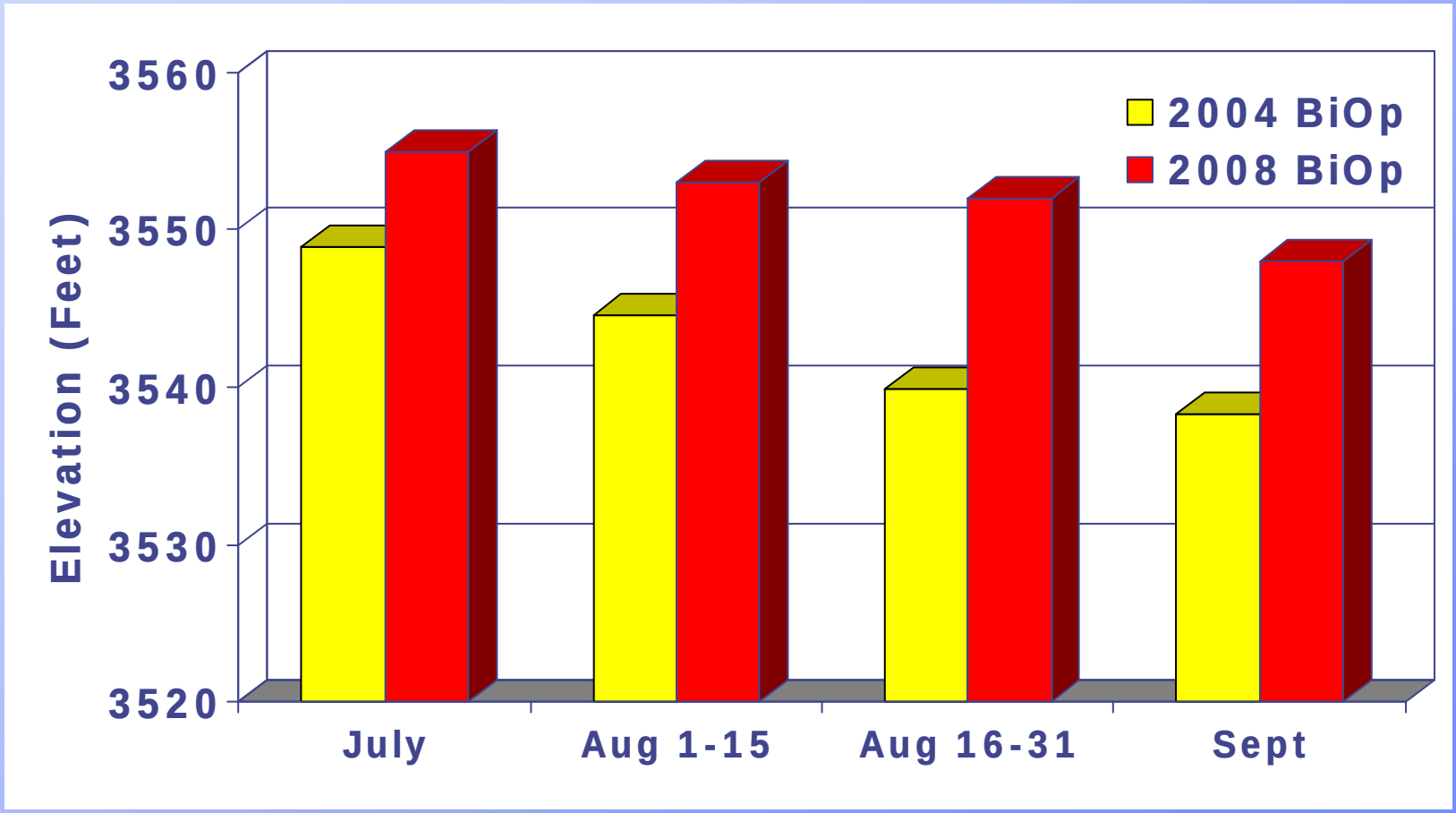
Summer Flows at Libby





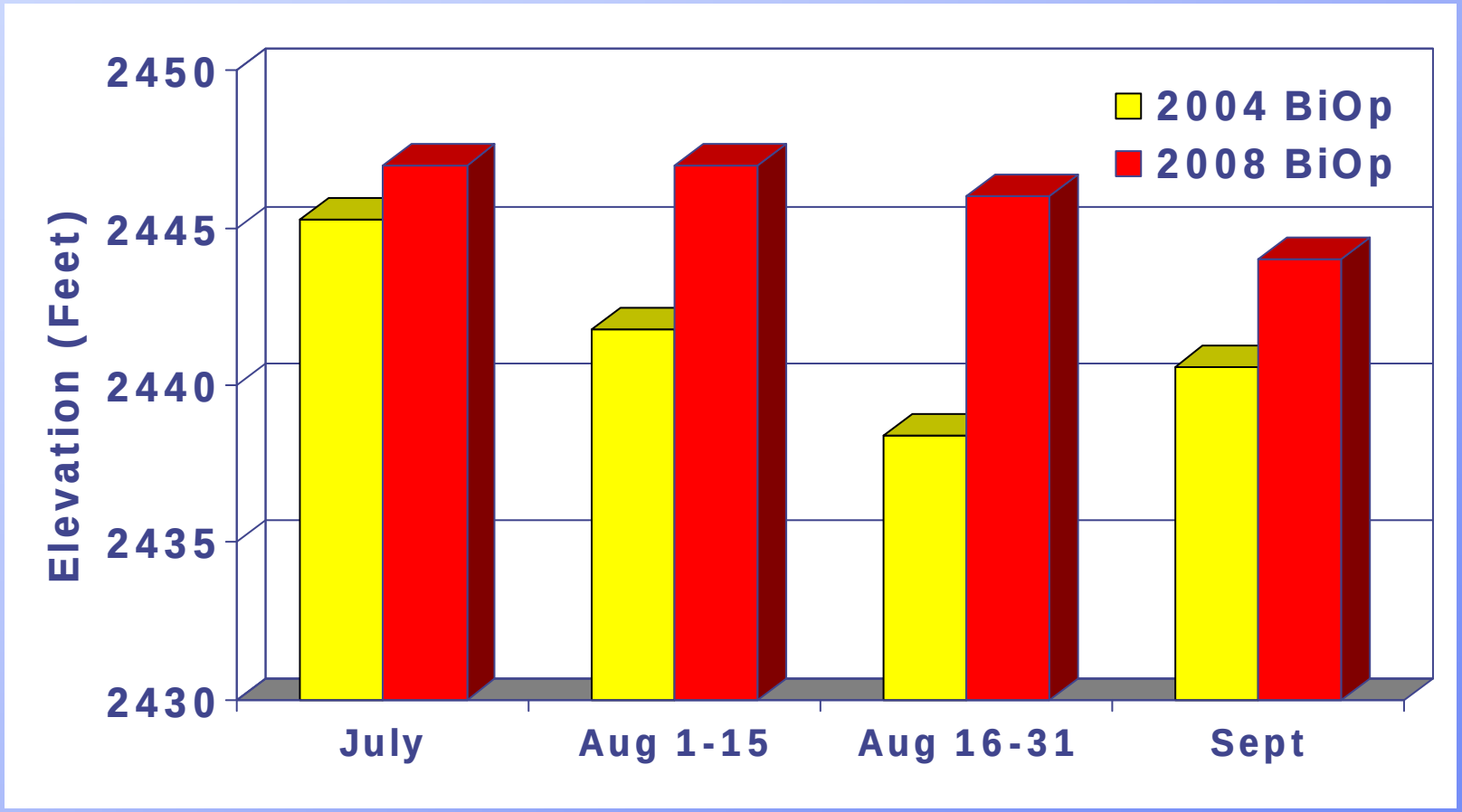
Northwest Power and Conservation Council

