Federal Transmission Expansion in the West

DOE Tribal Leader Forum:

Transmission and Clean Energy Development in the West

February 7-8, 2012

Denver, Colorado

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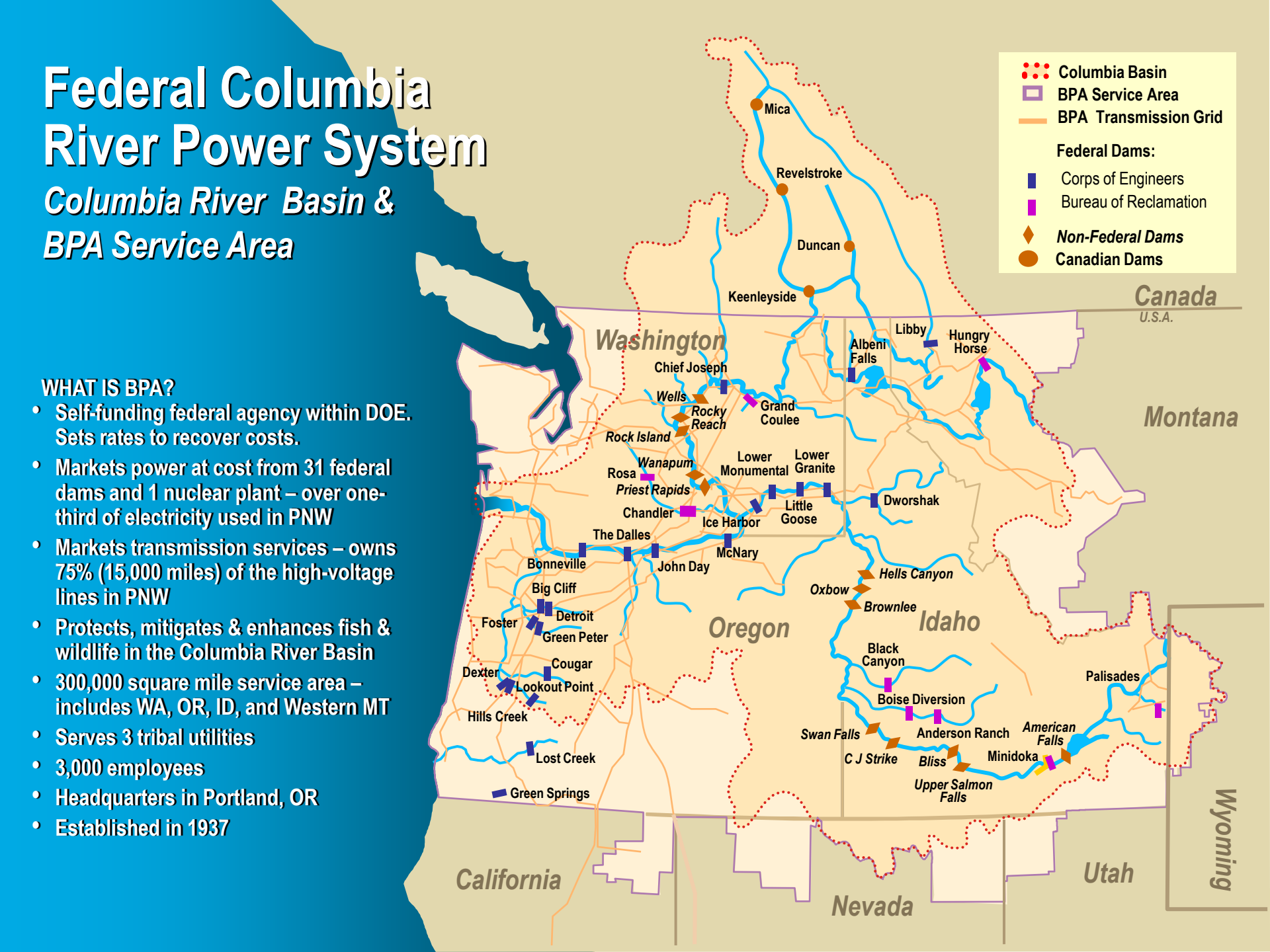
Deputy Administrator

Bonneville Power Administration

Together, we watch over the river that creates the most awesome energy on earth.

Federal Columbia River Power System

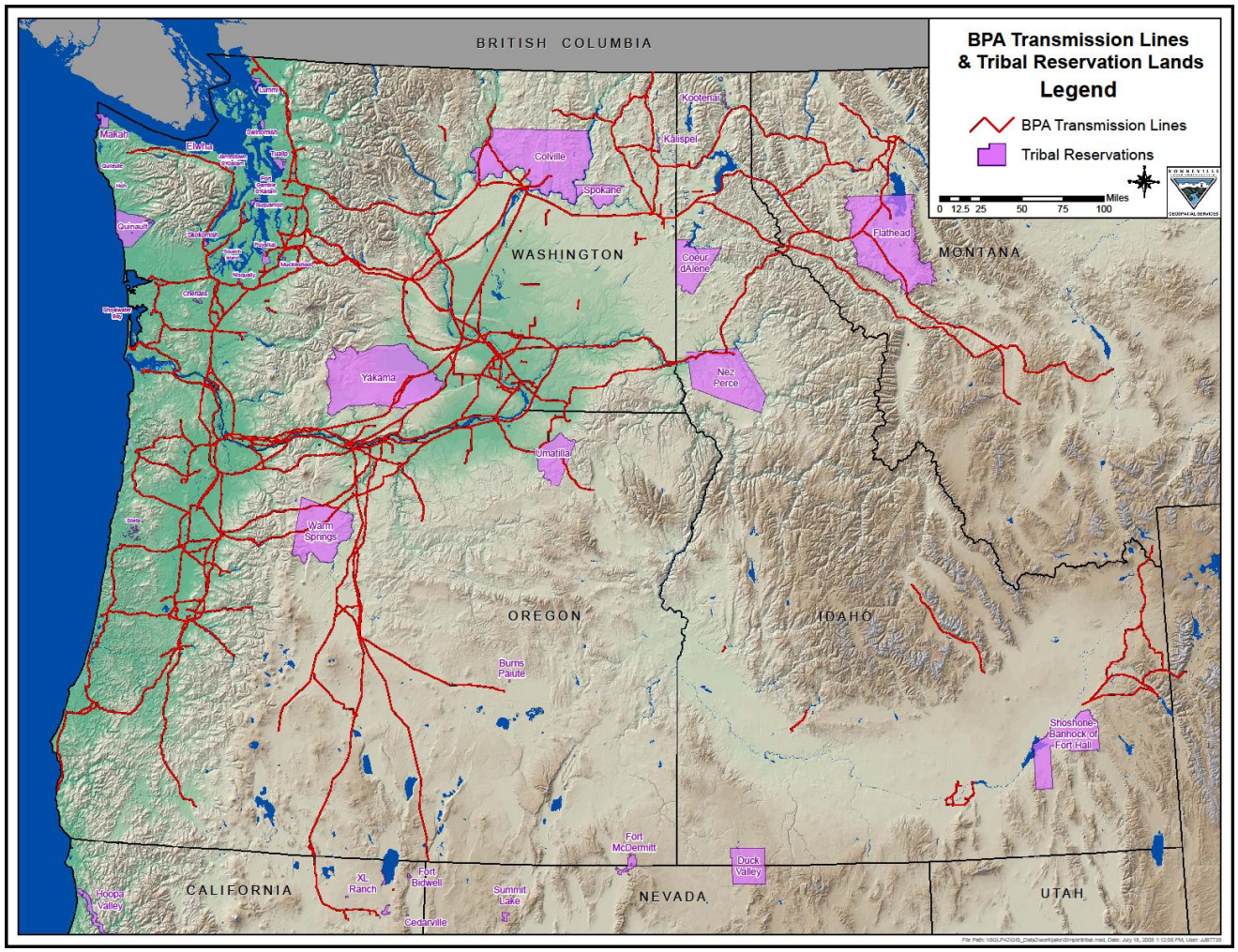
Columbia River Basin & BPA Service Area



WHAT IS BPA?

