

BALANCING LONG TERM SUPPLY AND
DEMAND:
WATERSHED PLANNING FOR THE
COLUMBIA RIVER BASIN

POWER, FISH AND WILDLIFE PLANNING FOR THE
NORTHWEST FOR THE NORTHWEST POWER AND
CONSERVATION COUNCIL

Jim Yost, Council Member
September 29, 2011



Northwest Power Act of 1980

- Idaho, Oregon, Montana, Washington form the Council
- Governors of each state appoint two Council members
- Council responsibilities:
 - Develop a Power Plan and update it every 5 years
 - Develop a Fish and Wildlife program and update it every 5 years
 - Inform and involve the public

Council Duties In The Law: Fish and Wildlife

- Power Act:

“Protect, mitigate and enhance fish and wildlife affected by the hydroelectric dams in the Columbia River Basin”

Council:

- Create fish and wildlife program, solicit projects
- Submit every project to review by a panel of 11 independent scientists to ensure credibility of the public expenditures

Key Themes

2009 Fish and Wildlife Program

- Focus on habitat protection and restoration
- Integration of Biological Opinions and 2008 Columbia Basin Fish Accords
- Scientific review of all projects
- New monitoring and evaluation strategy
- Refine and implement indicators for success
- More stringent project-reporting guidelines

Quagga and Zebra Mussels

The Council:

- Commissioned an IEAB (Independent Economic Advisory Board) economic-impacts study of infestation, control, containment, and damage
- Called upon the Corps of Engineers, Dept. of Interior, and NOAA Fisheries to prevent Pacific Northwest infestation
- Brought representatives of state and federal agencies to testify before the Council
- Brought a regional, public focus to the problem
- Created a forum for state and federal coordination

2008 FCRPS Biological Opinion

- The Obama Administration through NOAA Fisheries Service completed an internal review in September 2009 and found the Bi-Op complied with the Endangered Species Act.
- The responsible agencies (COE, BOR and BPA) simultaneously adopted an “Adaptive Management Implementation Plan” (AMIP). The AMIP provides for certain new mitigation actions and further establishes biological triggers activating near- and long-term responses to address unexpected, significant fish declines that may occur in the future
- The plaintiffs challenged the use of the AMIP to support the agencies’ contention that the Bi-Op complies with the ESA
- Judge Redden ruled in August 2011 that the 2010 FCRPS Biological Opinion was not consistent with the requirements of the ESA because the habitat actions after 2013 relied upon in part for the jeopardy conclusions were not sufficiently definite and certain to occur. He remanded the BiOp to NOAA and the Action Agencies to produce by January 2014 a revised supplemental BiOp that includes habitat mitigation plans containing specific habitat actions for the years after 2013. The Judge did not rule on any of the other issues raised by the plaintiffs.

Fish and Wildlife Program Spending

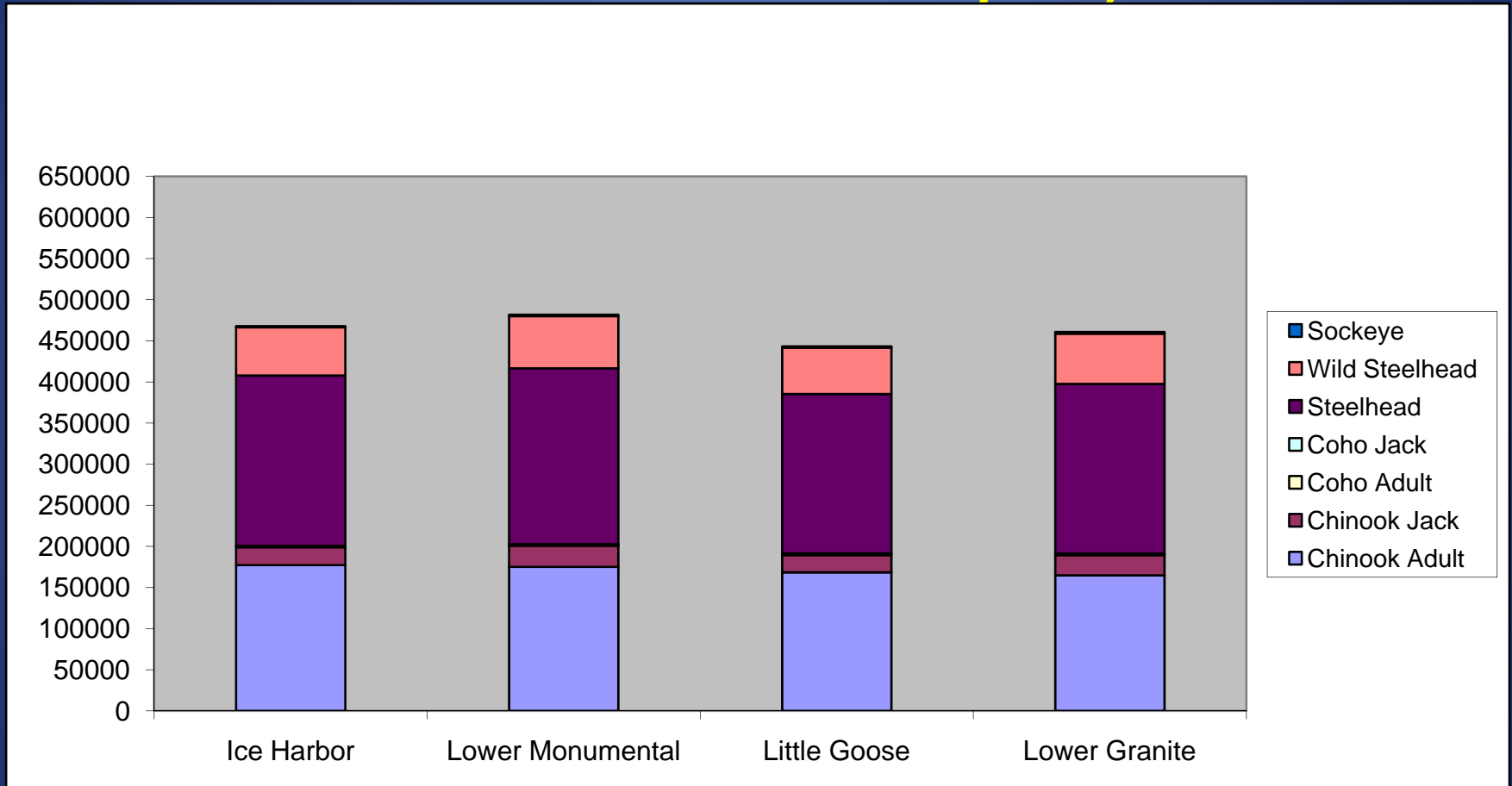
- 2008 Fish Accords raised spending from \$150 million to \$220 million annually
- FY 2009: \$41.4 million spent in Idaho
- 98 projects in Idaho in 2009 (94 direct-expense projects and four capital investment projects)
- State agencies that receive funding
 - Idaho Department of Fish and Game
 - Office of Species Conservation
 - Latah, Nez Perce, Custer Soil and Water Conservation Districts
 - Idaho Department of Water Resources

Overall Costs to Bonneville (2010)