Hungry Horse Elevation
70-Year Average



Northwest Power and Conservation Council

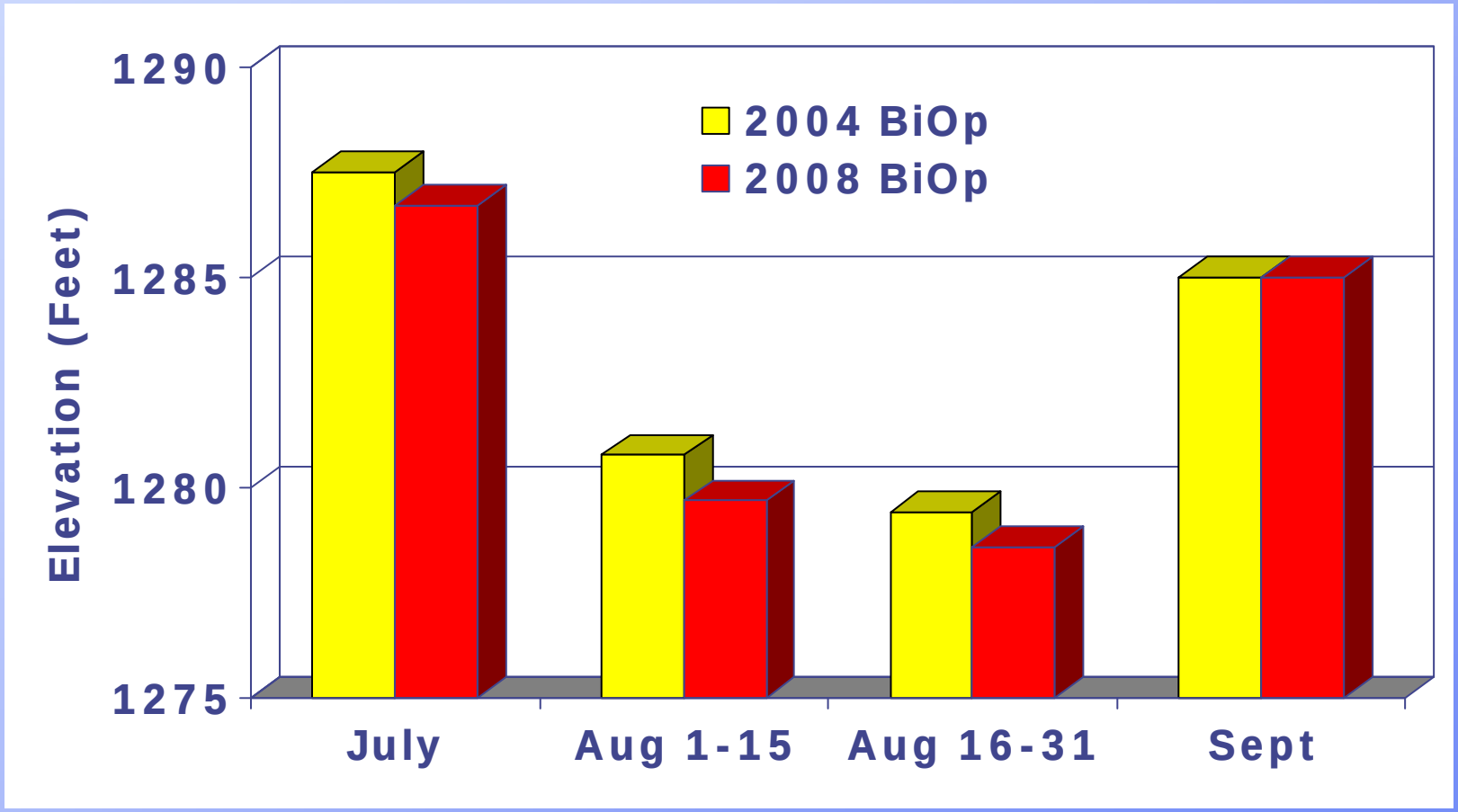
Libby Elevation
70-Year Average