- Self-funding federal agency within DOE. Sets rates to recover costs.
- Markets power at cost from 31 federal dams and 1 nuclear plant – over one-third of electricity used in PNW
- Markets transmission services – owns 75% (15,000 miles) of the high-voltage lines in PNW
- Protects, mitigates & enhances fish & wildlife in the Columbia River Basin
- 300,000 square mile service area – includes WA, OR, ID, and Western MT
- Serves 3 tribal utilities
- 3,000 employees
- Headquarters in Portland, OR
- Established in 1937

Tribal Reservations in BPA's Service Territory



Tribal Utilities Served by BPA

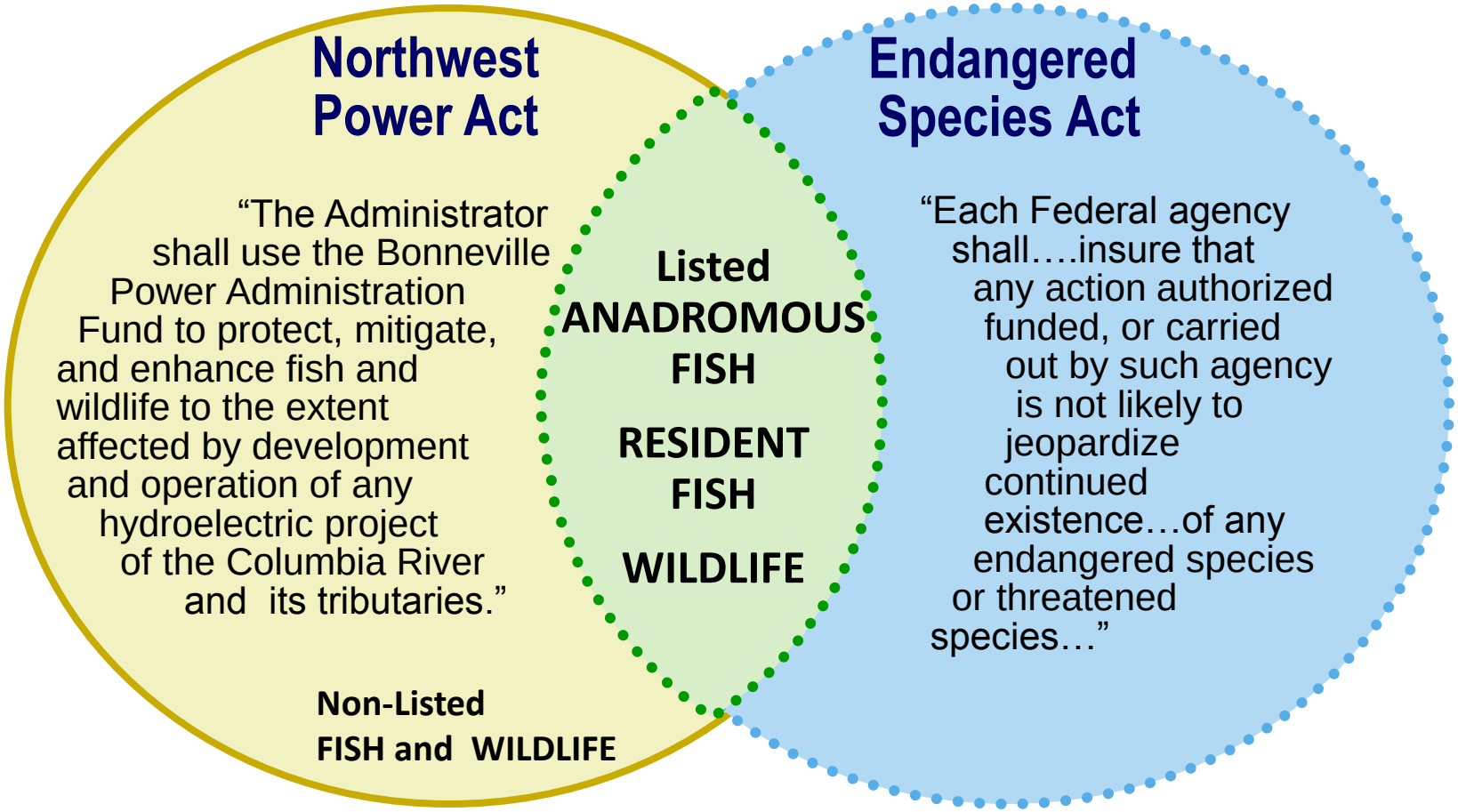
- Beginning in the late 1990's, tribes approached BPA about forming their own utilities.
- BPA provided support and technical assistance.
- BPA sets aside 40 MW of preference power for tribal utilities.
- Whether or not tribes choose to form utilities, they have the right and opportunity to do so.

- **Mission Valley Power:** Confederated Tribes of Salish and Kootenai in partnership with BIA; est. 1988

- **Umpqua Indian Utility Cooperative:** Cow Creek Band of Umpqua Indians; est. 2001

- **Yakama Power:** Confederated Tribes and Bands of the Yakama Nation; est. 2006

Fish & Wildlife Legal Mandates



Treaty and Non-Treaty Tribal Policy

BPA will consult with the Tribal governments prior to BPA taking actions, making decisions, or implementing programs that may affect Tribal resources.

Columbia Basin Fish Accords

- In 2008, BPA entered into 10-year agreements with the U.S. Army Corps of Engineers, the Bureau of Reclamation, five tribes and three states to benefit Columbia River Basin fish.
- Under these agreements, the tribes, states and federal agencies work together as partners on the ground to provide tangible survival benefits for salmon recovery by:
  - upgrading passage over federal dams
  - restoring river and estuary habitat, and
  - creative use of hatcheries

