Columbia River Treaty

National Association of Flood & Stormwater Management Agencies

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Columbia River Basin

- 258,000 sq. miles
- 2 countries
- 7 states
- 87 Large Dams and Reservoirs
- Travel time 10-20 days over 1200 miles
Columbia Basin reservoir storage is limited.

**Average Annual Runoff vs. Usable Reservoir Storage**

- **Peak runoff:** 192 MAF
- **2011 Peak runoff:** 61.0 MAF

**River Basin**
- Columbia River
- Missouri River
- Colorado River

**Volume (million acre-feet)**
- U.S.
- Canada

Columbia Basin reservoir storage is limited.
The Columbia River Basin

- The river headwaters originate in British Columbia and ultimately enter the Pacific Ocean near Astoria Oregon (over 1,200 miles)
- The basin is approximately the size of France
- About 15% of the basin is in Canada, and 35% of the average annual flow comes from Canada (as measured at The Dalles, Oregon)
- Historically, the peak run-off occurs in the spring (primarily snowmelt driven)
- The basin has the most hydropower capacity (~37 GW) in North America
- U.S. federal projects are authorized to meet multiple purposes: flood risk, hydropower, fish and wildlife, navigation, irrigation, recreation, and municipal and industrial water supply
Columbia Basin Development

THE DALLES-CELILO CANAL
1915

CASCADE LOCKS - 1896

Single Purpose Navigation Projects
Columbia River 1931 Plan: Navigation, Irrigation, and Hydropower

Flood Control was not considered a federal interest (levees)
Construction in the 1930’s

- Grand Coulee Dam (USBR in 1933)
- Bonneville Dam (USACE in 1933)
- Rock Island (Puget Sound P&L Co. in 1933)
- Kerr (Montana Power Co. in 1938)
WW2 Increased Power Demands

- Bonneville units 7-10
- Grand Coulee units 7-9
- Rock Island units 5-10
- New dam authorizations: Hungry Horse, McNary, Lower Snake Navigation, Albeni Falls, and Chief Joe
BUILDING STRONG®
CRT 2024

PRIME POWER INCREASE
due to
HUNGRY HORSE
1,230,000 Kilowatts

DOWNSTREAM POWER BENEFITS OF THE HUNGRY HORSE PROJECT

Coordinated System Operation based on 1969-70 Installations & Load Estimates
1948 Columbia River Flood

1948 flood destroyed
Vanport, Oregon,
a city of 20,000-30,000 people

About 50-60 people were killed

Vanport, Oregon in 1948

Damaged homes, farms, and levees from British Columbia (e.g. Trail) all the way to Astoria, Oregon

President directs Corps to include flood control in report due four months later.

Trail, B.C. in 1948

CRT 2024
System Authorizations

1950 FCA (H.D. 531):
- Addressed new levees and improvements to existing levees
- Added to and modified previous system reservoir design
- Authorized projects to provide 20.55 MAF of useable flood control storage

CRT Signed January 1961

1962 FCA (H.D. 403):
- Re-examined projects after studies found multiple reservoirs authorized by 1950 FCA were impracticable or undesirable
- Originally authorized 14.9 MAF of useable flood control storage
- Only 2 of the 6 authorized projects were constructed, resulting only in an additional 7 MAF
Authorized Project Purposes

Flood Control  
Navigation  
Hydropower

M&I/Irrigation  
Recreation  
Fish & Wildlife
Columbia River Treaty: Implemented September 1964

- The Treaty required Canada to construct and operate three large dams (Mica, Arrow, and Duncan) with 15.5 million acre-feet (Maf) of storage in the upper Columbia River basin in Canada “for improving the flow of the Columbia River.”
  - 8.95 Maf (of the 15.5 Maf) of the Canadian Treaty storage is first operated for flood control in Canada and the U.S.
  - 15.5 Maf is operated for optimum power generation within flood control constraints
- The Treaty allowed the U.S. to construct and operate Libby Dam with 5 Maf of storage on the Kootenai River in Montana for “flood control and other purposes”.
Columbia River Treaty Overview

- The Treaty requires the U.S. and Canada are to share equally the downstream power benefits produced in the U.S. from the operation of Canadian Treaty storage.
- Reservoir storage is operated to reduce flood flows, and shift energy from low value time periods to high value time periods.
- The CRT is implemented by the U.S. and Canadian Entities. By Executive Order the U.S. Entity is the BPA Administrator and NWD Commander.
- By securing cooperative measures for hydropower and flood control through the Treaty, other benefits are made possible. Supplemental operating agreements have been mutually agreed upon in support of ESA and ecosystem requirements in both countries (including non-Treaty storage in Canada).
Columbia River Treaty Dams

<table>
<thead>
<tr>
<th>Dam</th>
<th>Completed</th>
<th>Treaty Storage</th>
<th>Non-Treaty Storage</th>
<th>Installed Capacity</th>
<th>Dam Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUNCAN</td>
<td>1967</td>
<td>1.4 Maf</td>
<td>None</td>
<td>None</td>
<td>130 ft.</td>
</tr>
<tr>
<td>ARROW</td>
<td>1968</td>
<td>7.1 Maf</td>
<td>.25 Maf</td>
<td>185 MW</td>
<td>170 ft.</td>
</tr>
<tr>
<td>MICA</td>
<td>1973</td>
<td>7.0 Maf</td>
<td>5.0 Maf</td>
<td>2805 MW</td>
<td>650 ft.</td>
</tr>
<tr>
<td>LIBBY</td>
<td>1973</td>
<td>5.0 Maf</td>
<td>None</td>
<td>604 MW</td>
<td>370 ft.</td>
</tr>
</tbody>
</table>
Treaty Flood Control

**Current**

- Canadian Entity is obligated for the first 60 years to operate 8.95 Maf reservoir storage according to the *Flood Control Operating Plan* prepared by the Corps for the U.S. Entity. (pre-paid by the U.S.)
- Canadian Entity must also operate all additional storage on an on-call basis as requested (U.S. must pay).
- The Corps coordinates reservoir refill of all Treaty storage.
- In September 2024 the assured operation of flood control storage ends and is replaced with an undefined called upon operation (U.S. must pay).