Northwest Power and Conservation Council

Grand Coulee Elevation

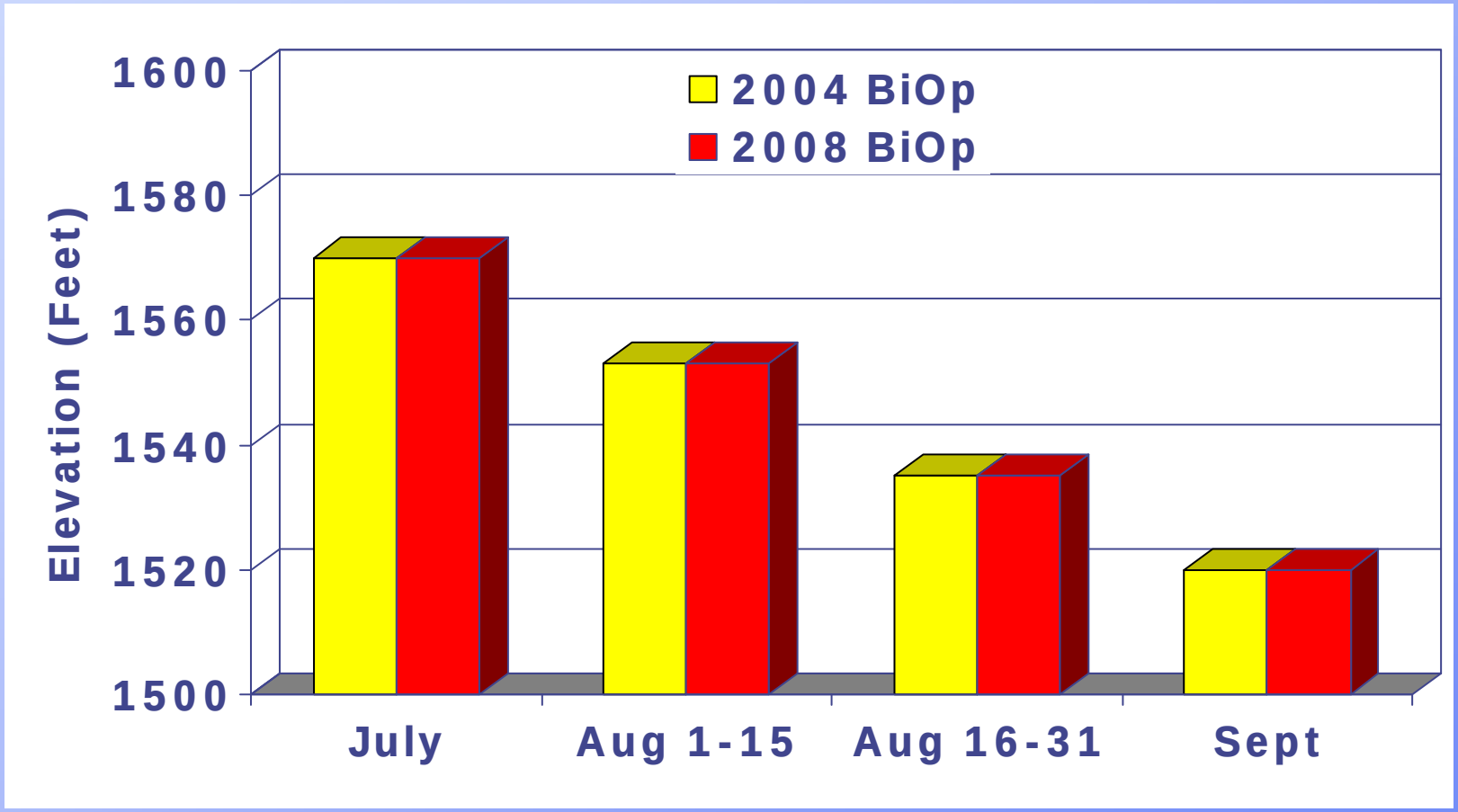
70-Year Average



Northwest Power and Conservation Council

Dworshak Elevation

