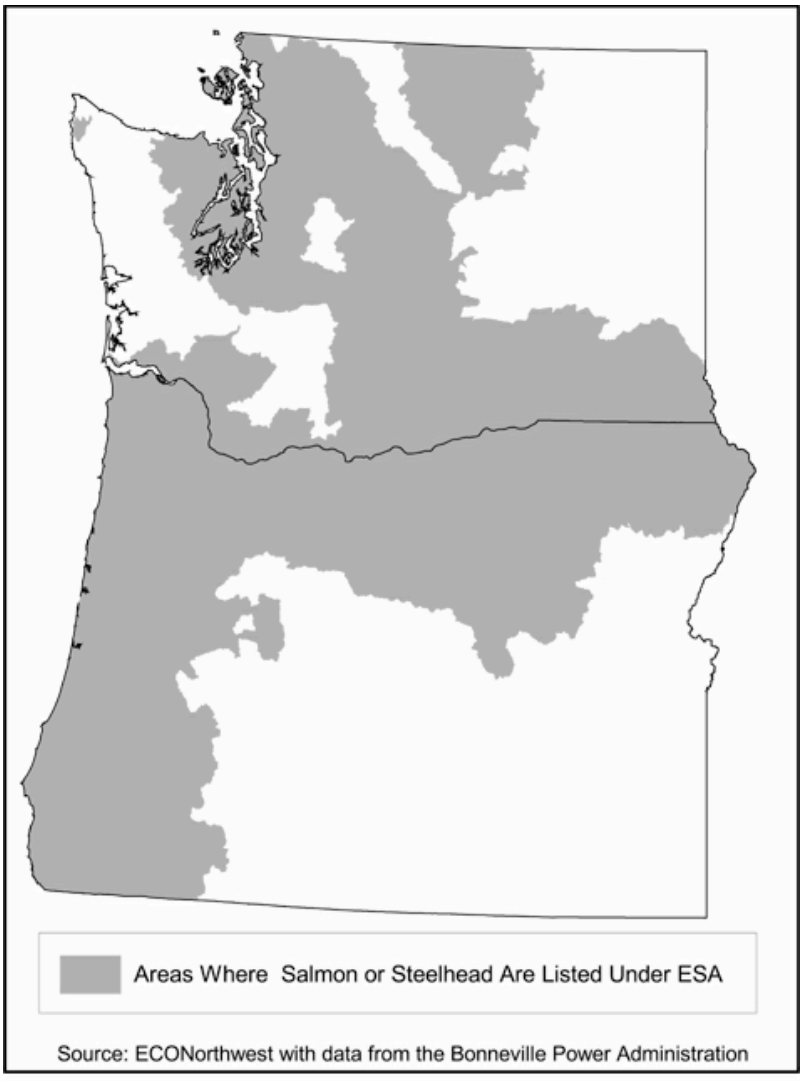
Green Building: Saving Salmon, the Environment, and Money on the Path to Sustainability

Opportunities for the Pacific Northwest



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September 2000

READERS' GUIDE

Why Was This Report Prepared?

The citizens of Washington and Oregon face a number of important environmental challenges. For example, they know that a majority of streams fail to meet water quality standards and that many salmon stocks are listed as threatened or endangered regionwide. In addition, the recently published Oregon State of the Environment Report identified a number of areas where Oregonians can expect continued problems under current policies and programs including: poor water quality, especially in urban and agricultural areas, inadequate water supplies, loss of wetlands, degraded riparian areas, depleted fish stocks, invasion of exotic species, diminished biodiversity, and increased waste and toxic releases.

These environmental issues threaten to constrain the economy and communities of the Pacific Northwest. The public and decision makers want to take appropriate steps to resolve these problems, but often hesitate because they fear the economic consequences will be too severe.

In the spring of 1999, The Center for Watershed and Community Health (CWCH), a non-profit research institute affiliated with the Mark O. Hatfield School of Government at Portland State University, initiated a project to help decision makers throughout the region better understand the economic issues and facts associated with developing a more environmentally sustainable economy. The CWCH's aim is to provide accurate, objective, and easy-to-understand information about the potential costs and benefits associated with adopting practices and policies that can resolve pressing problems such as endangered salmon and lead to a more sustainable economy. The CWCH provides grants to a number of leading economists throughout the region, and completes its own research, to accomplish this goal. This assessment is one in a series of reports to be produced as a result of this effort. The project is an integral part of CWCH's focus on developing new, more effective and efficient approaches to environmental governance.