**Post-2024**

- U.S. Entity requests for called upon storage limited to potential floods that cannot be adequately controlled by all related U.S. storage.
Treaty Hydropower

Current

• 15.5 Maf of Canadian Treaty storage for optimum power generation downstream in Canada and the United States (within flood control constraints).

• U.S. must deliver electric power to Canada equal to one-half the U.S. power benefits from the operation of Canadian Treaty storage.

• Non-federal hydro-project owners (five mid-Columbia projects) deliver 27.5% of the return of downstream power benefits to BPA for delivery to B.C.

Post-2024

• Existing Treaty hydropower procedures, operations, and return of Canada’s share of the downstream power benefits continue absent the current flood control constraints.
Columbia River Treaty in 2024

- The Columbia River treaty has no specified end date
- In 2024 flood risk operations change
- 10 years prior written notice is required for either country to terminate the treaty
- 2014/2024 Review included three primary driving purposes
  - flood risk management
  - hydropower
  - ecosystem based function
- Regional Recommendation to U.S. State Department from U.S. Entity delivered Sept. 2013
Path to Regional Recommendation

- Phase 1 studies initiated with Canada in 2007
- Sovereign Review Team (SRT) and stakeholder processes initiated by U.S. Entity in 2010
- Sovereign Technical Team conducted studies
- Development of a policy level recommendation began in January 2013
- Multiple drafts and public comment periods leading to final version
- Delivered Regional Recommendation to Department of State on December 13, 2013
Regional Engagement

Sovereign Review Team (SRT):
- States: OR, WA, ID, MT
- 15 NW Tribes: 5 representatives (USRT, CRITFC, UCUT, Cowlitz, CSKT)
- Federal Agencies: NMFS, USFWS, BOR, USACE, BPA, BLM, EPA, USFS, USGS, BIA, NPS)

Northwest Stakeholders:
- Regional Listening Sessions
- Listening sessions directly between the SRT and regional stakeholders and technical experts
- Briefings to stakeholders through invitation

Government to Government:
- Tribal
- States

Regional Federal Agencies
- MOU – Federal CRTR Team and Federal Execs
- SRT participation
Regional Recommendation Goal

The region’s goal is for the United States and Canada to develop a modernized framework for the Treaty that maintains a similar level of flood risk and assures reliable and economic hydropower benefits, while providing a more resilient and healthy ecosystem-based function throughout the Columbia River Basin.
Summary of Regional Recommendation (cont.)

**Flood Risk Management:**

Maintain coordinated flood risk management, and protect public safety and the region’s economy

- Agreement on FRM operations after 2024
- May include planned or assured storage
- How Canada is compensated for FRM operations
- Flexibility to adapt to changing conditions, such as climate change

**Hydropower:**

Maintain coordinated hydropower operations and a reliable, economically sustainable hydropower system

- United States should pursue rebalancing the power benefits between the two countries to reflect the actual value of coordinated operations
- Reconsidering flexibility for the return of the Canadian Entitlement
- Avoid substantial changes in hydro-generation during peak load periods that result in lower system reliability and flexibility
- General Principle: Implementation of ecosystem-based functions in the Treaty should be compatible with rebalancing the entitlement and reducing U.S. power costs
Summary of Regional Recommendation (cont.)

Ecosystem-based Function:

Modernize the Treaty to further ensure a more comprehensive ecosystem-based function approach throughout the Columbia River Basin watershed.

1. Flow Management
   - Formalize the current annual agreement for 1 MAF of spring flow augmentation
   - Formalize and incorporate a dry year strategy
   - Accommodate post-2024 modifications to flow augmentation
   - Provide reservoir conditions to promote productive populations of native fish and wildlife, including anadromous and resident fish species

2. Fish Passage Investigations
   - Pursue a joint program with Canada, with shared costs, to investigate and, if warranted, implement restored fish passage and re-introduction of anadromous fish on the mainstem Columbia River to Canadian spawning grounds
Status of DOS Process

- Department of State has hired a lead negotiator for the Columbia River Treaty
- The U.S. government document, Circular 175, is in process by DOS.
- Canadian government is still working through their internal process to enter into negotiations.
- DOS will lead any negotiations with Canada and determine frequency of regional engagement.
Columbia River System Operations, 2024

- The U.S. Entity has developed state of the art models to evaluate post 2024 operations including impacts and benefits of all authorized purposes and the risks associated with climate change.

- U.S. Federal Agencies will be ready to operate the Columbia River Reservoir in 2024 for all authorized purposes and complying with the ESA, CWA, and NEPA.

- U.S. Entity stands ready to support DOS in negotiations with Canada.
Questions?

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