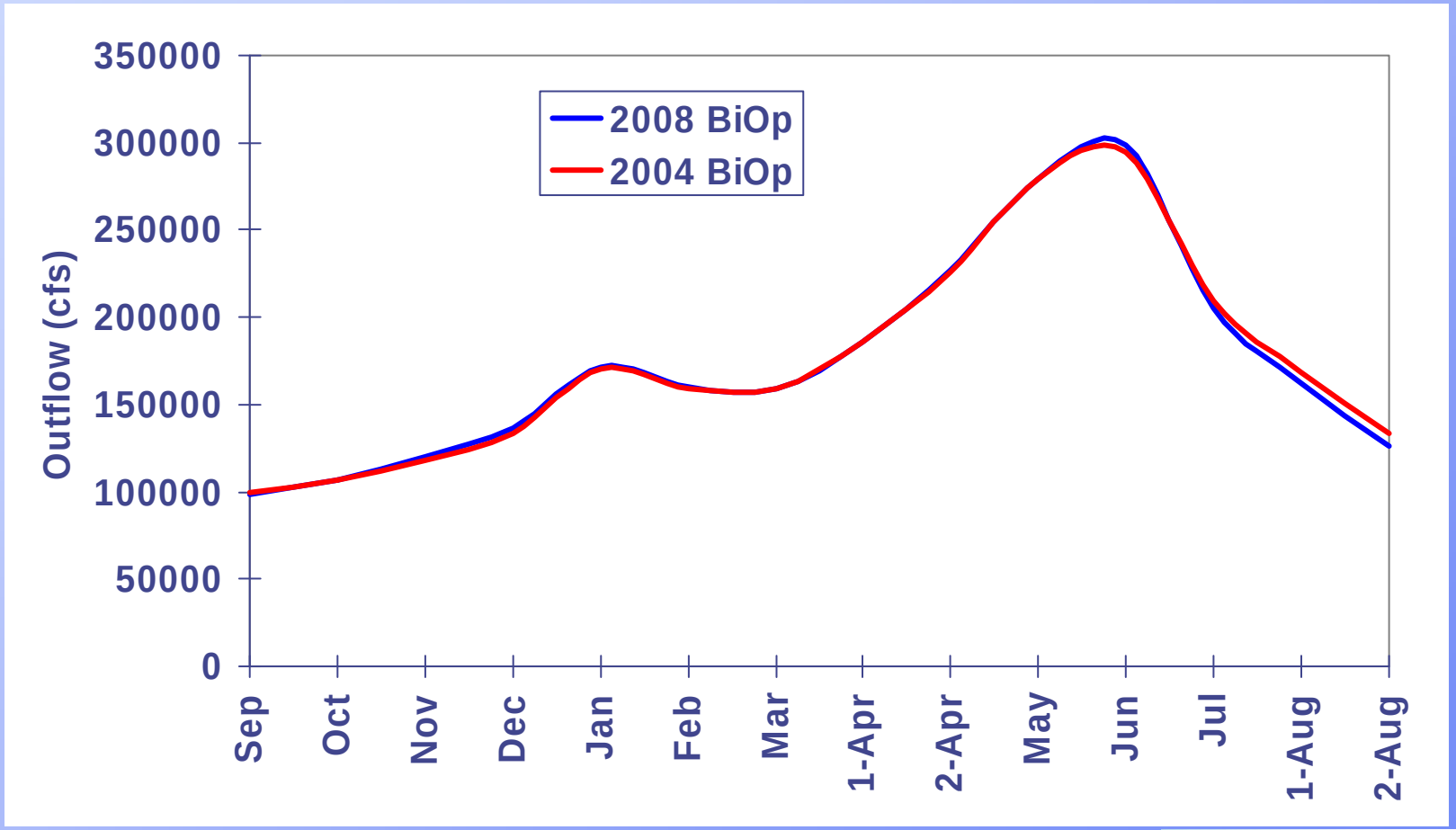
70-Year Average



Northwest Power and Conservation Council

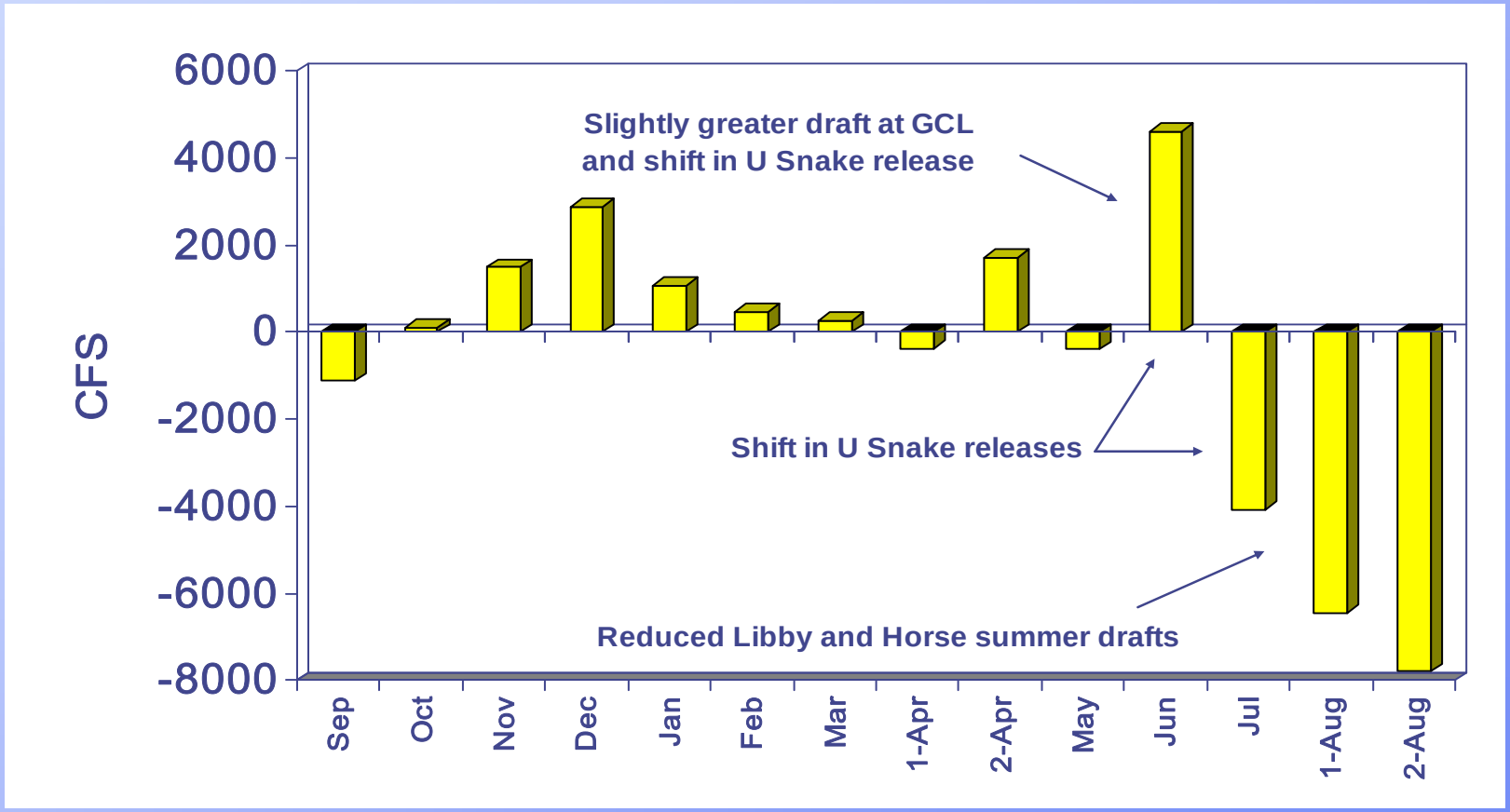
Regulated Outflows at McNary

(70-year average)