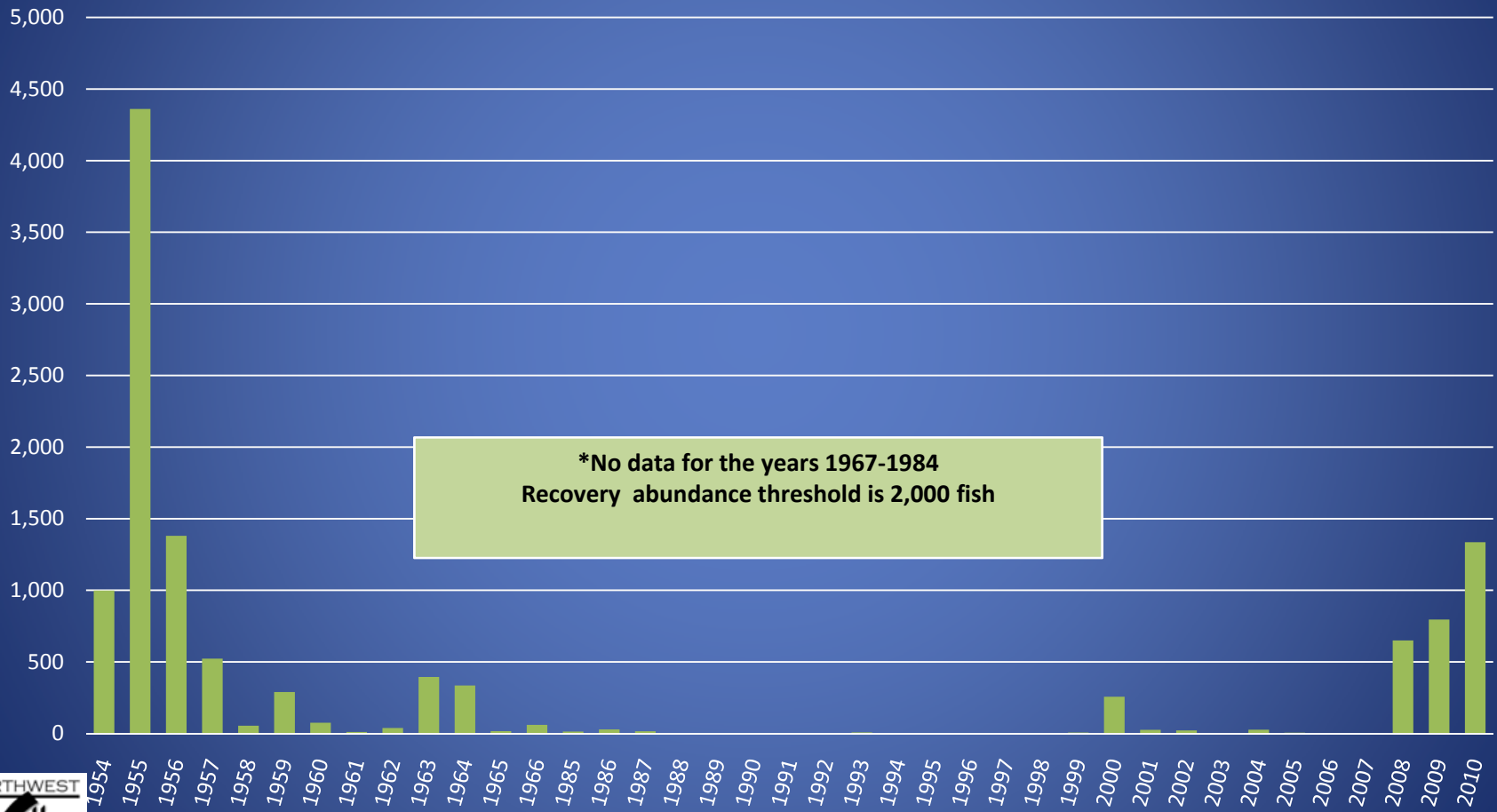
Idaho Sockeye Salmon Captive Broodstock Program

- 16 wild sockeye returned to the Sawtooth Valley in the 1990's
- Captive broodstock program started in 1991
- In 2009, 1,219 crossed Lower Granite Dam, and 833 returned to collection points in the Sawtooth Valley
- In 2010, 2,200 crossed Lower Granite Dam, and over 1,300 returned to collection points in the Sawtooth Valley
- Plans are in place to expand the program six-fold to release up to 1 million smolts annually

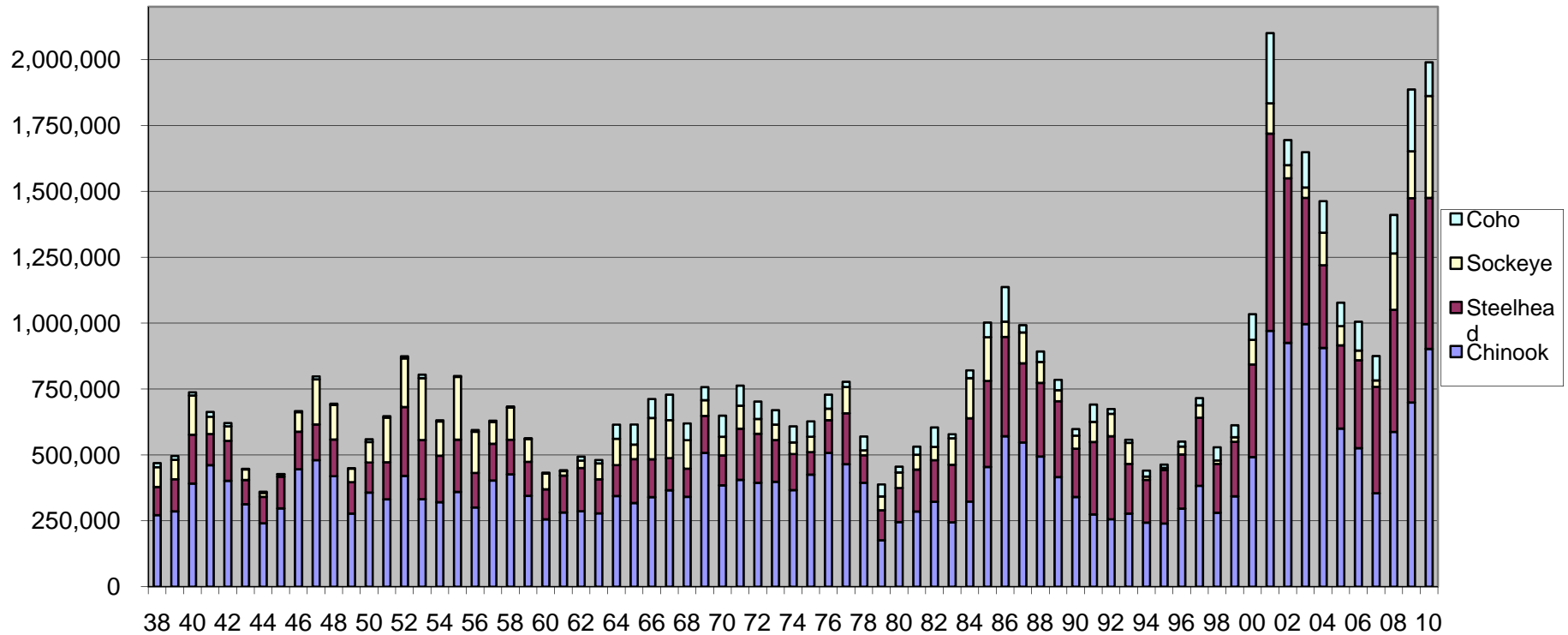
Fish Counted at Snake River Mainstem Dams Below Hells Canyon, 2010



