Biological Opinion & the Snake River Dams

Overview
Biological Opinion (BiOp)

Federal Columbia River Power System (FCRPS)

- River management plan
- Guides the operation of 14 dams
- Protect endangered fish
- 13 threatened or endangered stocks
- NOAA Fisheries lead agency
- $16B invested since 1978
  - Northwest electric ratepayers
Biological Opinion (BiOp)
Recent Developments

  - Four federal agencies, three Northwest states, majority of Tribes
- Subsequently challenged by:
  - National Wildlife Federation, Oregon, Nez Perce Tribe, others
- In May 2016, U.S. District Court ruled that BiOp is insufficient
  - Remanded the BiOp back to federal agencies
  - Ruled that BiOp violated:
    - Endangered Species Act
    - National Environmental Policy Act (NEPA)
  - NEPA process should consider breaching/bypassing Snake River dams
More recently, Court ordered additional “spill-test”

- Spill-test for 2018 – April thru Mid-June
- Concern by some that too much spill may harm fish

Financial impact of test – as much as $40M to BPA

- May impact Benton PUD $0.6K to $1.2M in 2018
Northwest salmon, the stuff of legends, still struggle to survive. Can we save them — and at what price?

Fate Of Pacific Northwest Orcas Tied To Having Enough Columbia River Salmon

A changing electric grid may make Snake River dams expendable — and help save salmon

BY ROCKY BARKER
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AUGUST 05, 2017 8:34 PM
A Northwest energy solution:
Regional power benefits of the lower Snake River dams

Clean, flexible and reliable. The lower Snake River dams are part of a Northwest energy solution with the capability to generate over 3,000 megawatts of carbon-free power.

Congress authorized the U.S. Army Corps of Engineers to construct four large dams along the lower Snake River. Completed in the 1970s, the dams are workhorse multi-use facilities that provide power, navigation, recreation, and fish and wildlife conservation benefits for the Northwest.

The four lower Snake River dams — Ice Harbor, Lower Monumental, Little Goose and Lower Granite — are part of the Federal Columbia River Power System. The FCPS is the largest source of clean, renewable energy in the Pacific Northwest, helping to reduce greenhouse gas emissions. Based on the east side of the Cascades and Washington state’s lower Columbia River, critical links in the early settlers’ historic route, the system is Northwest’s federal hydropower powerhouse.

CLEAN: Emissions free, renewable energy

A key benefit of the federal dams is that they produce a lot of energy without producing any emissions. This gives the Northwest unmatched clean energy power production is largely emissions free.

Ice Harbor Dam — capacity 693 megawatts, energized in 1961.
Listed Fish Species

Chinook Salmon
- Snake River Fall (threatened)
- Snake River Spring/Summer (threatened)
- Upper Columbia River Spring (threatened)
- Lower Columbia River (threatened)
- Upper Willamette River (threatened)

Steelhead
- Snake River (threatened)
- Middle Columbia River (threatened)
- Upper Columbia River (threatened)
- Lower Columbia River (threatened)
- Upper Willamette River (threatened)

Sockeye Salmon
- Snake River (endangered)

Chum Salmon
- Columbia River (threatened)

Coho Salmon
- Lower Columbia River (threatened)

Ice Harbor Dam: 603 MW
Lower Monumental Dam: 810 MW
Little Goose Dam: 810 MW
Lower Granite Dam: 810 MW
Total: 3,033 MW
Climate and ocean conditions affect adult returns

Salmon and steelhead abundance is strongly influenced by conditions in the ocean, where they spend the majority of their lives. Warm ocean conditions impact the food chain for the fish that young salmon eat. The effects of those ocean conditions may not be fully realized until years later when fish return to freshwater as adults.

Several factors contribute to increases in abundance including fish passage improvements, reduction in travel time, habitat enhancement, harvest levels, predation management and ocean conditions.
To date, performance testing shows that all dams are on track to meet performance standards of 93 and 96 percent average per-dam survival for migrating juvenile fish.
Yearling Chinook

LITTLE GOOSE DAM
Yearling chinook
2012 passage and survival estimates*

98.2%

OVERALL DAM SURVIVAL

Juvenile fish travel past dams by many routes: through turbines, juvenile bypass systems, spillways, or by collection and transport in barges or trucks downstream. Juvenile survival rates vary by route, as seen here at Little Goose Dam. Performance-standard testing at Little Goose Dam in 2012 estimated overall survival for juvenile spring Chinook at 98.2 percent. Performance-standard testing results range from 95.97 percent to 98.68 percent survival for spring chinook at the lower Columbia and Snake River dams. The B10p performance standard is 96 percent average per-dam survival for spring chinook.