Columbia Basin Fish Accords
2008 - 2018

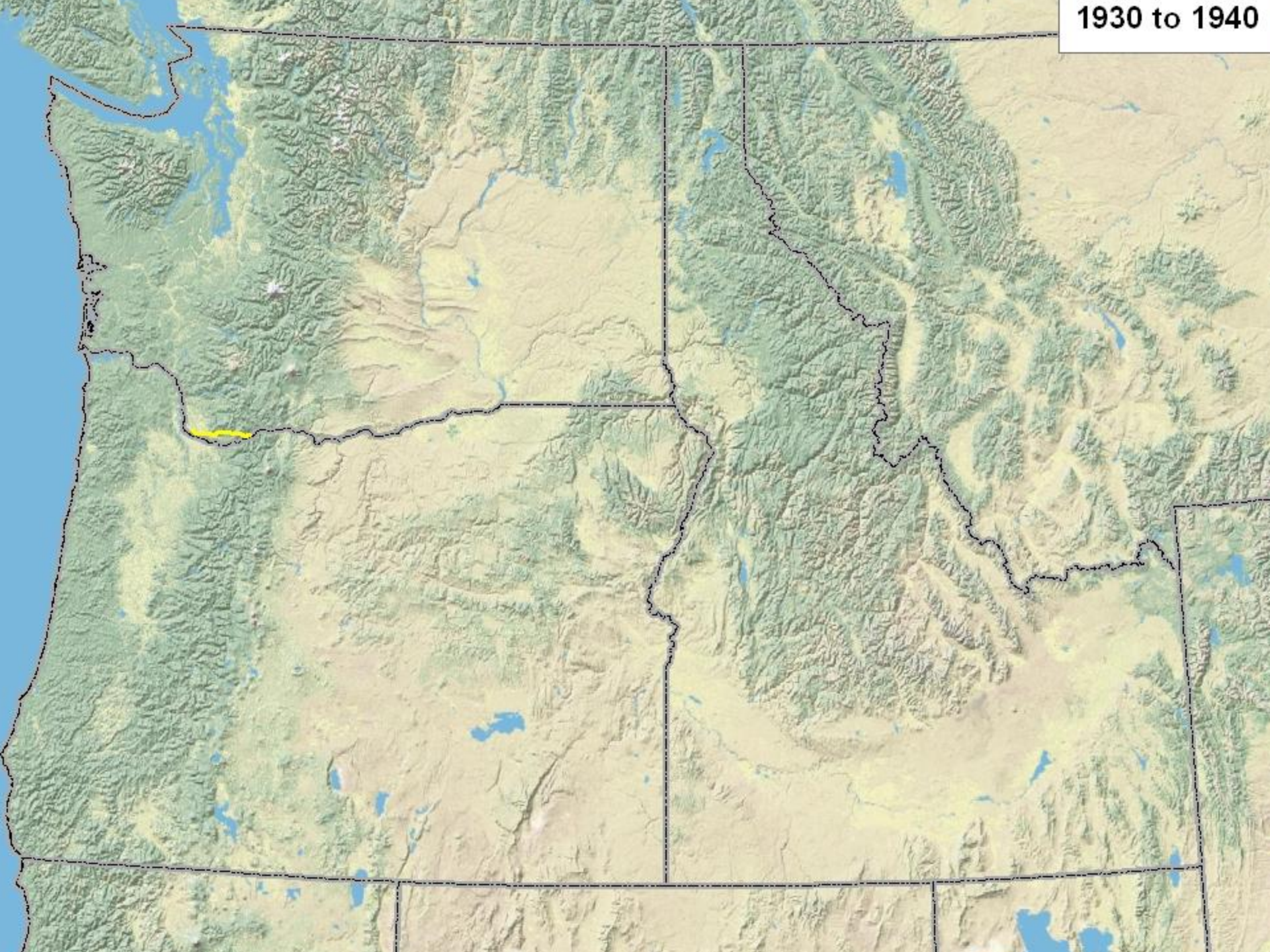
Transmission Development

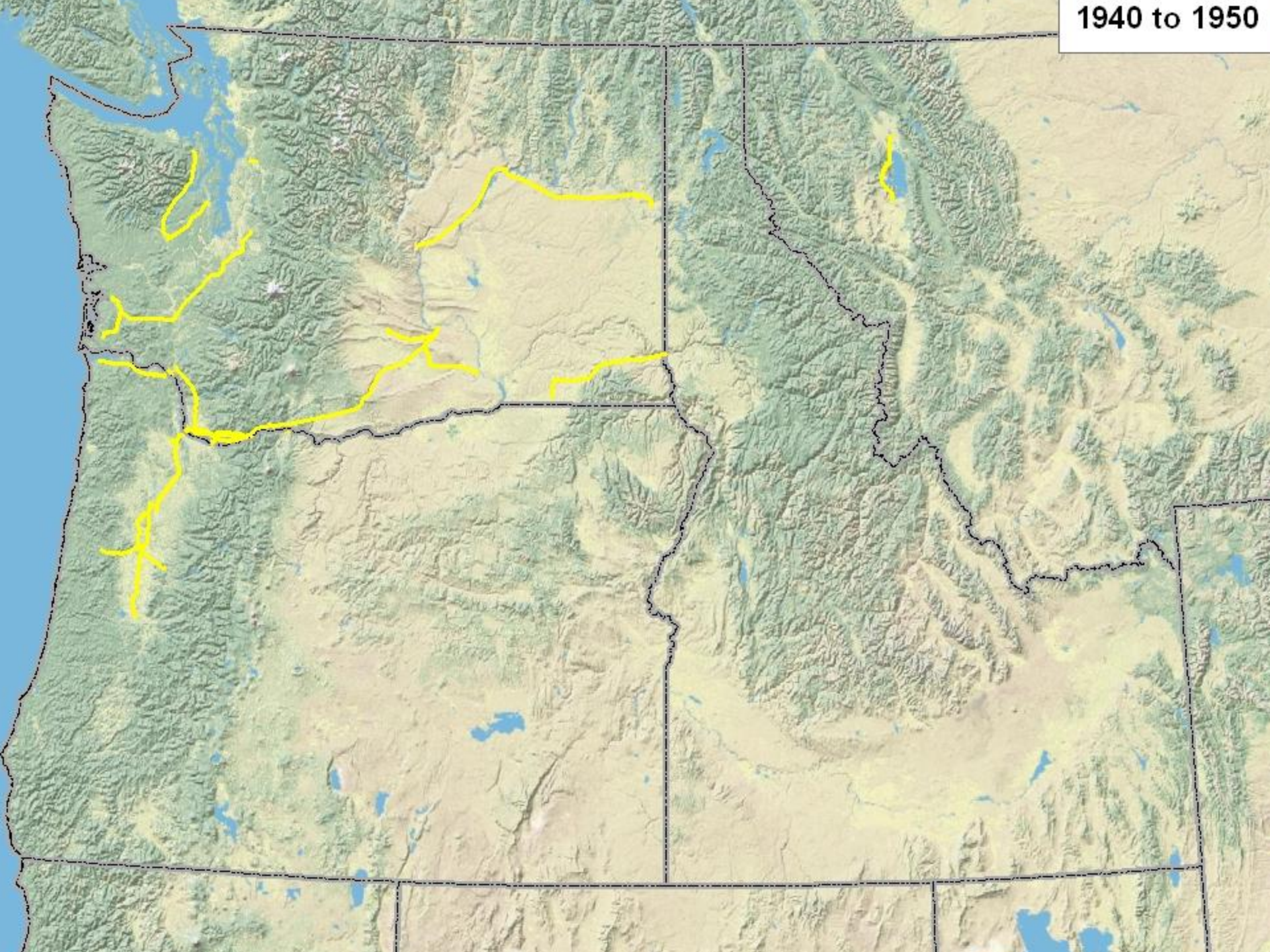
Animation:

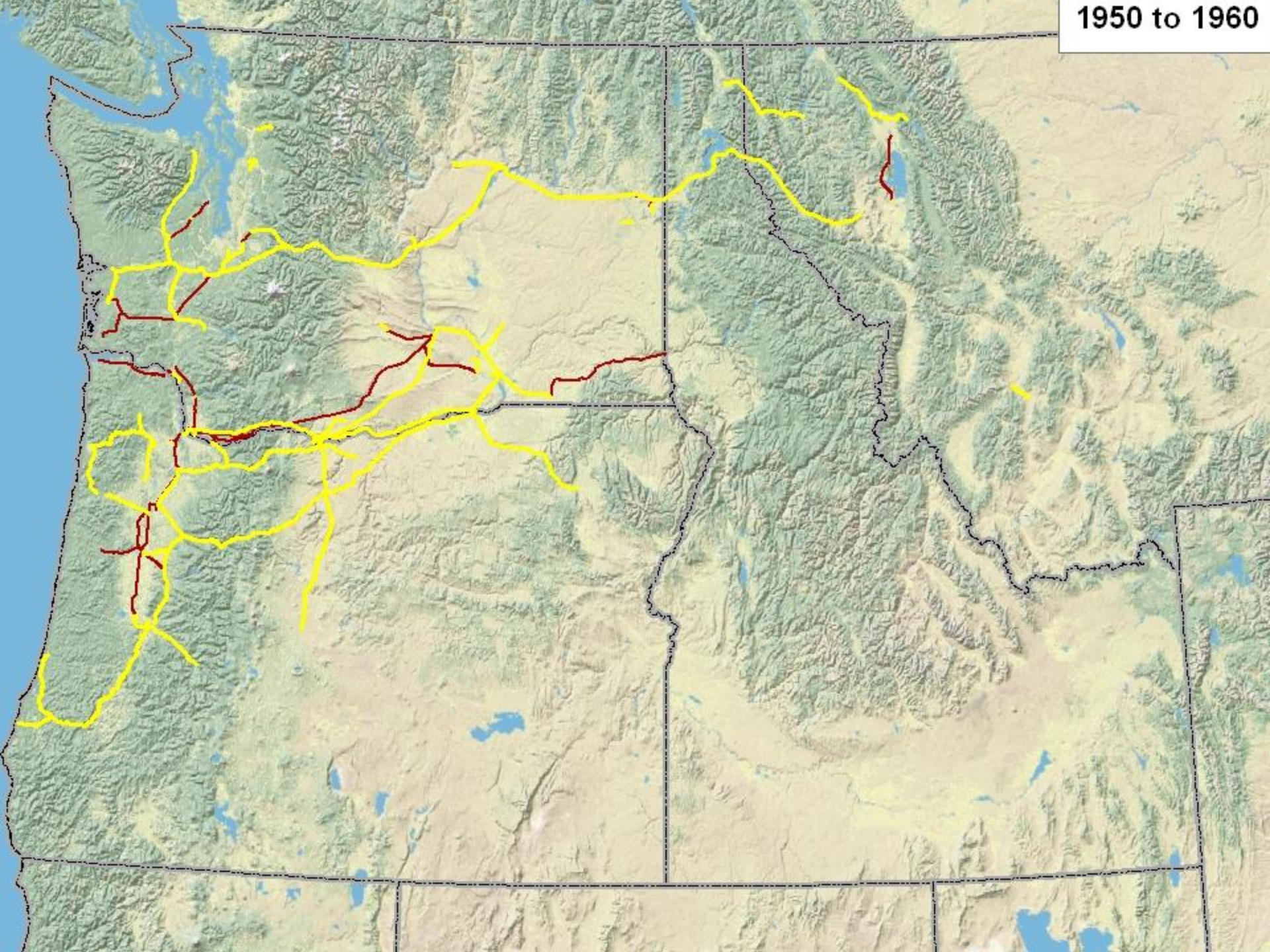
NW Transmission Grid Build-Out

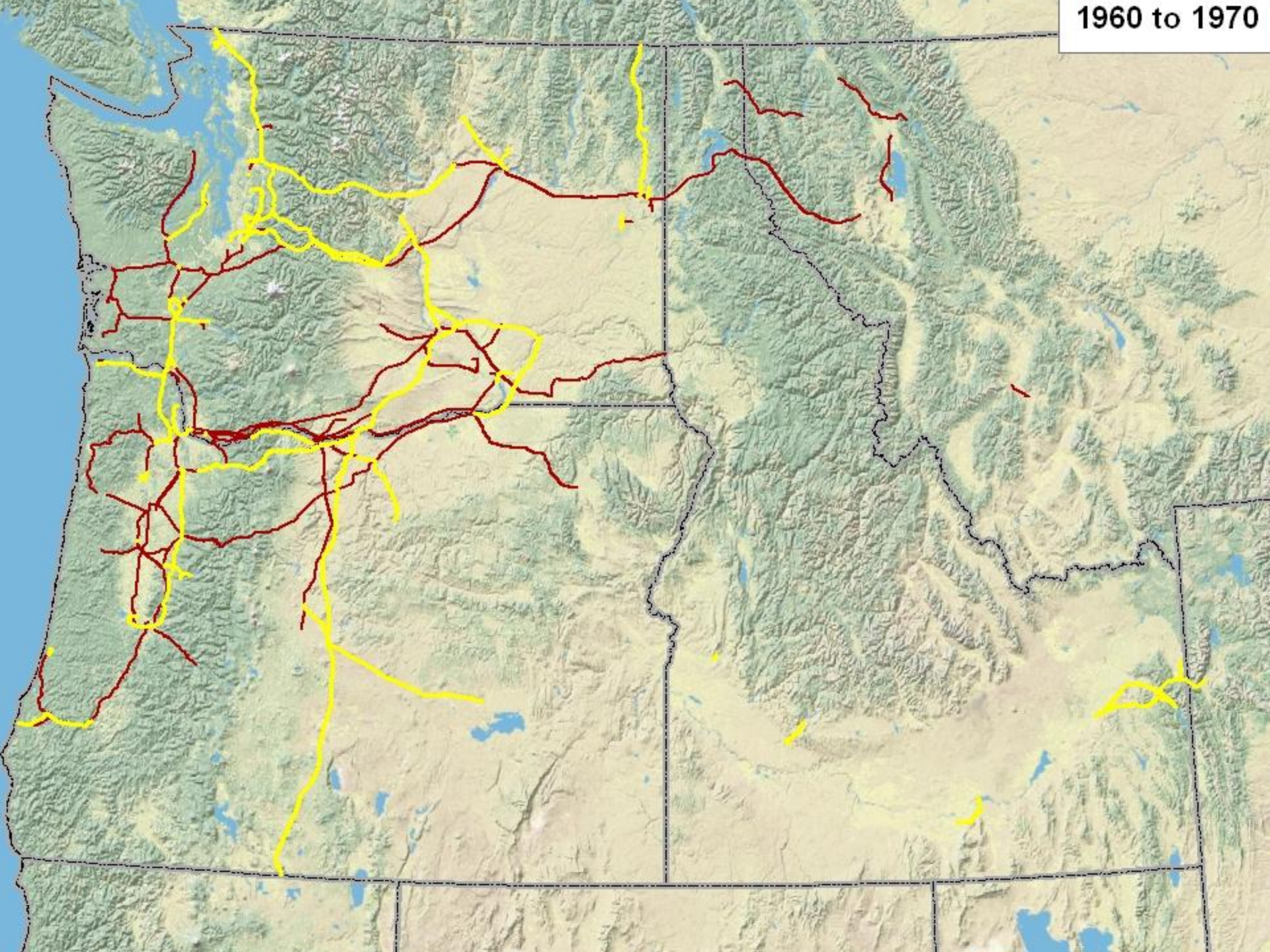
1920 - 2020

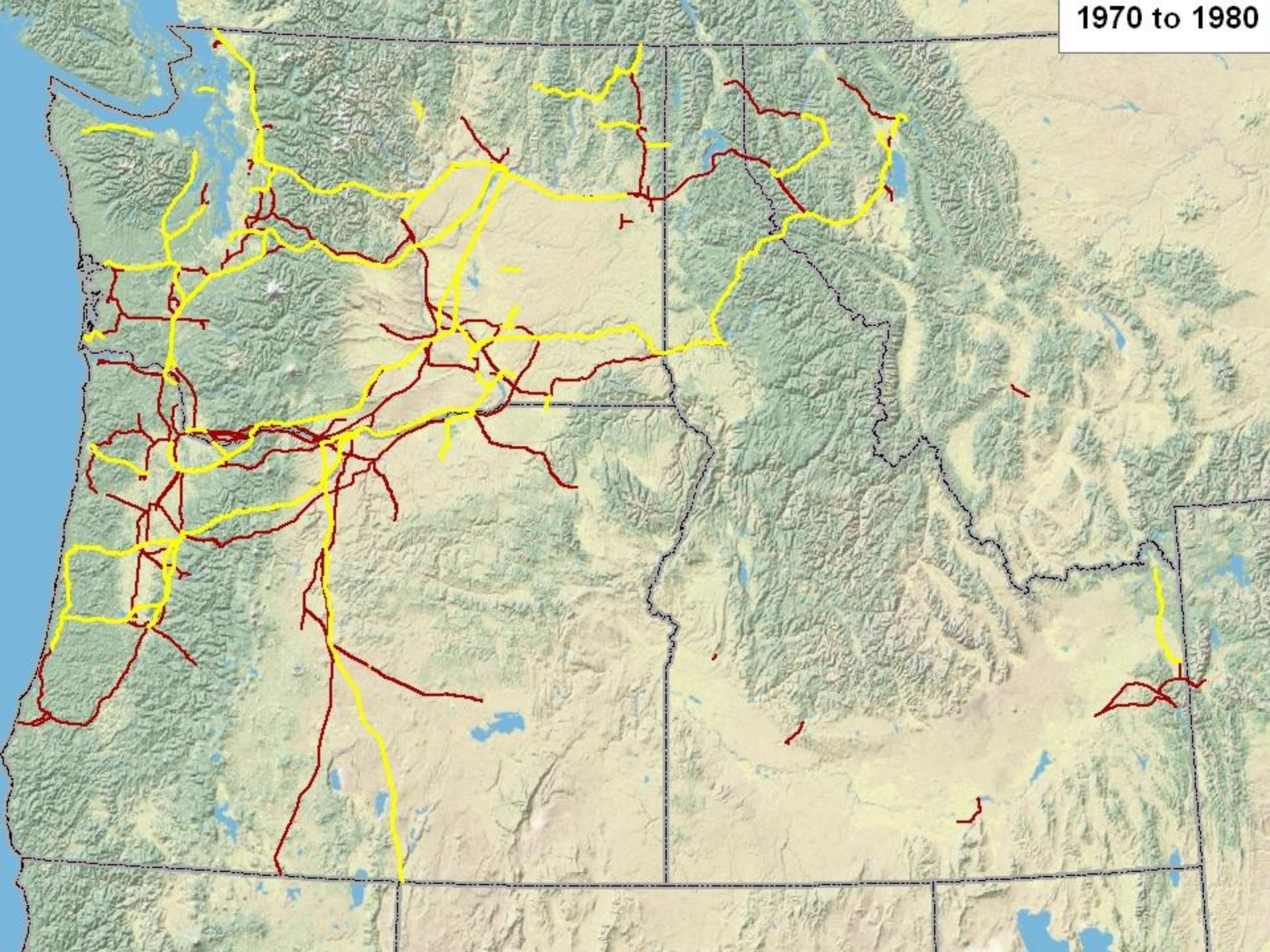

1920 to 1930

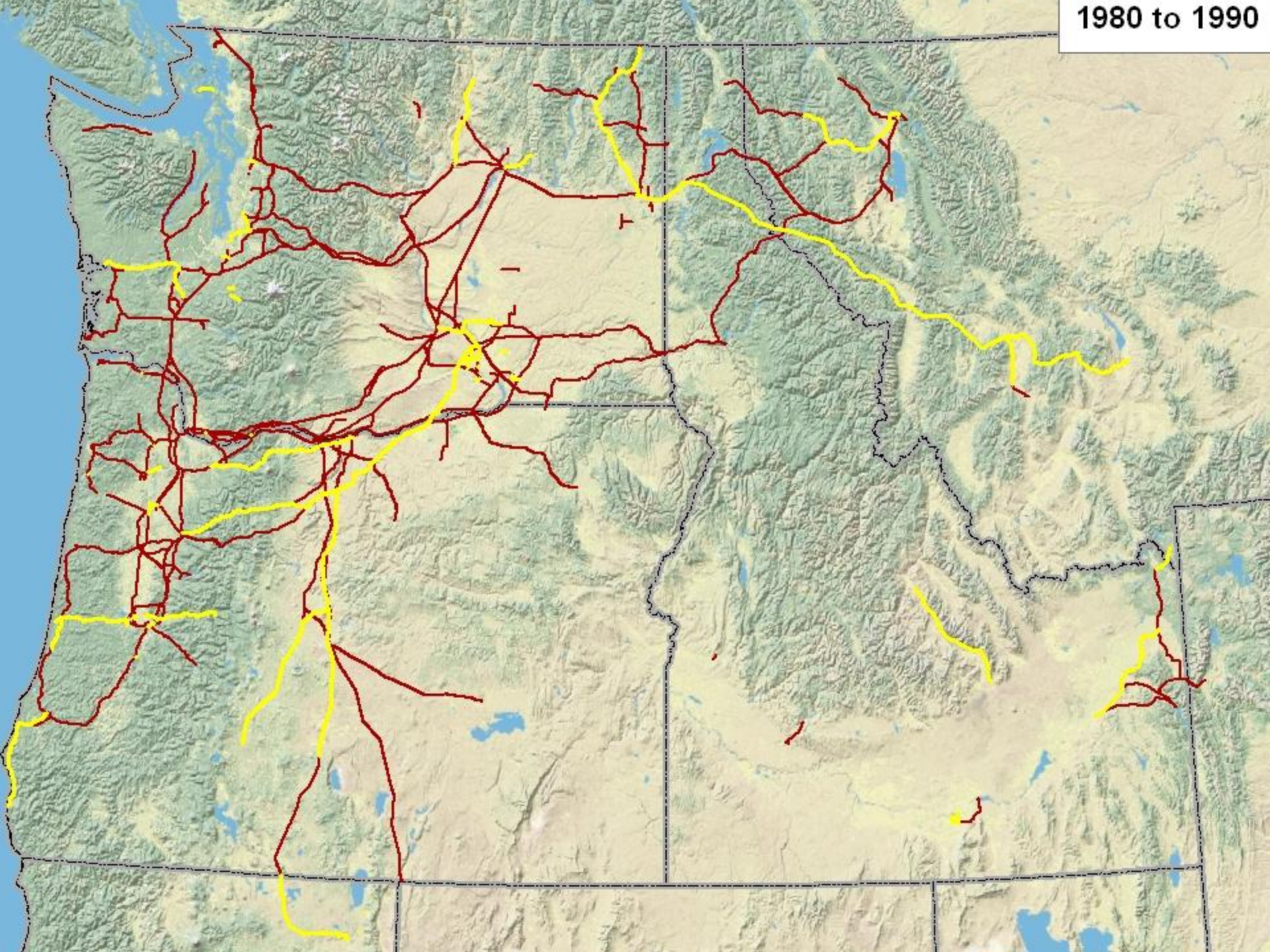

1930 to 1940

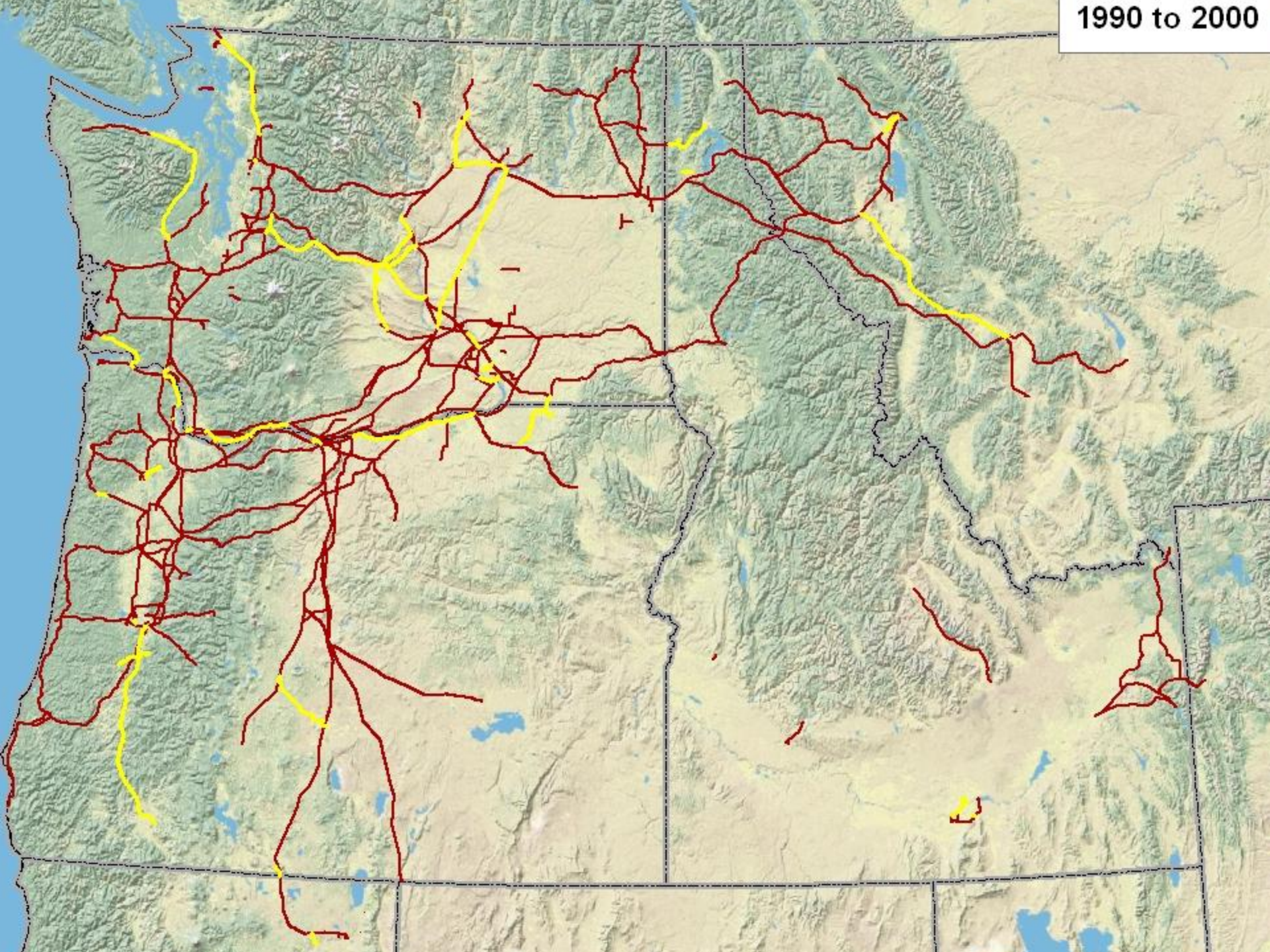

1940 to 1950

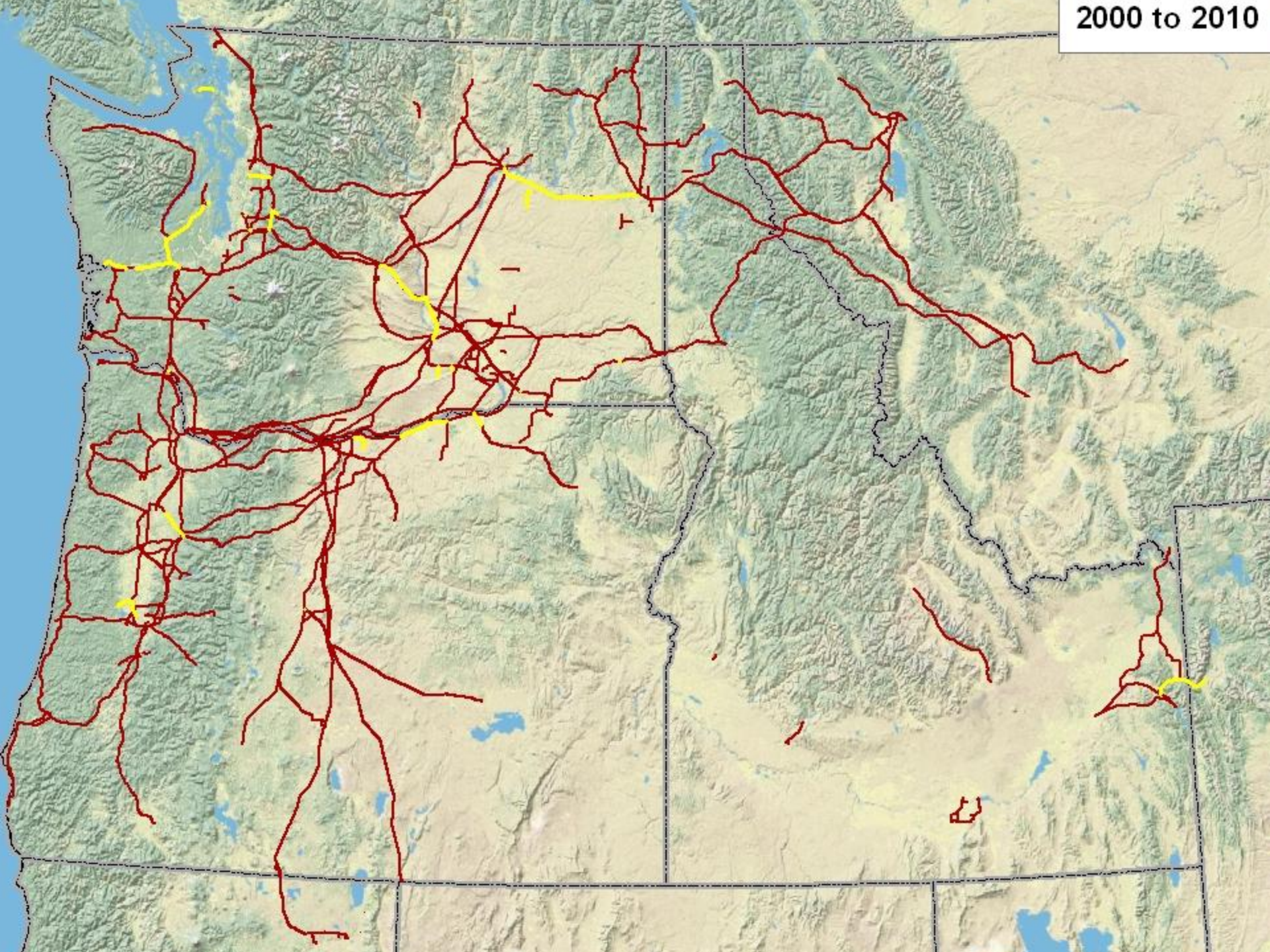