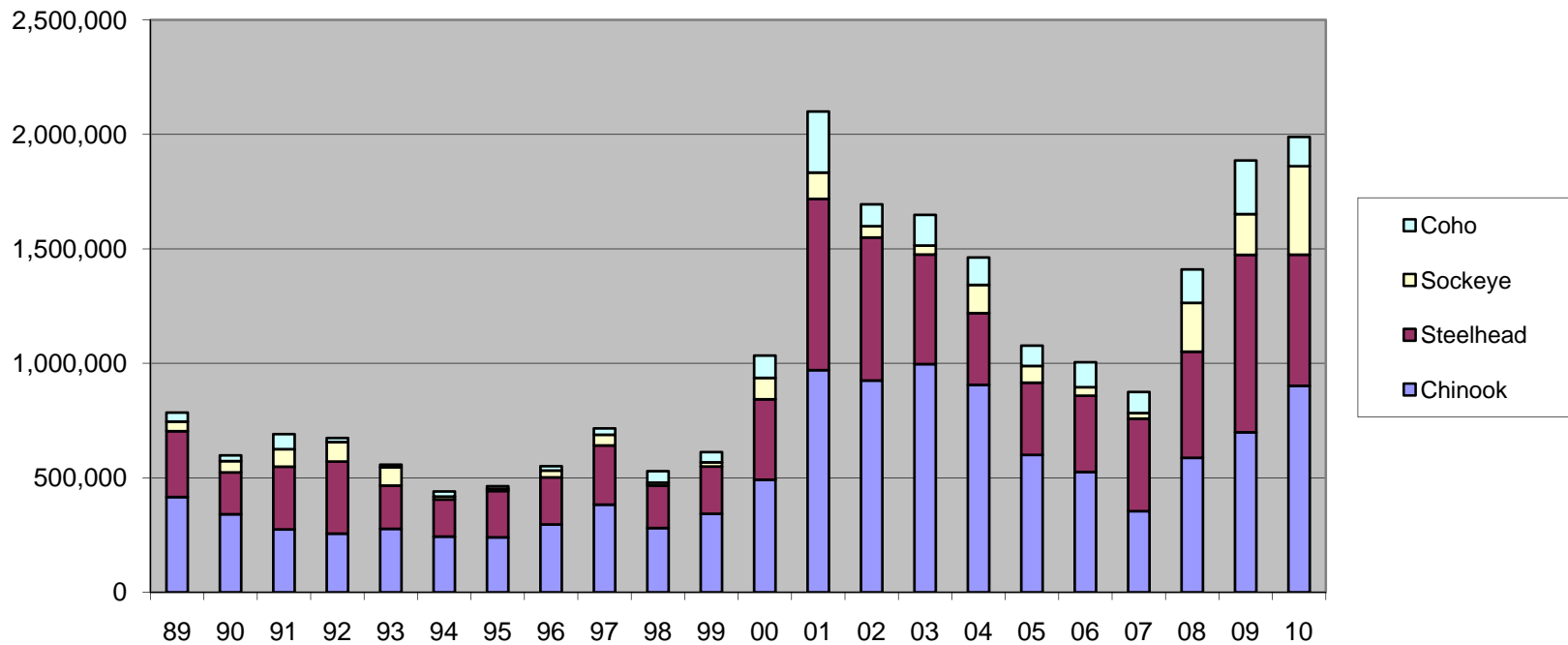
Adult Sockeye Returning to Sawtooth Basin Lakes 1954-2010*



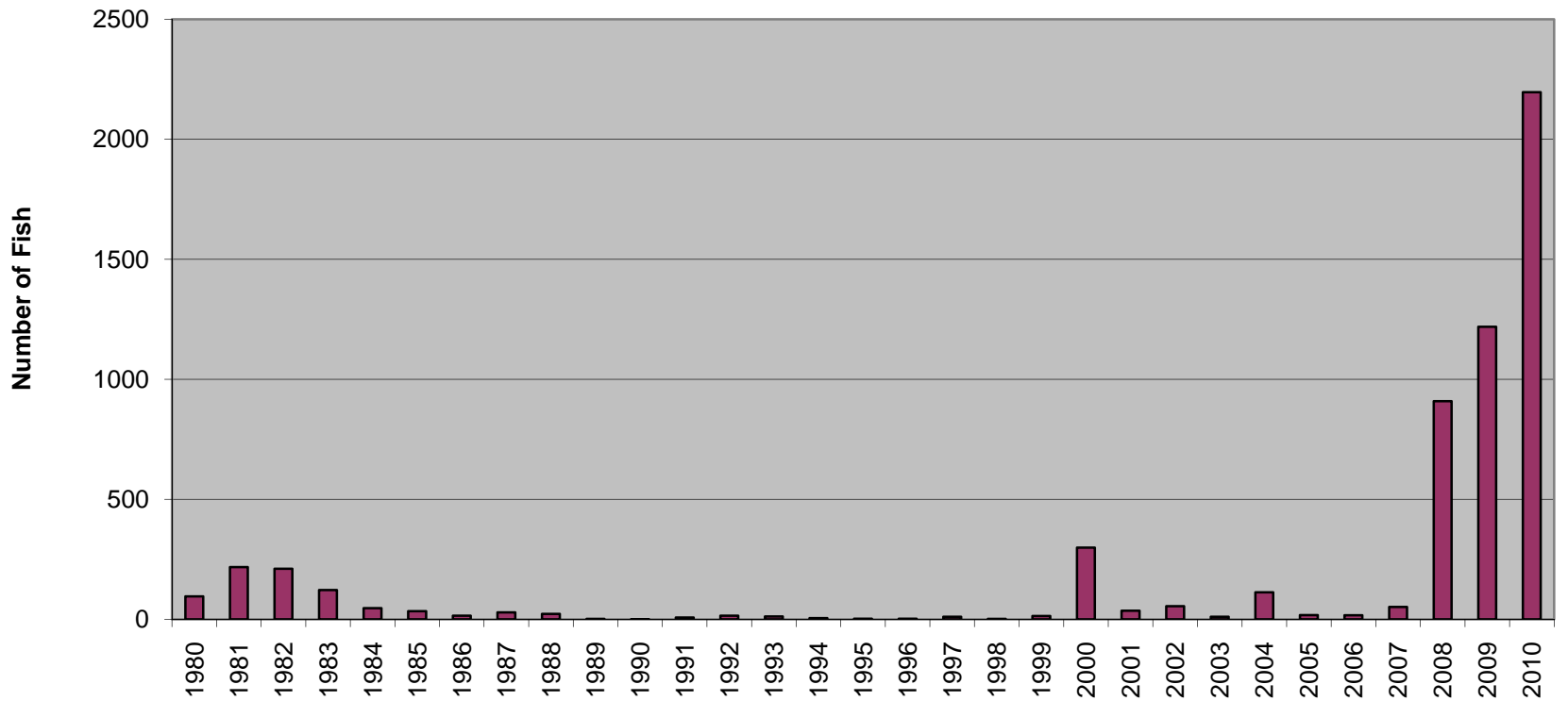
Salmon and Steelhead Passing Bonneville Dam, 1938-2010



