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## Cost of removing dams depends on assumptions

Estimates for replacing power generated on Lower Snake range from \$79 million to \$500 million a year

By Rocky Barker - Idaho Statesman

Whether the Pacific Northwest can afford to replace the power produced by four salmon-killing dams on the Snake River depends on the assumptions you make.

The economic debate is only one part of the region's struggle over how to balance human needs and values against the needs of endangered salmon.

Now that salmon advocates are pushing Congress to approve new economic and science studies, the power issue has returned to center stage.

Three different groups with three very different viewpoints have presented estimates ranging from \$79 million to \$500 million annually to replace the power produced at the four dams between Pasco, Wash., and Lewiston.

Predictably, those that want the dams removed predict the lowest costs and those who want them to stay predict the highest costs.

### Power

Impacts on irrigation, shipping and benefits from fishing and recreation also are a part of the economic debate over dam breaching.

But the power cost is the biggest issue, said Joel Hamilton, a professor emeritus at the University of Idaho.

"The replacement power is always the biggest issue in any study," Hamilton said.

Even though the idea of removing a dam is politically controversial, it could end up as the easiest route out of a legal battle over the future of the fish.

More than 12 stocks of salmon and steelhead are threatened or endangered across the region.

A wide variety of human activities, from overfishing to habitat destruction to hindering or cutting off salmon migration with dams, threatens sea-going fish from Puget Sound into the entire Columbia River Basin, an area larger than France.

But a growing cadre of biologists says the four dams are the major factor in preventing the recovery of the salmon and steelhead that spawn and rear in Idaho's pristine wilderness and rural watersheds.

If federal managers and fisheries officials don't write a plan that satisfies U.S. District Judge James Redden of Oregon, he could order a series of limitations on hydroelectric dams aimed at saving salmon that could exceed the cost of breaching the four dams.

Removal of the four Snake River dams would result in less loss of electricity and barge traffic than removal of any one of the four dams on the Columbia River, such as John Day near Hermiston, Ore. Those dams impede salmon migration as much or more than do the four Snake dams.

Even drawing down Columbia reservoirs and spilling additional water over their spillways and away from hydropower turbines to improve migration could cost the region hundreds of millions of dollars annually.

### **Bonneville's scenario**

The Bonneville Power Administration, which markets the power from the four dams and 26 others, assumes it must replace the full capacity of the dams, more than three times the electricity the dams annually produce.

Its managers say they need the full capacity to ensure there is enough power for the rare but critical event that requires all the power the system currently has.

BPA predicts the annual cost to range from \$400 million to \$500 million.

It assumes it would have to replace the dams with 3,400 megawatts by building natural gas turbine generators.

It could use wind to produce some of that power, but the capital costs would be the same since it needs the gas turbines to back wind turbines up when the wind doesn't blow, said Kieran Connolly, BPA regional power manager.

BPA also assumes it could offset some of the power needed with conservation.

A major difference from its analysis done earlier in the decade is that it no longer has as many big, industrial customers, including aluminum plants, that could be shut off.

In the rare but serious emergencies, when the power system's full capacity is needed, it would have less flexibility.

"We think capacity needs to be on the table," Connolly said.

### **Conservation scenario**

Salmon advocates say they can replace the average annual production of the four Washington dams with energy conservation and new wind power.

To visualize their assumptions, imagine the Pacific Northwest's 15 million people changing every incandescent light bulb to an energy-efficient compact fluorescent bulb.

If each person changed 10 light bulbs, they would offset about a fourth of the average power generated by four dams on the Snake River in Washington that salmon advocates say must be removed to save Idaho's salmon.

Add in energy-efficient refrigerators, water heaters and washers. Include additional insulation of homes and businesses, increased efficiencies for industrial processes and 40 wind turbines, and you get 895 megawatts of conservation and 107 megawatts of wind power.

Conservation advocates estimate their plan will cost Bonneville Power \$79 million to \$179 million a year.

The energy conservation needed is available said Steve Weiss, a power analyst with the Northwest Energy Coalition.

"Every time the (Northwest Power and Conservation Council), has made an estimate of energy conservation available, the region has exceeded it," Weiss said.

### **Economists' scenario**

An independent group of economists under contract to the Northwest Power and Conservation Council recommended building two natural gas turbine plants that produce one and a half times the dams' average annual production.

The council is a four-state panel that writes Pacific Northwest energy plans. It used the results of a 2002 U.S. Army Corps of Engineers study for its proposal.

In 2002, the corps estimated the annual cost of such a project at \$271 million.

But the cost of natural gas has gone up, so the cost would be much higher today, said Hamilton, who speaks for the independent economists.

They were skeptical the region could come up with enough energy conservation to meeting rising demand and offset the loss of the dams.

Enough has changed since 2002 that a new study is warranted, Hamilton said. He said any new economic study must be a transparent process, allowing all stakeholders to be involved.

He wouldn't comment on whether that would fit under salmon-advocate backed legislation calling for a science and economic study of salmon recovery. But he does believe the Corps of Engineers could build on the economic and science studies it did in 2002.

"I don't think we need to repeat the whole corps environmental impact statement," Hamilton said.