1950 to 1960

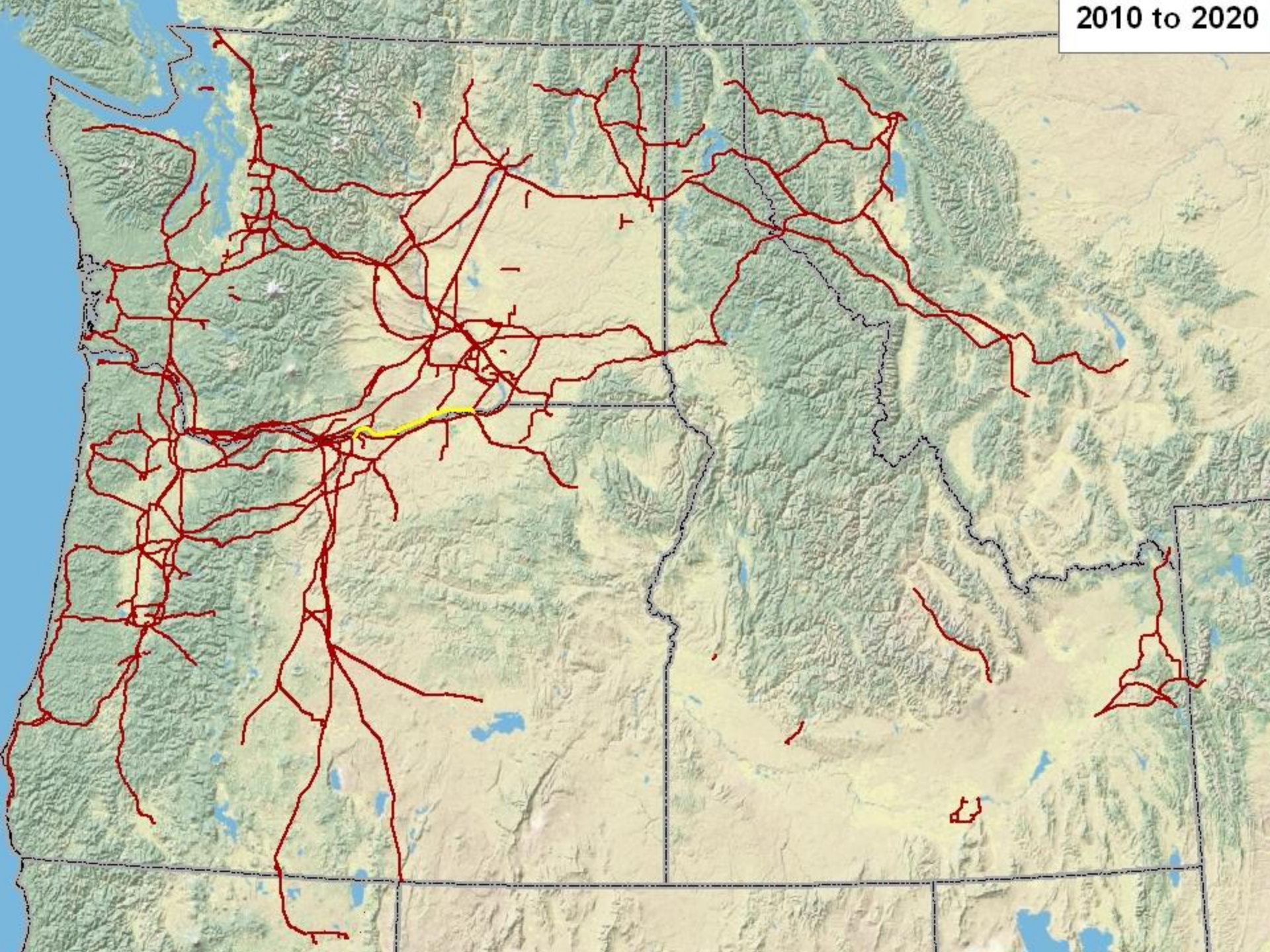

1960 to 1970

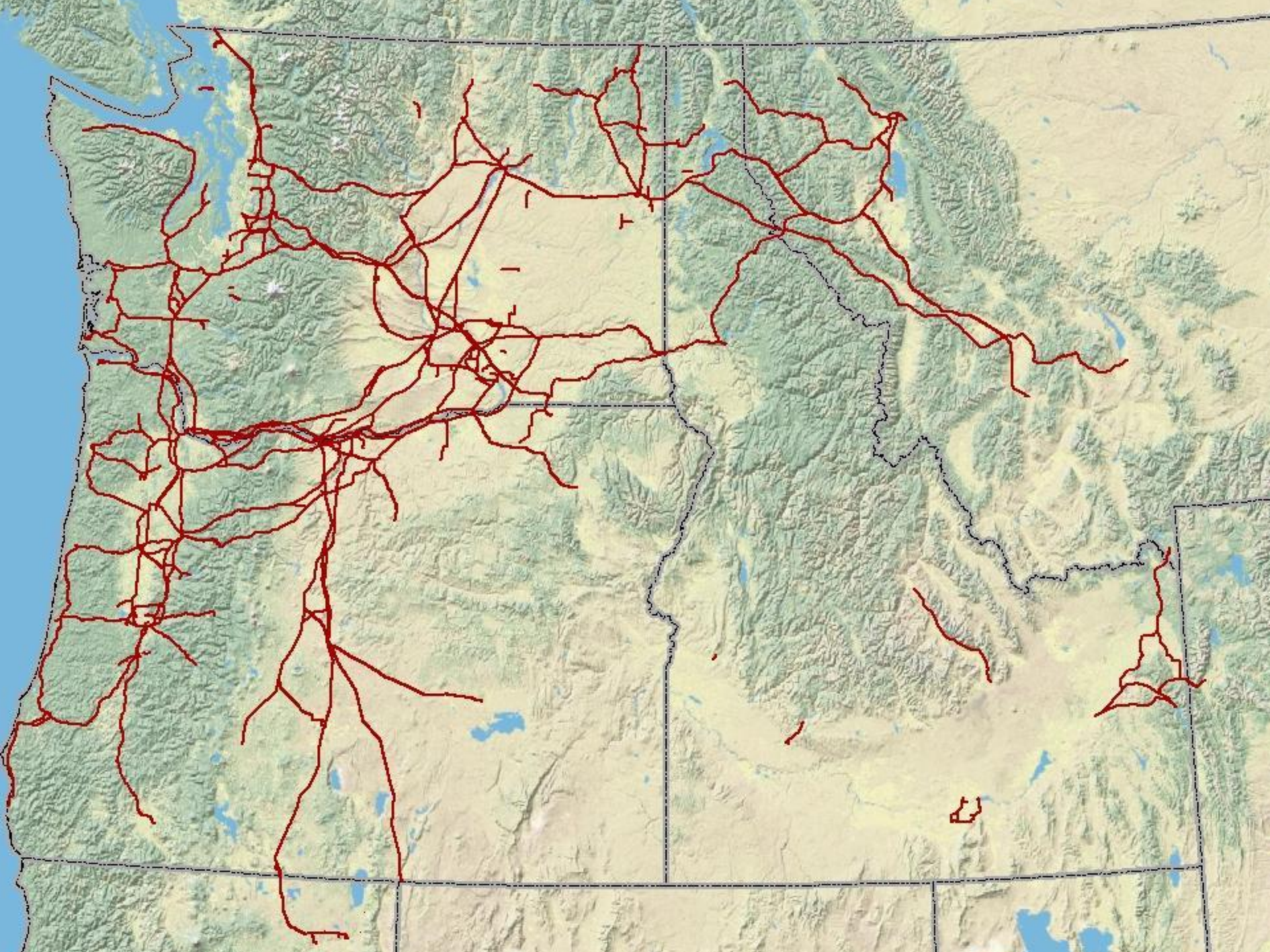

1970 to 1980


1980 to 1990


1990 to 2000


2000 to 2010


2010 to 2020



How Transmission is Planned and Developed

- The Pacific Northwest's growing population and need for renewable energy is placing new demands on BPA's already strained transmission grid.
- Most renewable energy sources are located away from population centers.
- Like most utilities, Bonneville historically used a "First In First Out" approach to applications for service in its transmission queue.
- To clear a growing backlog of requests BPA developed a Network Open Season (NOS) process that identifies which transmission requests in the queue are ready to move forward, and determines where additional infrastructure (if any) would be needed to enable that service.
- As a result of the 2008-2010 NOS processes, BPA fulfilled 263 requests totaling 11,722 MW. Of those requests, 7,105 MW were associated with wind generation.