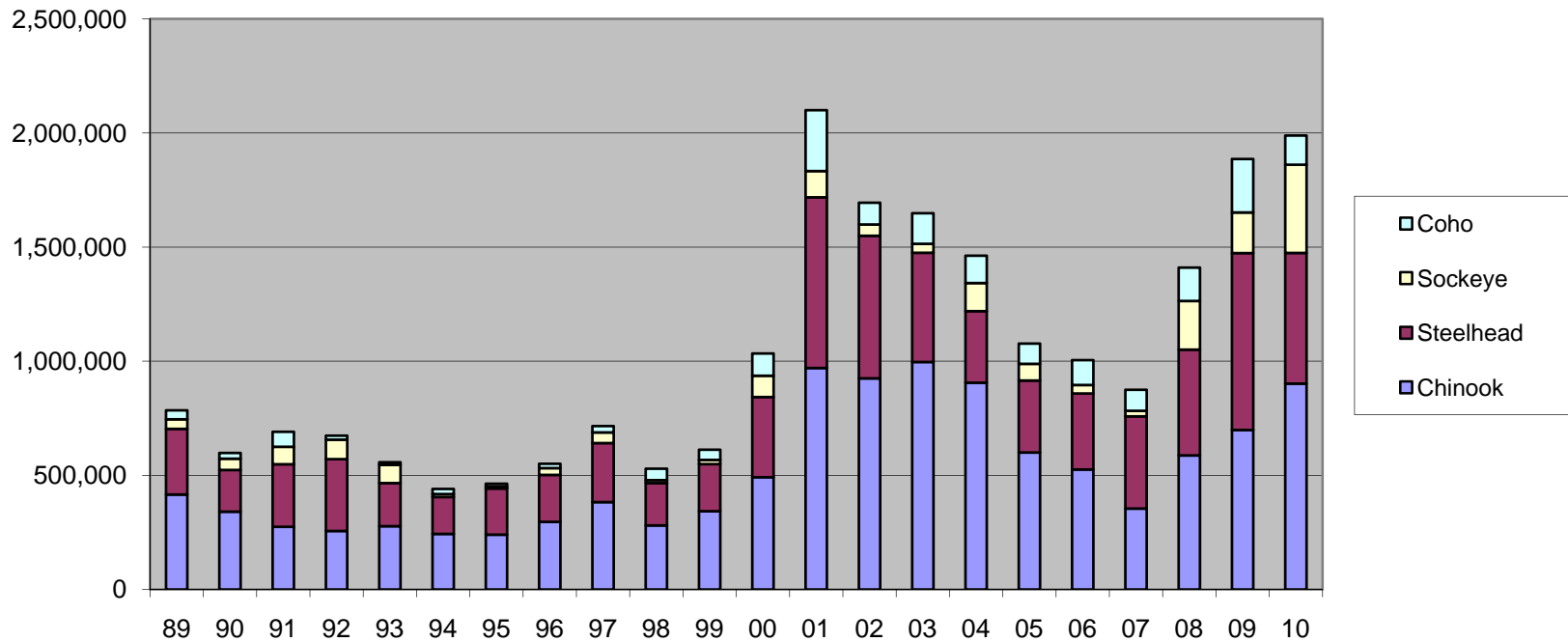
Adult Salmon and Steelhead Crossing Bonneville Dam 1990 Through 2010



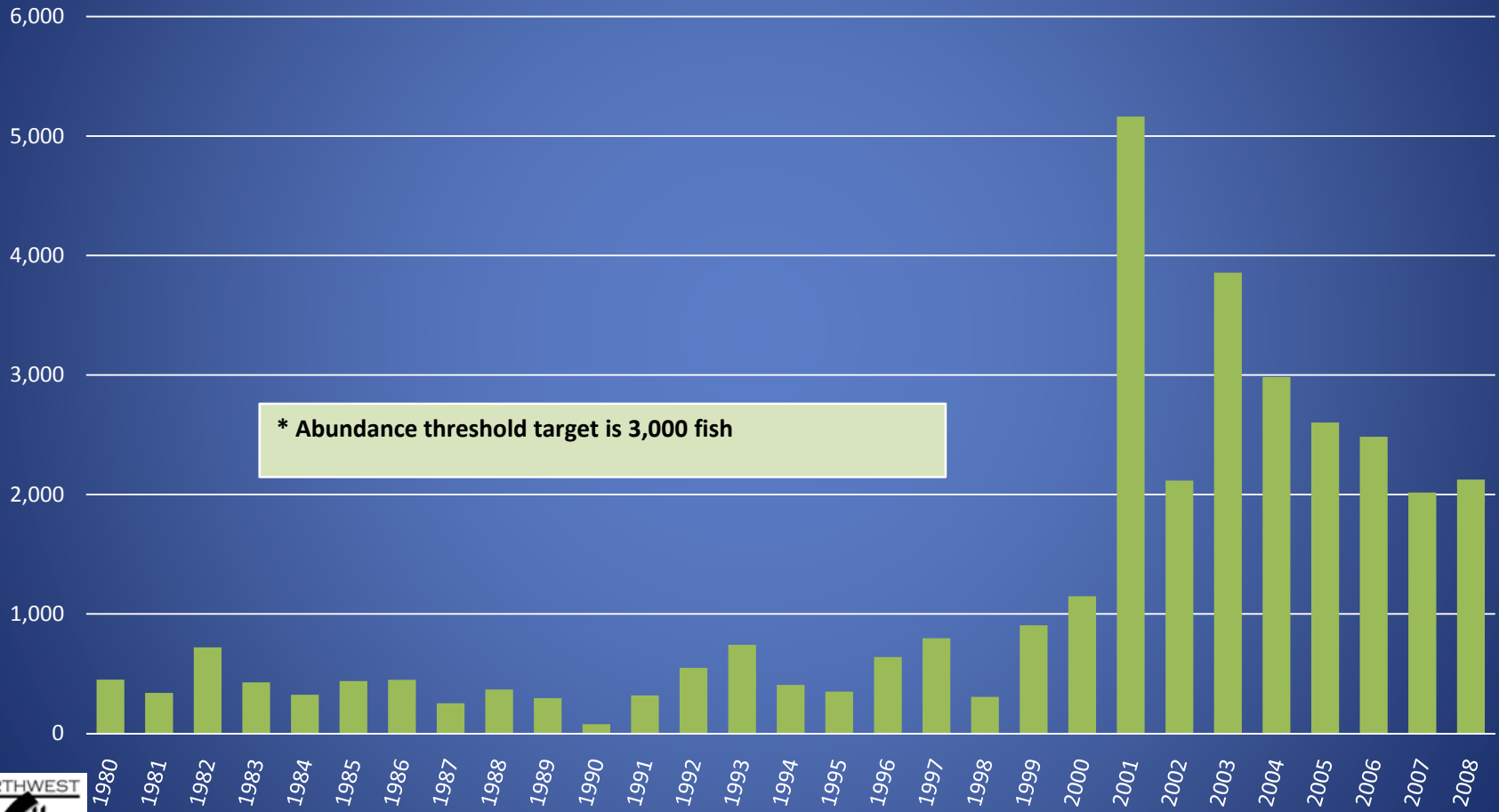
Adult Sockeye Counted at Lower Granite Dam, 1980-2010



Adult Salmon and Steelhead Crossing Bonneville Dam 1990 Through 2010



Snake River Naturally Produced Fall Chinook at Lower Granite Dam, 1980-2008*



Columbia River Basin Treaty

- A river flood control and energy agreement between US and Canada set to expire in 2024.
- US entity (BPA & COE) wanted to provide input into recommendation:
 - 1) terminate the treaty
 - 2) continue the treaty
 - 3) negotiate to amend the treaty
- Region formed the Sovereign Review Team (SRT) (States, Tribes, Federal Agencies) to reach consensus.
- Sovereign Technical Team (STT) created by SRT.
- Non-Sovereign Group
- Universities



Council Duties In The Law: Power Planning

- Develop a regional plan to “assure the Northwest an adequate, efficient, economical and reliable power supply.”
- Analyze the adequacy and reliability of the power supply