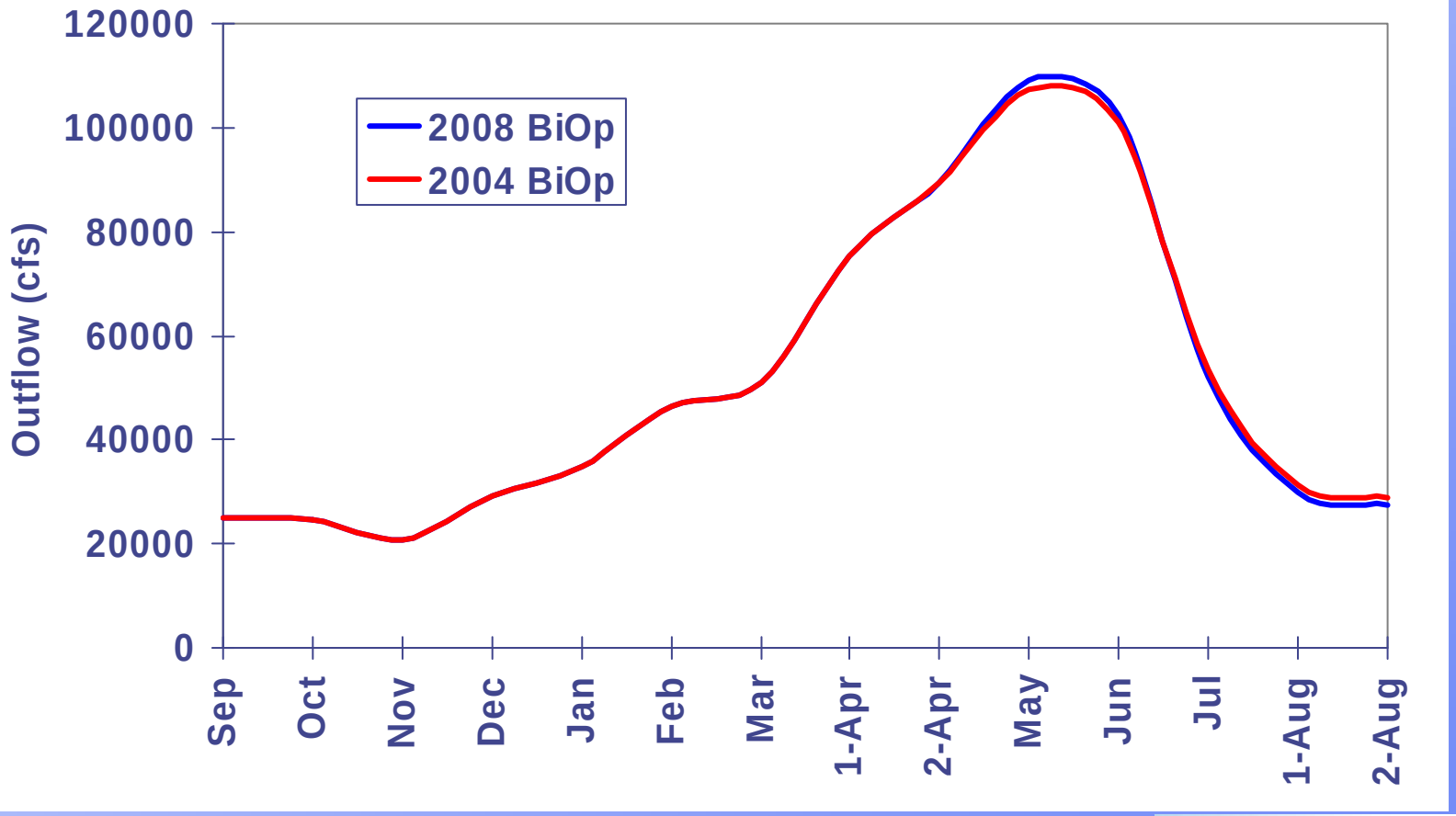
Northwest Power and Conservation Council

Change in Flows at McNary
(70-year average difference from the 2004 BiOp)



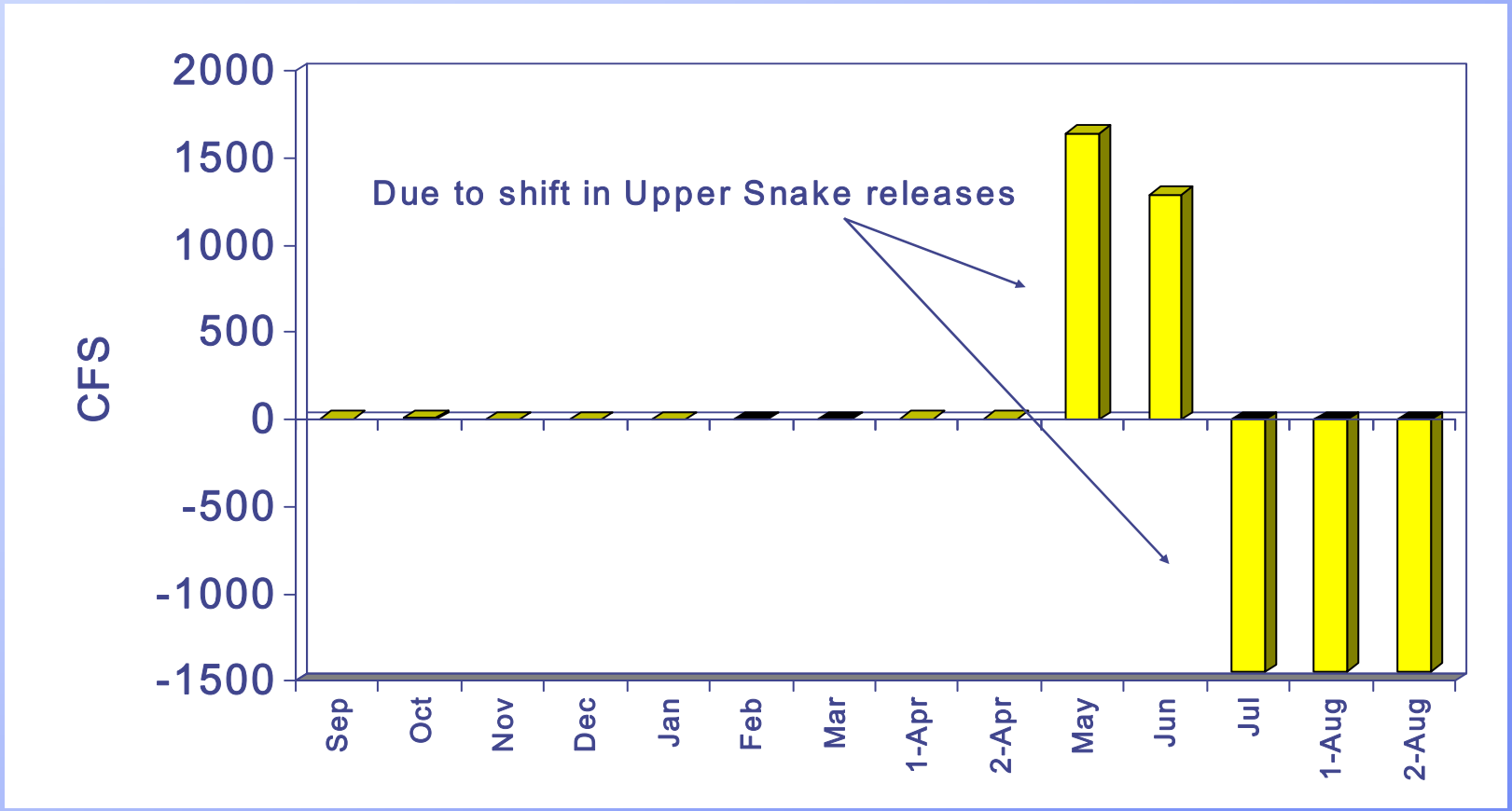
Northwest Power and Conservation Council