* 2012 is the most recent year of performance standard testing at Little Goose Dam.
Adult returns to Bonneville Dam

Counts include listed and non-listed salmon and steelhead, hatchery and wild fish.

http://nwriverpartners.org/how-are-the-salmon-doing
Figure 1. Total Number of Salmon and Steelhead Returning to the Snake River from 1962 - 2016

Data courtesy of University of Washington DART Adult Passage Annual Counts

Source: Public Power Council
Natural-origin fish for all ESA-listed salmon and steelhead species in the Upper Columbia and Snake rivers have increased in abundance since the first ESA listings in the 1990s. On average, natural-origin chinook numbers have more than tripled and wild steelhead numbers have doubled in that time.
Recently, some organizations have advocated for the removal of four federal dams on the lower Snake River to promote recovery of the Southern Resident killer whales. NOAA Fisheries assessed the operation of the four lower Snake River dams and their effects on listed salmon and steelhead in our Biological Opinion issued in 2008. In 2014, our supplemental Biological Opinion re-examined the issues, including consequences for Southern Resident killer whales. Neither opinion, nor the recovery plans NOAA Fisheries has developed for individual salmon species and stocks, concluded that breaching the dams is necessary for recovery of Snake River salmon or Southern Resident killer whales. The biological

Do killer whales distinguish between hatchery and naturally spawned salmon?

Killer whales appear to select salmon based on their species and size, preferring larger Chinook salmon. There is no evidence that they distinguish wild from hatchery fish.
80-YEAR AVERAGE ANNUAL GENERATION

**FCRPS Snake River Dams**  
1,004 aMW

**Small Wash. Dams Removed**  
31 aMW

**IOU-owned Boardman Coal Plant**  
489 aMW

The lower Snake River dams are significant energy resources.

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**Five things you should know**

1. The four lower Snake River dams produce over 1,000 average megawatts of reliable, carbon-free energy. That’s enough energy for over 800,000 average U.S. homes.

2. It would cost $1.3 billion to $2.6 billion to breach the dams.

3. The four lower Snake River dams include some of the most advanced and successful fish passage systems in the world.

4. The dams are now on track to achieve standards of 96 percent average dam survival for young spring chinook and steelhead migrating downstream and 93 percent for young summer-migrating fish.

5. Wind and solar generators are neither technically nor economically viable replacements for these dams.

Source: Regional Power Benefits of the Snake River Dams  
BPA March 2016
## All Megawatts are not Equal

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- **Northwest**
- **No economical grid-scale storage today**
- **Except for hydro**
A Northwest energy solution: Regional power benefits of the lower Snake River.

TRANSMISSION

The 500 kilovolt transmission lines that run from western Washington to the Tri-Cities area in Washington. Ice Harbor Dam is probably the most critical from a transmission operations point of view, because it provides very important support in terms of both power and voltage to the Tri-Cities area in Washington. If Ice Harbor were breached, either costly new generation in that local area or significant transmission reinforcements would be needed to support the Tri-Cities, especially during the high-demand periods in summer.
It happened again this summer.

To avoid a power emergency, the U.S. Army Corps of Engineers and the Bonneville Power Administration declared a local transmission emergency and reduced the required fish spill at Ice Harbor Dam in order to put more water through turbines.
Automatic Generation Control allows federal hydro operators to use the lower Snake River dams to meet electricity demands minute-to-minute while using the Columbia River dams to support wind power. There are 31 federal dams in the Northwest; the 10 largest have AGC capability.
BPA Balancing Authority Load & Total Wind, Hydro, Fossil/Biomass, and Nuclear Generation, Last 7 days (last updated 6Aug2017 12:30:40)

Kennewick Highs:
- July 31: 98
- August 1: 102
- August 2: 99
- August 3: 102
- August 4: 101
- August 5: 97
- August 6: 100

Load:
- Red line

Hydro:
- Blue line

Fossil:
- Green line

Nuclear:
- Purple line

Wind:
- Black line
Recent Actions in Response to BiOp & Challenges to Snake River Dams

- Protective appeal filed\(^1\) on US District Court ruling
- Proposed U.S. House Resolution 3144
  - Operate dams in accordance with 2014 BiOp until amended
  - Limitations on restricting electrical generation/navigation
- Columbia-Snake River Irrigators Association
  - Endangered Species Act Committee
  - Request to Inspector Generals (US Corps of Engineers/Department of Commerce)
    - 2015 juvenile fish transportation program
- Education of stakeholders on all sides

\(^1\)Appeal filed by NOAA Fisheries, US Army Corps of Engineers and Bureau of Reclamation, Montana, Idaho, Northwest RiverPartners, and Inland Ports and Navigation Groups.
Discussion
Documents Referenced

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Slide 15 – Southern Resident Killer Whales