Bonneville Dam

Demand Forecast

- Regionwide
 - 1% growth in demand with conservation
 - 1.6% growth in demand without conservation
- Idaho
 - Approximately 1.4%

Conservation

- Conservation is first priority because:
 - It is the lowest cost resource by far
 - It has no greenhouse gas emissions and therefore reduces risk from potential carbon pricing policies
 - It avoids fuel price risks
 - It provides both capacity and energy
 - It is a source of local jobs and economic activity

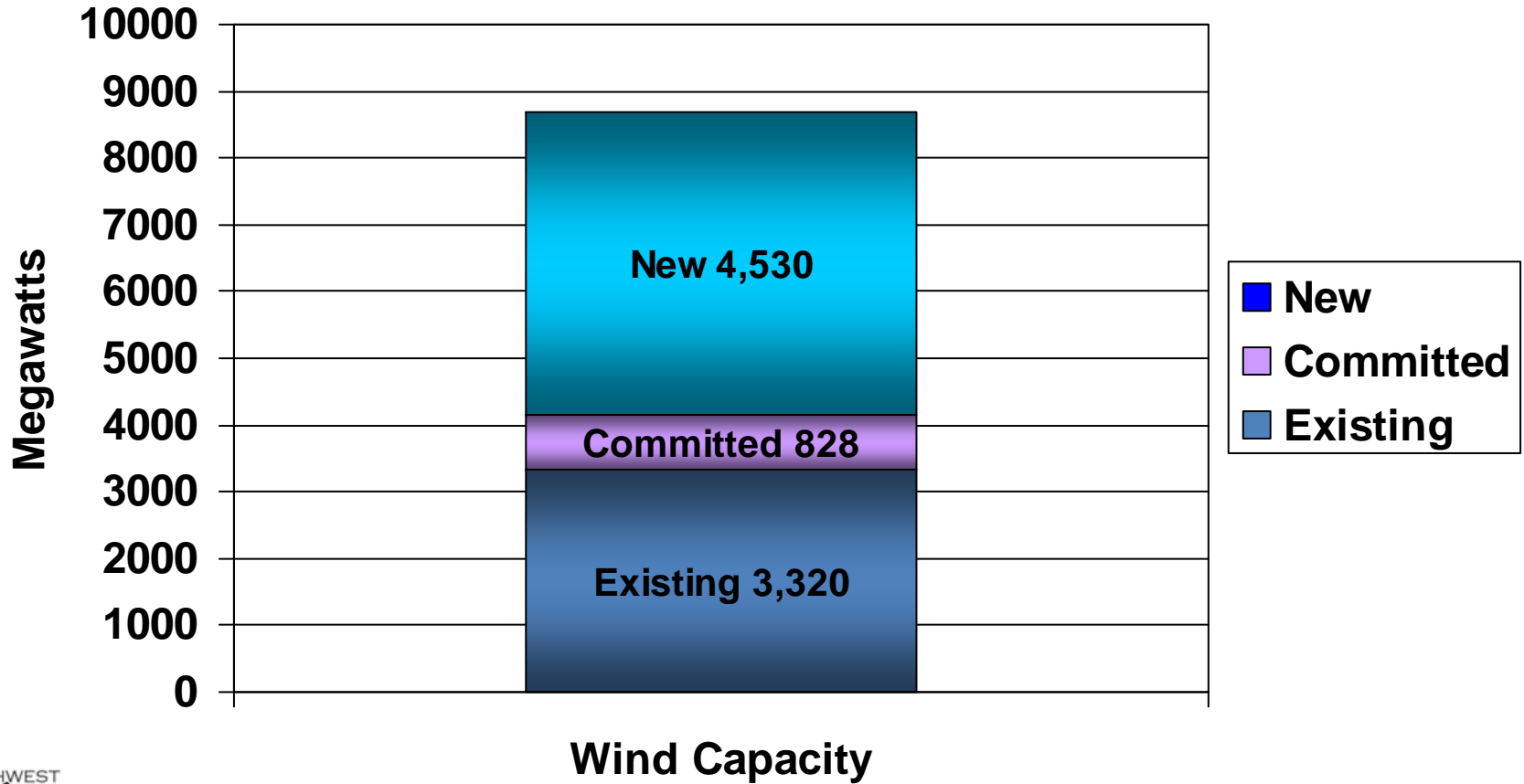
Conservation & Energy Efficiency

- Since 1980, the Northwest has achieved 3,900 megawatts of energy conservation
- 3,900 megawatts is equal to 40% of growth in electricity demand over the last 25 years in the Northwest
- The average cost of this conservation was less than 3 cents per kilowatt-hour
- The NWPCC has identified an additional 3,000 megawatts of conservation (also less than 3 cents) that is available