Regulated Outflows at LWG
(70-year average for the 2008 BiOp)



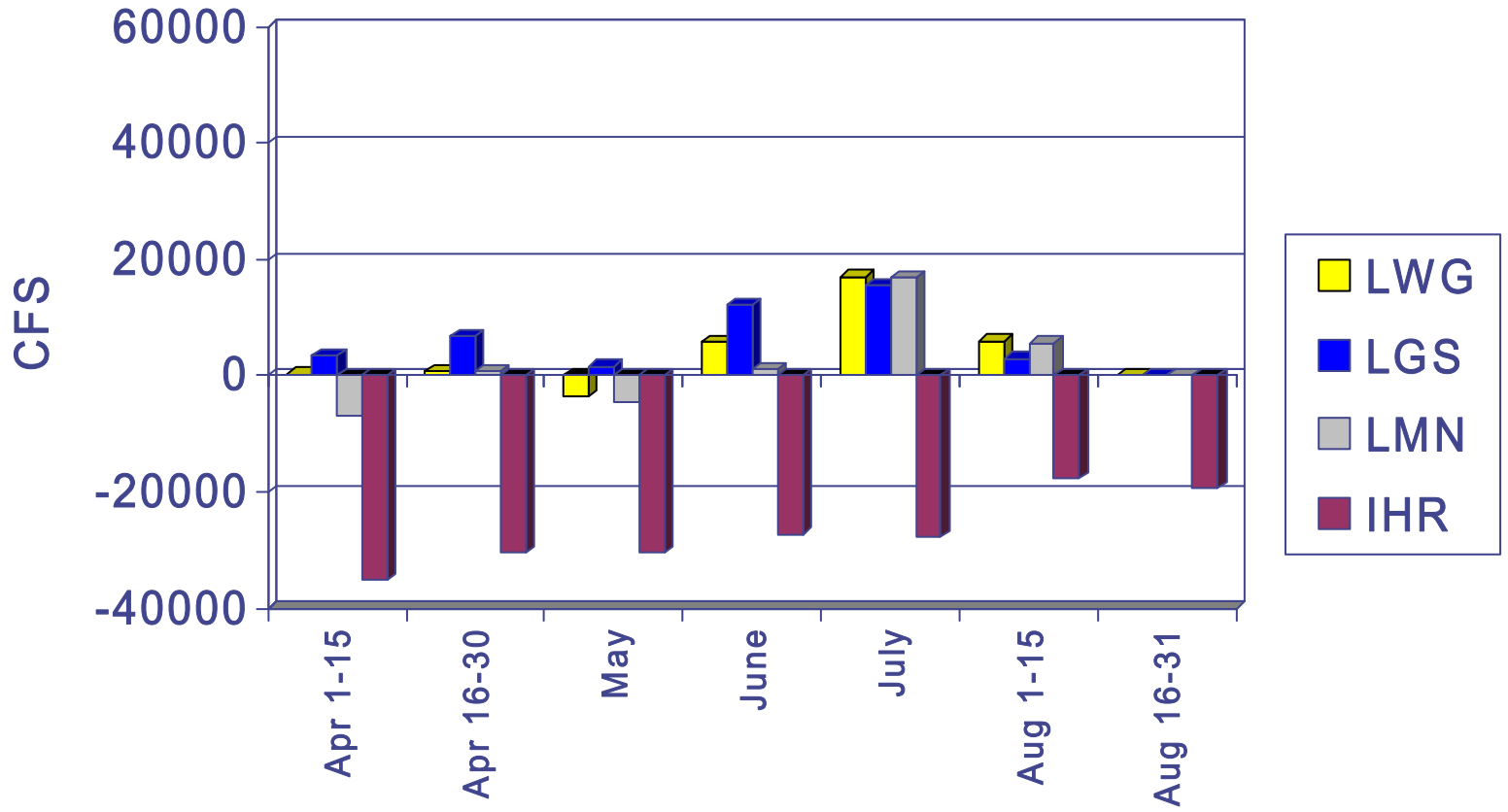
Northwest Power and Conservation Council

Change in Flows at Lower Granite
(70-year average difference from the 2004 BiOp)