BPA's Transmission Expansion

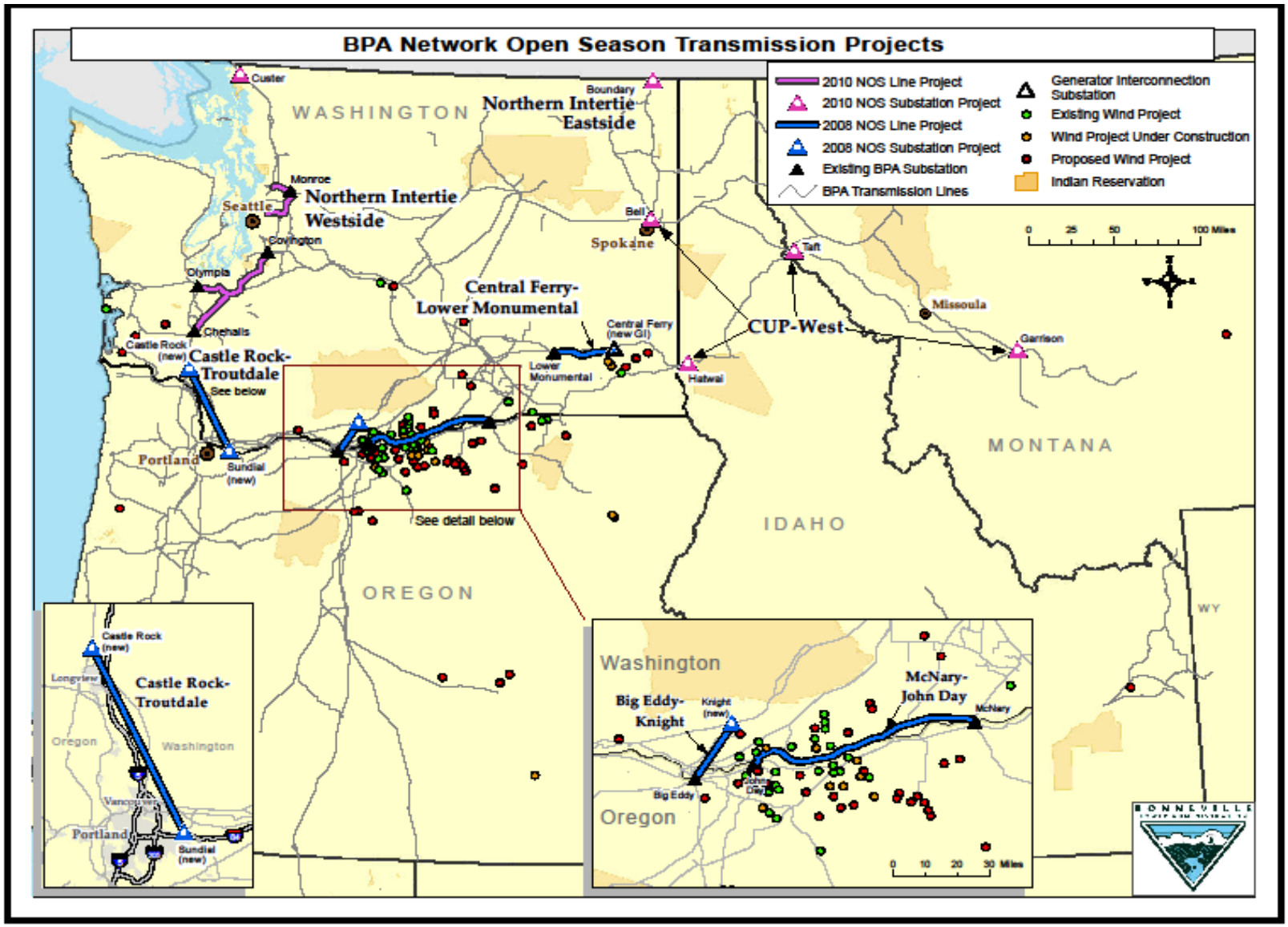
- For those transmission service requests that could not be met with existing capacity, the NOS enabled BPA to identify where and how much additional infrastructure would be needed to serve those requests.

- Out of the NOS cluster studies, BPA identified four major transmission expansion projects:

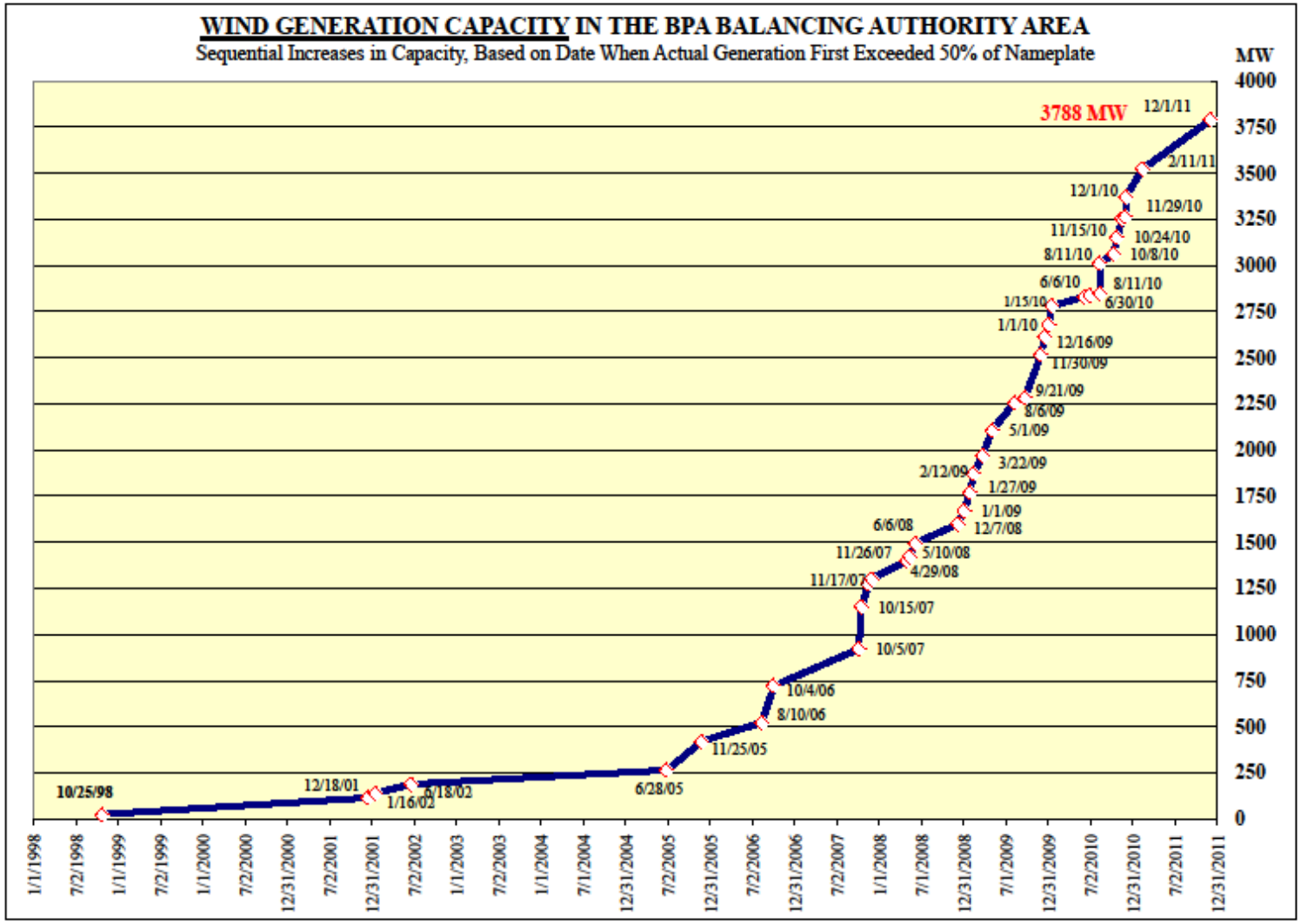
  - McNary-John Day: Completed November 2011.
  - Big Eddy-Knight: Construction started September 2011.
  - Central Ferry-Lower Monumental: Completed environmental review February 2011.
  - I-5 Corridor: In environmental review.

- Together, the four transmission lines would add more than 225 miles of high-voltage transmission to the Pacific Northwest's federal transmission grid.

Transmission Infrastructure Projects



Wind Generation Capacity in the BPA Balancing Authority Area



WIND_InstalledCapacity_current.xls 12/14/2011

Challenges and Solutions for Integrating Wind Resources

- Wind plant interconnection has become the overwhelming motivator for new transmission facilities as well as the primary driver of the transmission planning challenge.
- BPA is using several tools to meet this challenge:
  - Managing occasional periods of oversupply during high water events to protect fish and comply with Clean Water Act and Endangered Species Act requirements
  - Offering Conditional Firm Transmission Service to allow greater use of existing transmission
  - Using the NOS process to prioritize thousands of megawatts of requests for transmission access to support wind and other new power sources
  - Setting rates for wind integration services and other BPA services
  - Moving to within-hour scheduling to reduce the need for balancing reserves

Looking Ahead

- Two fundamental challenges:
  - Ensuring that there is sufficient transmission capacity to move energy to new and existing loads;
  - Providing the necessary transmission integration services to maintain system reliability while meeting competing environmental obligations

- Questions confronting Bonneville as our region moves from conventional to variable energy resources:
  - How do you find a balance between reliability, economic, environmental & other public purpose objectives?
  - How can transmission and resources be optimized to best meet the needs?
  - What is the relationship between the physical adequacy of the transmission system & economic adequacy?