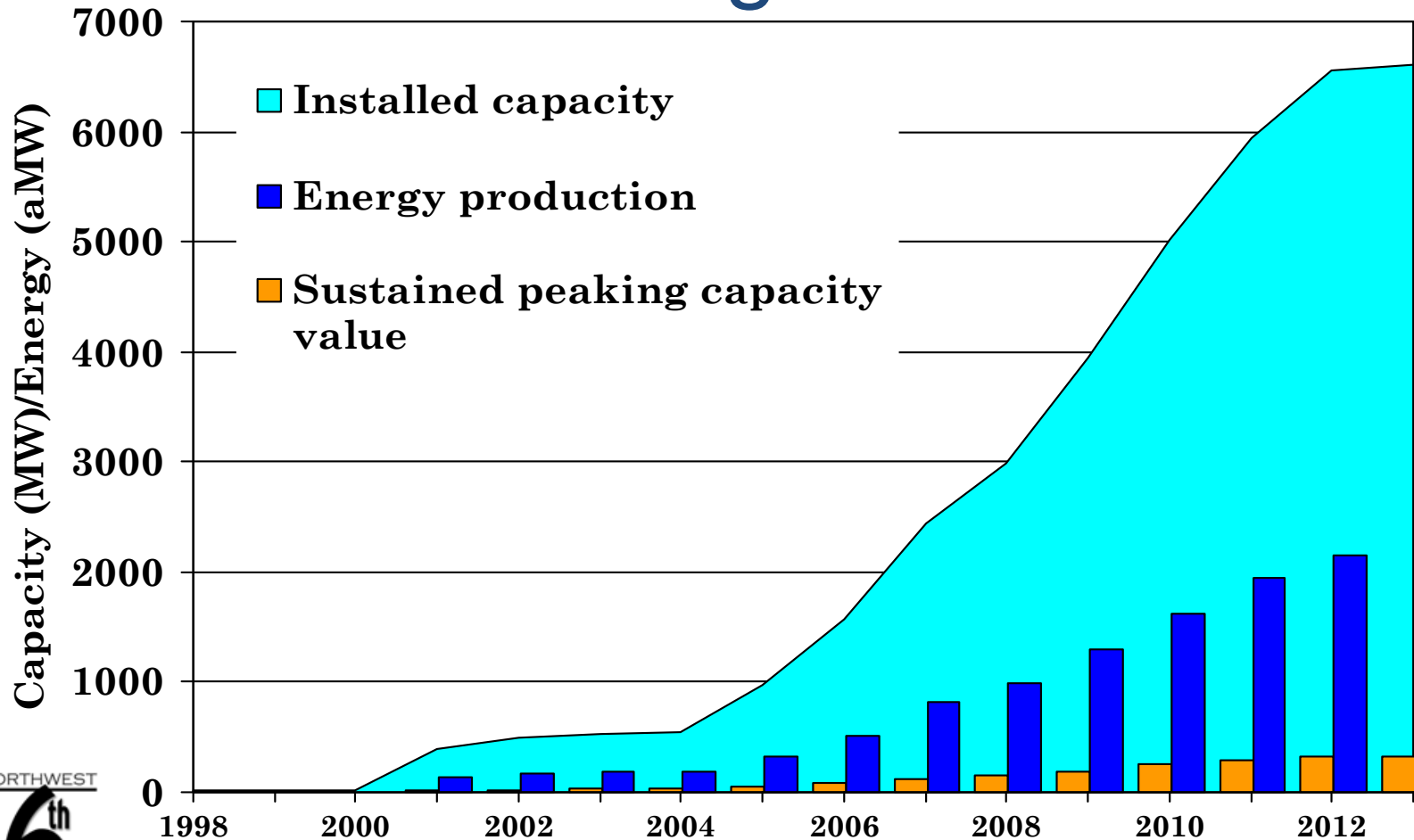
Renewable Generation

- Wind power is expected to meet the majority of RPS requirements
 - RPS would require 1,800 average megawatts of wind (5,400 installed capacity)
 - Variable wind output creates integration challenges
- Geothermal and other smaller-scale renewables such as biogasification, bioresidue combustion, hydropower upgrades, and new hydropower may be cost-effective and should be explored when available at the local level