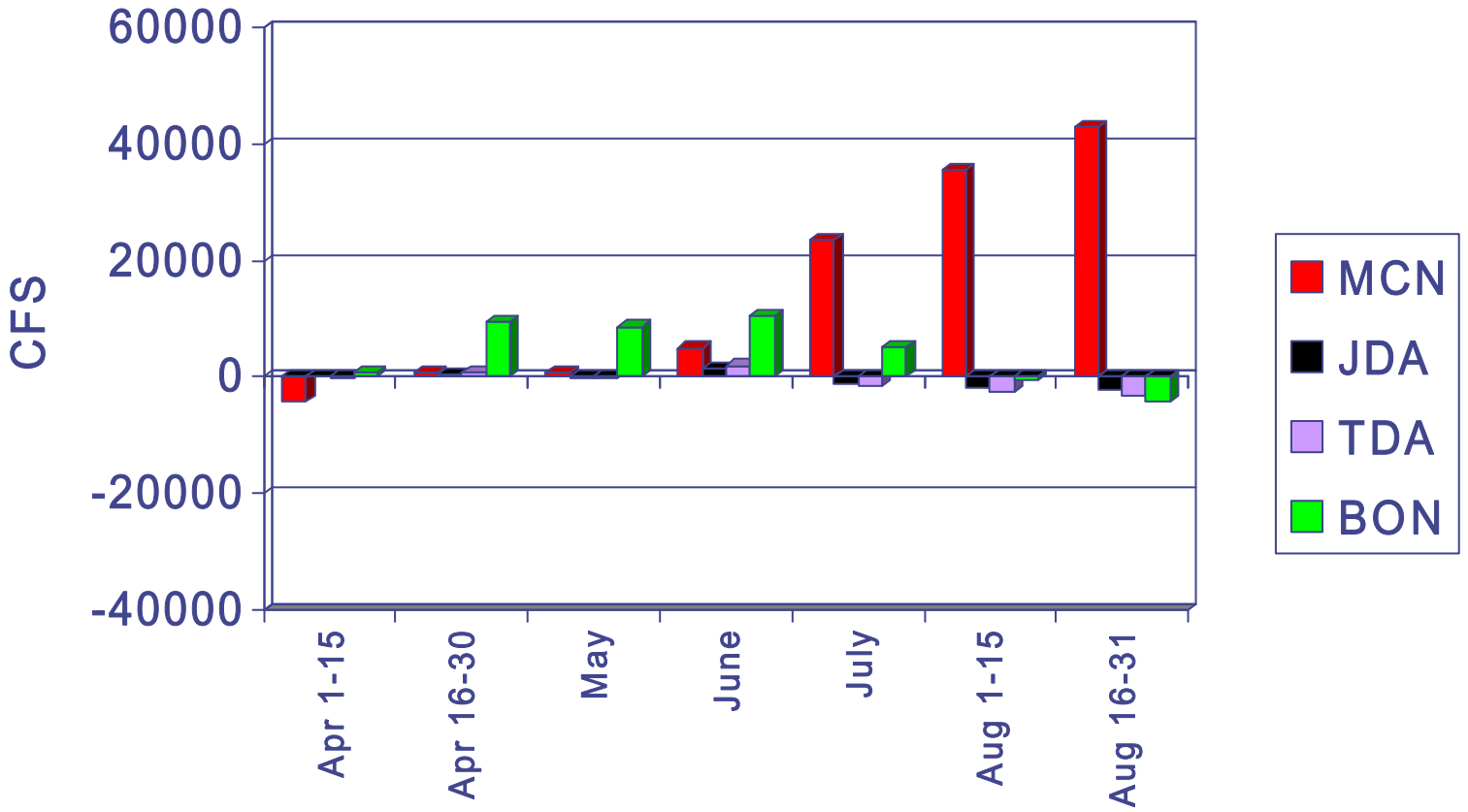
Northwest Power and Conservation Council

Change in Total Spill (Snake)
(70-year average difference from the 2004 BiOp)



Northwest Power and Conservation Council

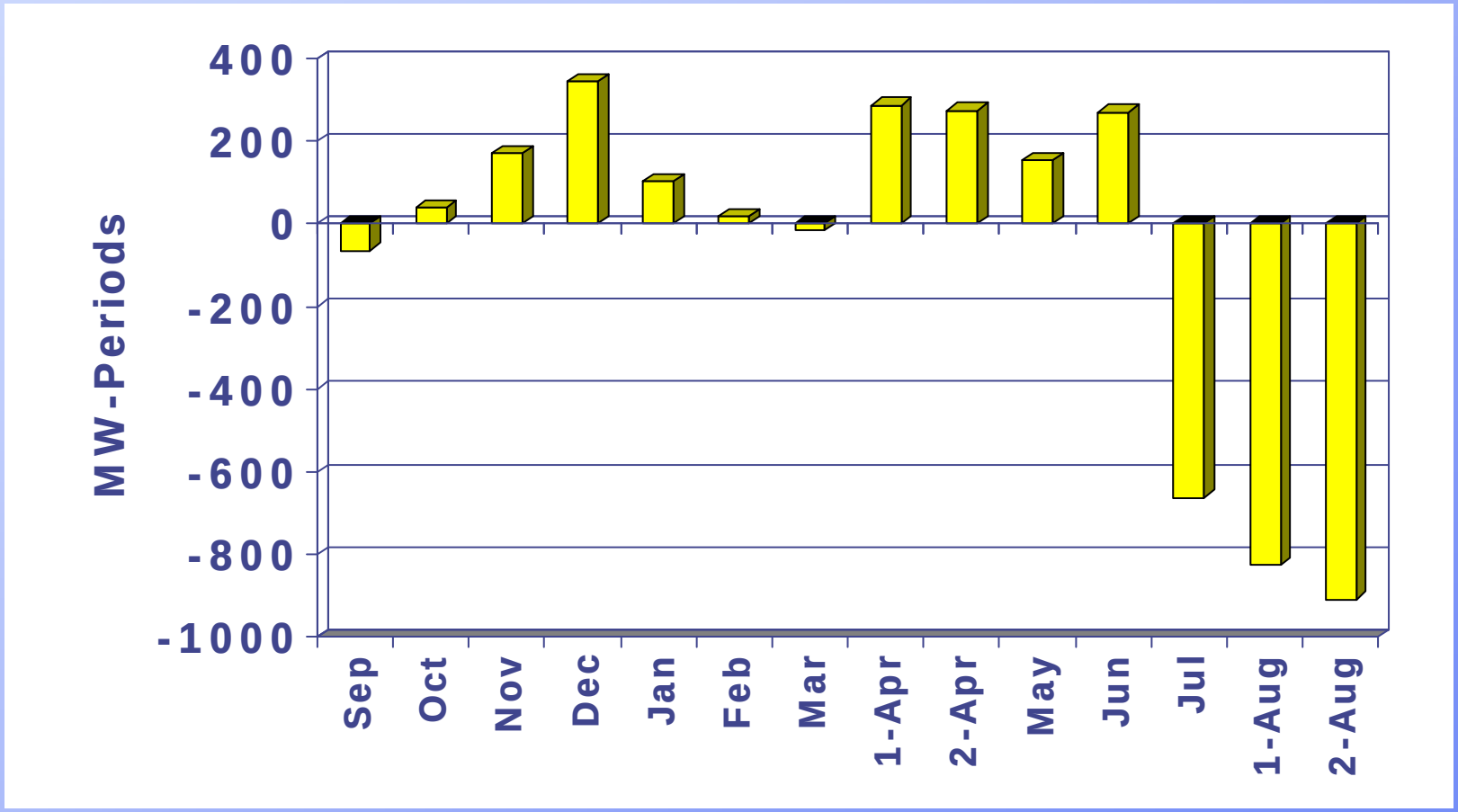
Change in Total Spill (Columbia)
(70-year average difference from the 2004 BiOp)