Existing, Committed, and New Wind Generating Installed Capacity

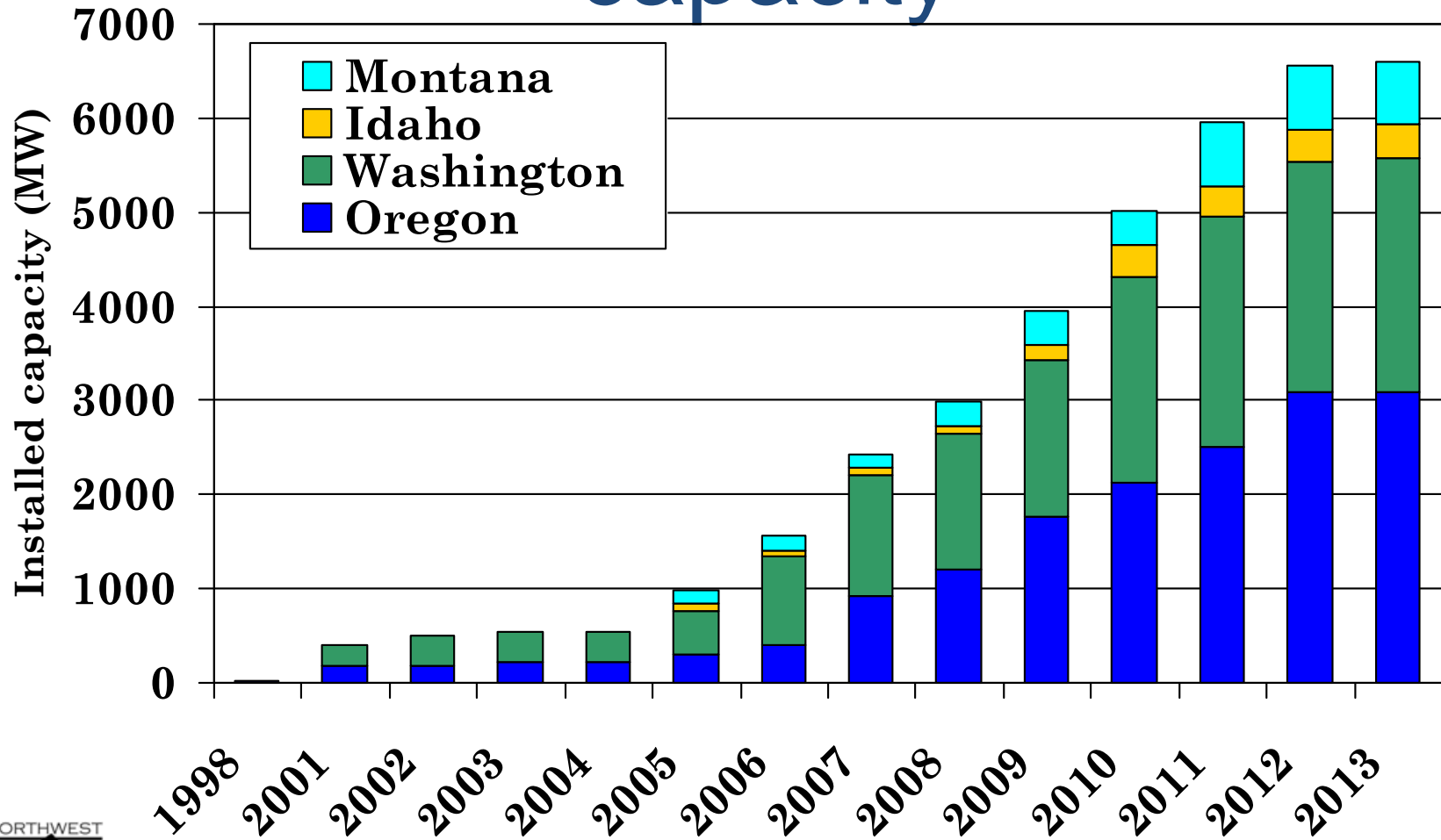


Cumulative committed & planned* wind power in the four state WECC region



*Planned: identified customer and announced completion dates

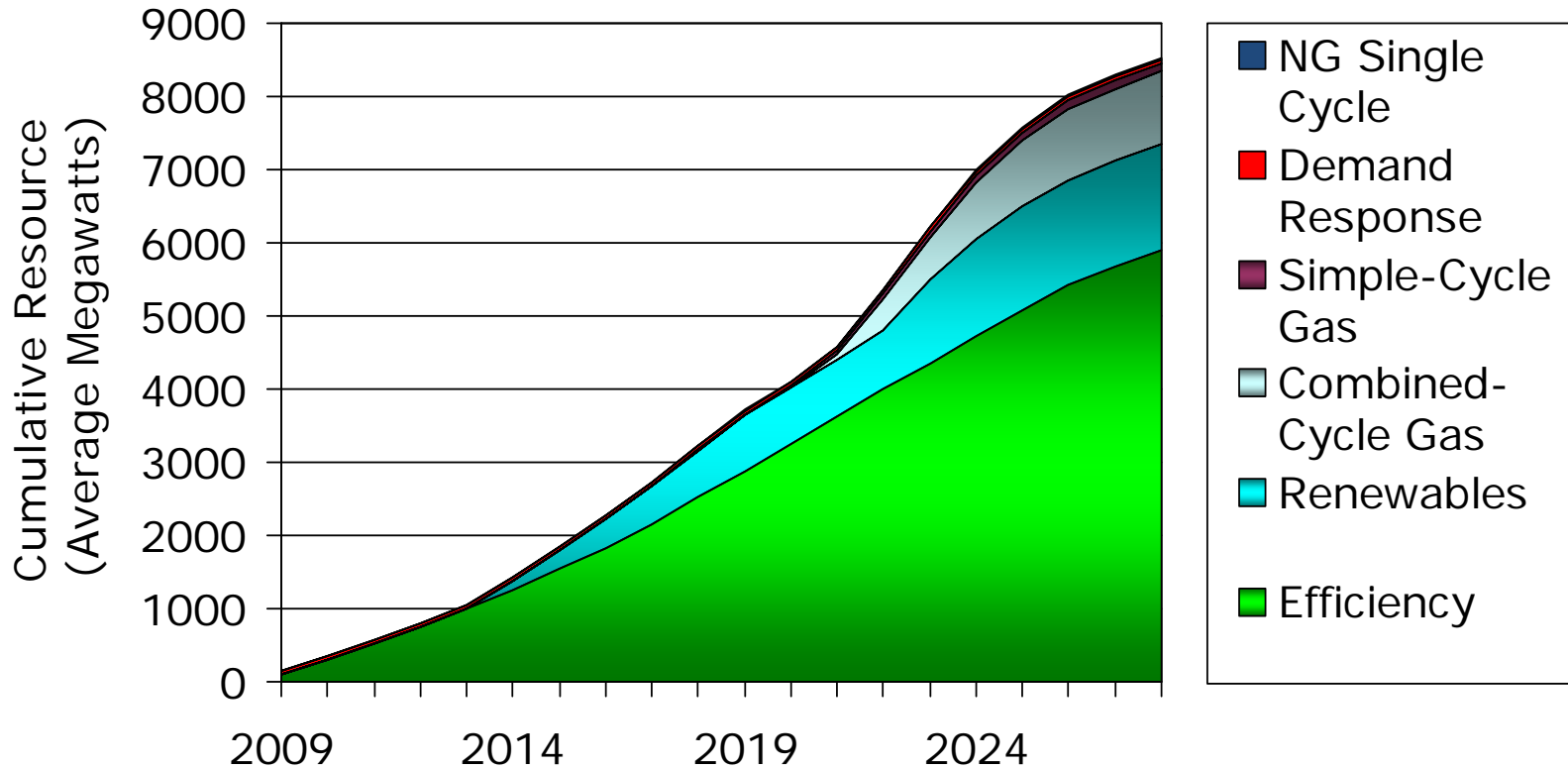
Location of Northwest wind capacity



Natural Gas

- Natural gas-fired generation can provide energy, firm capacity and flexibility when needed
 - Substantial fuel price risk
 - Moderate capital risk and short lead time
 - Lower carbon emissions than coal
- Gas-fired generation options provide protection against rapid growth and offer reduced carbon-emission generation if carbon prices are high
- The role of natural-gas fired generation varies among scenarios

Sixth Plan Resource Portfolio*



* Expected Value Build Out. Actual build out schedule depends on future conditions

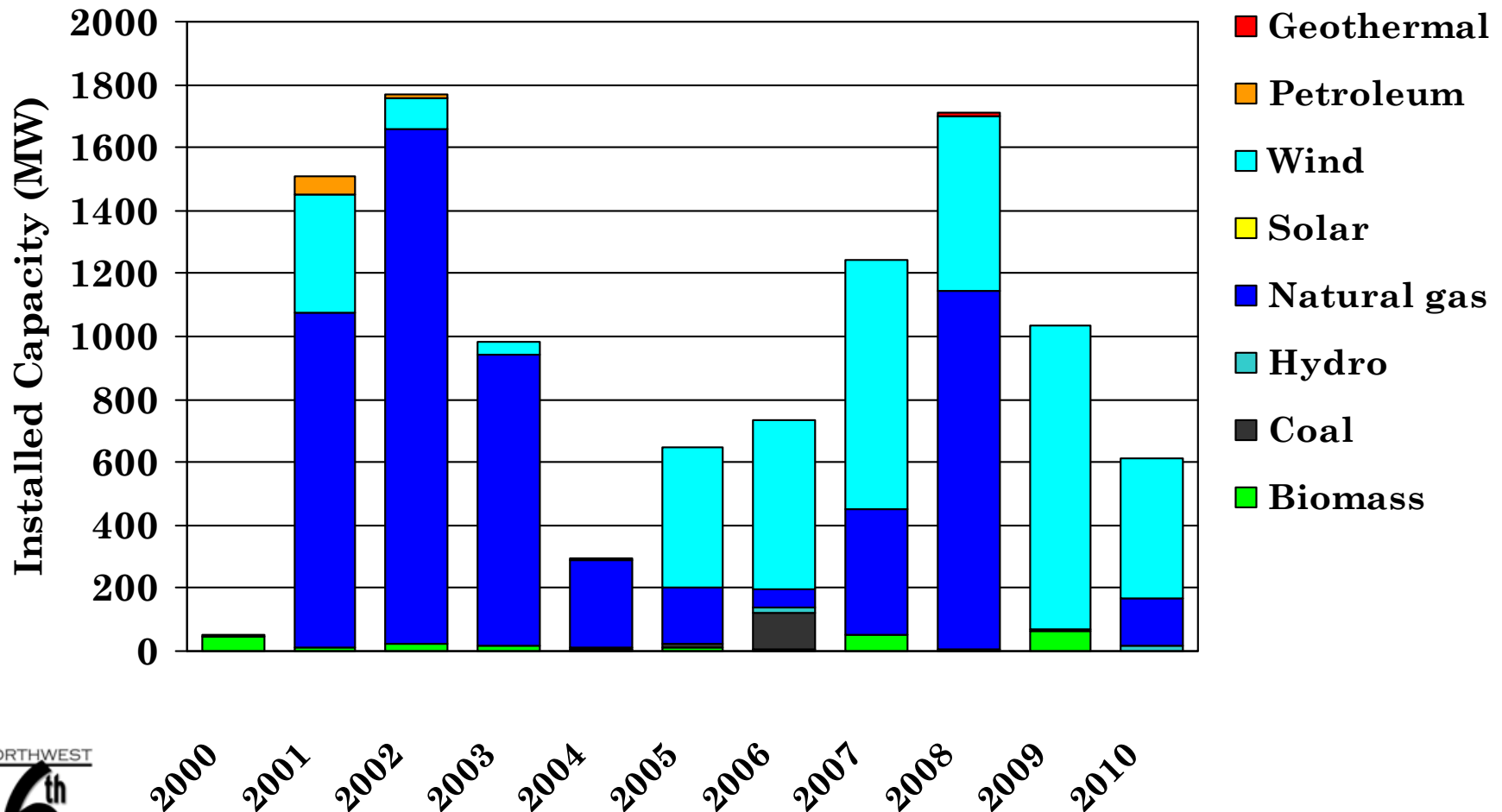
More Efficient Use and Expansion Power System Infrastructure

- Improved operation of the existing power system for wind integration
- Transmission system investments to improve market access and access remote wind potential
- Preserve the capability of the hydroelectric system while protecting salmon and steelhead