Northwest Power and Conservation Council

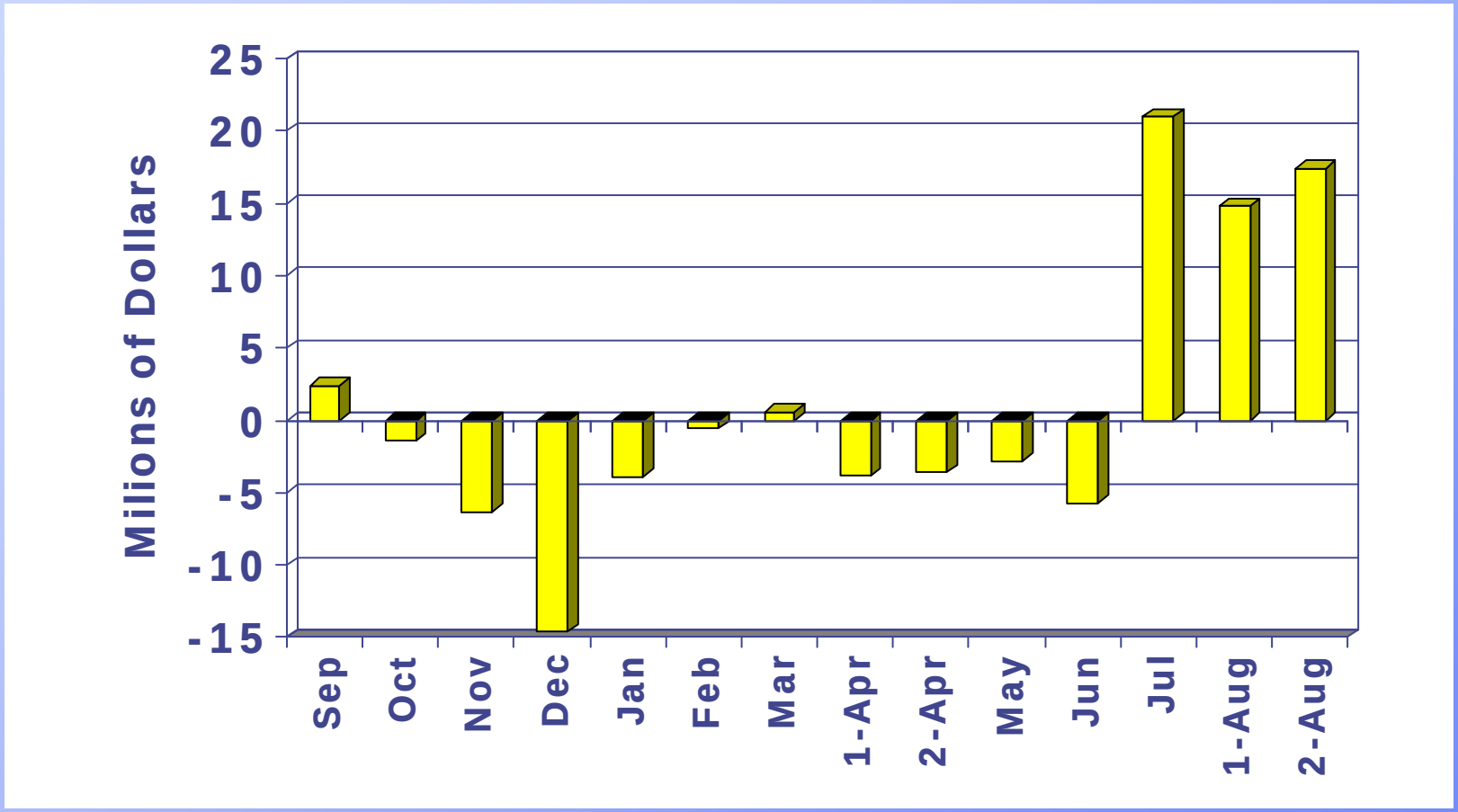
Monthly Change in Generation

70-Year Average



Northwest Power and Conservation Council

Approx. Monthly Cost
(using avg monthly prices)



Northwest Power and Conservation Council