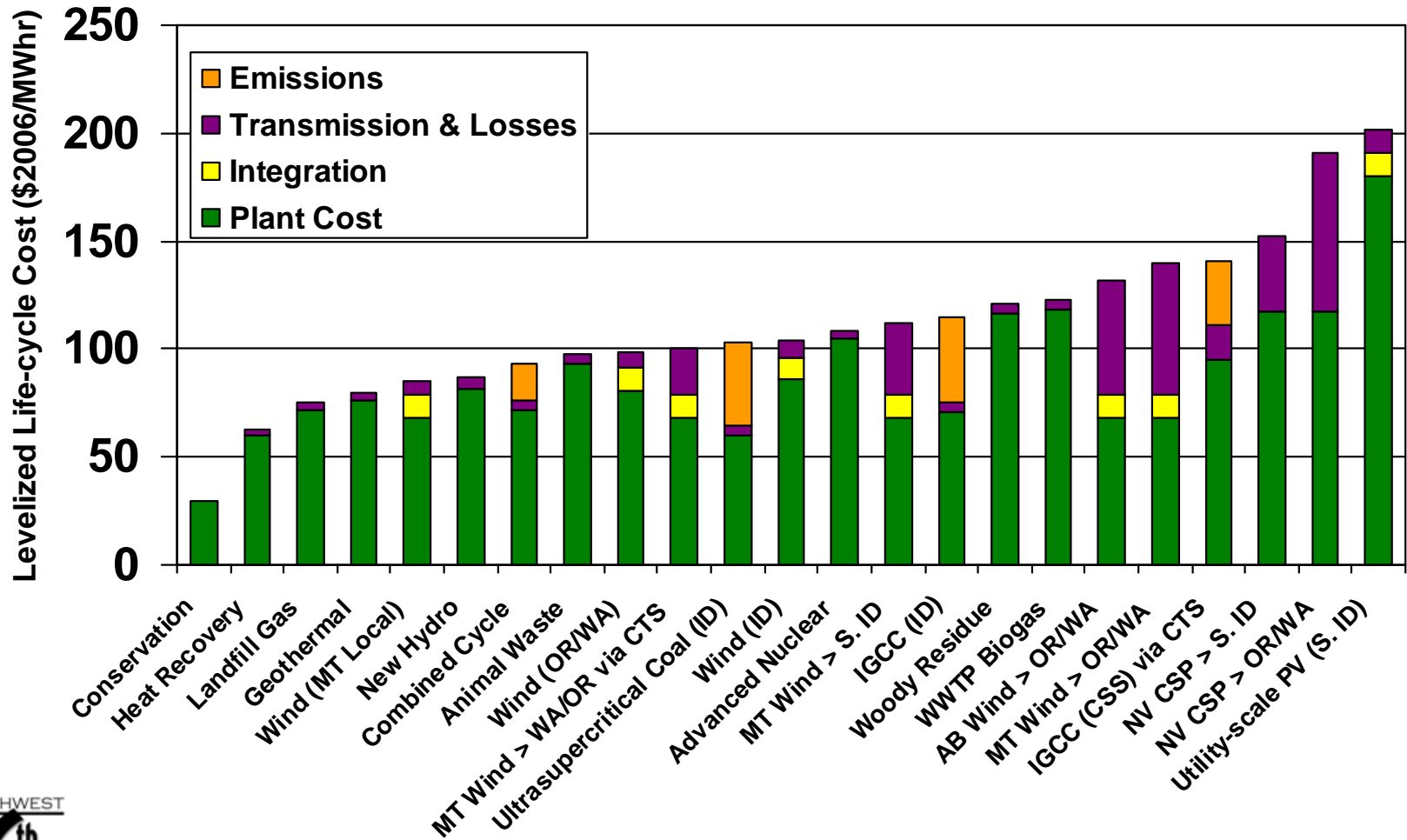
Explore Long-Term Alternatives

- Demand response (firm capacity, flexibility)
- Smart grid development (system operation, demand-side opportunities)
- Energy storage (firm capacity, flexibility)
- Coal gasification with carbon sequestration (reduced CO₂)
- Advanced nuclear technology (baseload energy, reduced CO₂)

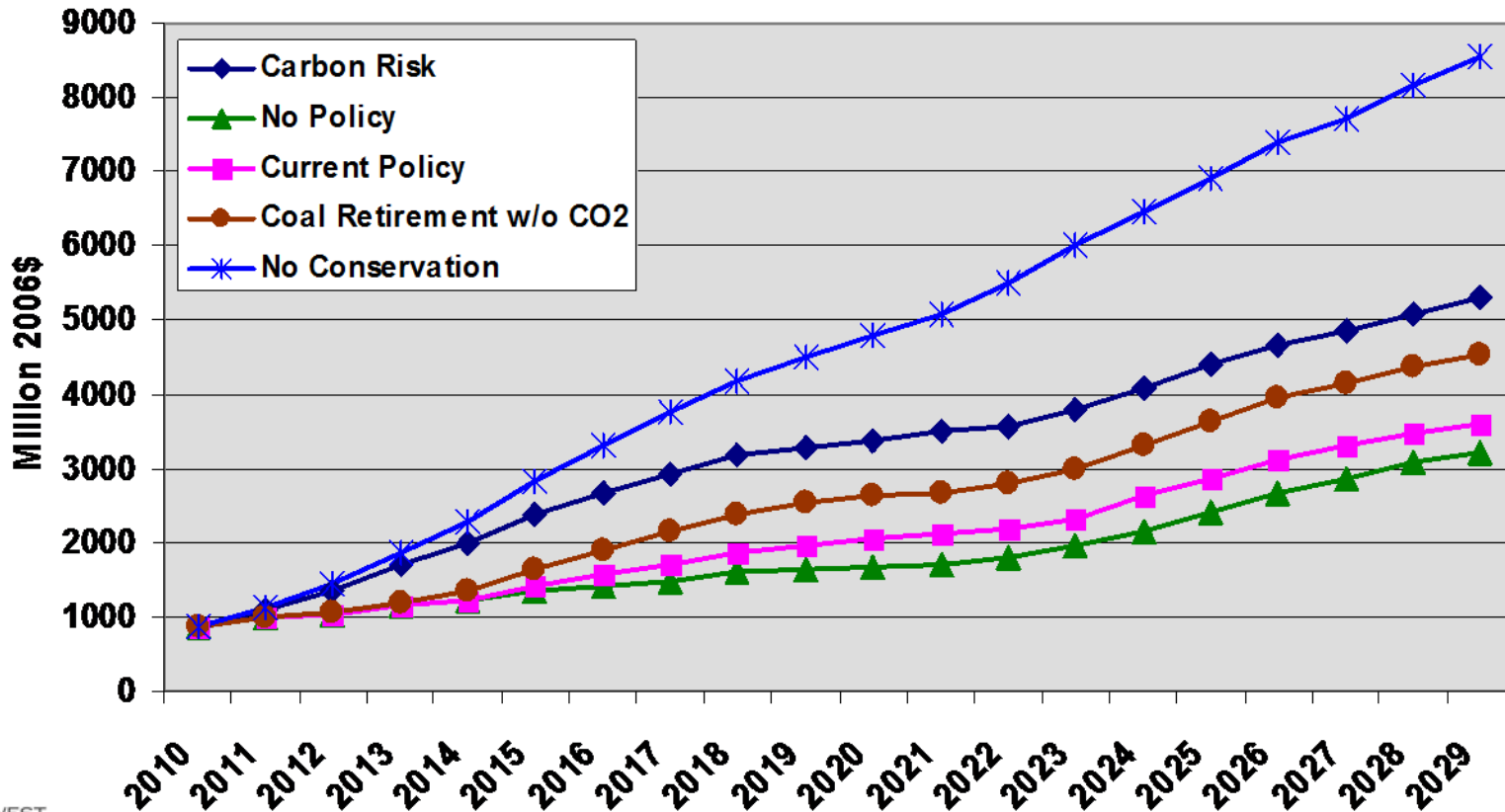
Northwest generating capacity additions*



Resource Costs: Long Term



Power System Costs Going Forward



Plan in a Nutshell

- Aggressive efficiency improvement
- Renewable generation to meet RPS requirements
 - Cost-effective, small-scale, local renewable and cogeneration opportunities should be developed
- Additional energy, capacity, and flexibility needs provided by natural gas-fired generation
- Improve power system operation and invest in transmission capacity
- Explore future low-carbon resource potential