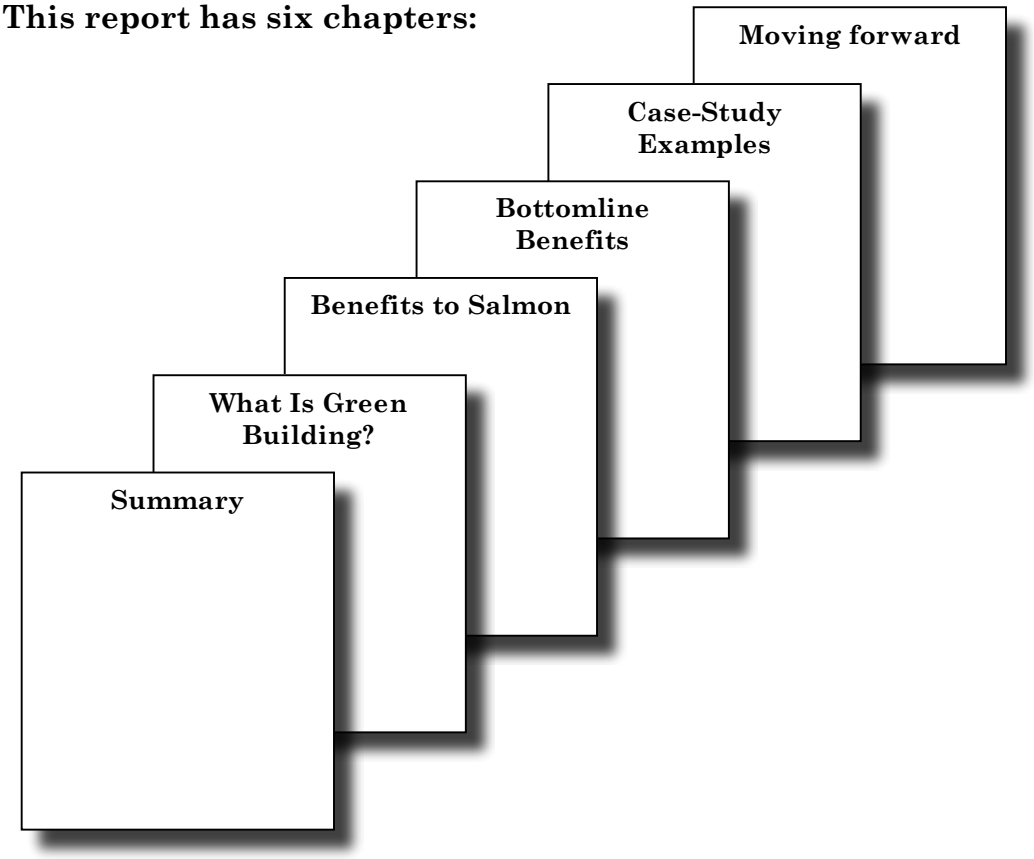
Who Prepared this Report?

This report was produced by Jim Ebenhoh, Ernie Niemi, John Tapogna, and Ed Whitelaw, economists with ECONorthwest, under a grant from The Portland State University, Center For Watershed and Community Health. The authors gratefully acknowledge comments by Robert Doppelt (CWCH), Robert Harrison (Robert Harrison Architects), Lucia Athens (Seattle Public Utilities), Rob Bennett (City of Portland Energy Office), Dennis Wilde (Gerding/Edlen Development Company), Logan Cravens (Zimmer Gunsul Frasca Partnership) and Alan Scott (Portland General Electric). The authors are solely responsible for the content of the report.

Acknowledgements

The CWCH gratefully acknowledges the financial support of the Ford Foundation, Brainerd Foundation, Lazar Foundation, and Harder Foundation for this project. The authors are solely responsible for the content.

This report has six chapters:



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Check out related studies. Check the CWCH website: www.upa.pdx.edu/CWCH/, or the Salmon and the Economy website: www.SalmonAndEconomy.org.

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SUMMARY

Green building: "innovative building and site design techniques that improve the quality and performance of buildings while simultaneously reducing stress on the environment."
—City of Portland Green Building Initiative

The Pacific Northwest faces a number of growing environmental challenges. For example, at least 19 wild salmon populations in Washington and Oregon are extinct and the remainder are in trouble. More than 70 percent of Washington and one-half of Oregon are covered by "endangered" or "threatened" listings of salmon under the Endangered Species Act. Conserving the environment, including water quality and salmon habitat requires widespread changes in how homes, offices, and shopping areas are built, landscaped, and operated.

Some builders prove every day that conserving the environment and saving salmon does not have to hurt the bottom line. **They have shown that using green-building practices for design, construction, and landscaping can help conserve the environment and save salmon …**

- Directly by reducing building-related damage to salmon habitat and pollution.
- Indirectly by reducing the demand for water, hydropower, forest products, and other goods, the production of which is often harmful to salmon.

… and save money. By incorporating green-building practices, Washingtonians and Oregonians could save more than $90 million each year in energy, water, and construction-related costs. Who benefits?

- Builders: Green homes and buildings are often more marketable, and, because green buildings promise lower future utility bills, buyers can spend more on the structure. Also, firms with a reputation for harming salmon risk consumer backlash
- Homeowners: Green homes use less electricity, water, and sewer capacity, saving a typical homeowner about $500 each year. Preferential mortgage rates may become available for green-built homes.
- Businesses: Commercial tenants of green buildings pay up to 35 percent less for lighting, heating-cooling, water, and sewer. Their workers often are more productive because they are exposed to fewer toxic building materials and work in natural light.
- Taxpayers and ratepayers: Conserving electricity and water lowers the need for expensive new dams and power plants. Also, preventing pollution and damage to salmon habitat usually is cheaper than cleaning up after the damage is done. Reducing sediment from building sites prevents clogged channels and reduces risk of flood damage downstream.

Wider application of green building practices makes good economic sense and would occur, even if there were no salmon crisis. Through common-sense actions, they stop wasteful uses of electricity and water that are expensive to produce; reduce the emission of pollutants that are a waste of resources and expensive to clean up; recycle building materials that are too valuable to throw away; and avoid creating compacted soils and other impervious surfaces that are expensive to manage, accelerate rainwater runoff, and increase the risk of flooding.

Saving Salmon, the Environment, and Money

Green building practices reduce building-related degradation to the environment, including habitats salmon need to survive. By incorporating these techniques into new construction and remodeling projects, residents and businesses in Washington and Oregon could save over $90 million each year.

- **Electricity conservation:** Widespread adoption of common-sense practices to conserve electricity would save about 800 megawatts[1] and lessen the region's reliance on dams harmful to salmon. The potential conservation equals the amount of power generated by the four, controversial, federal dams on the Lower Snake River. At the average retail rate, this conservation would save residential and commercial consumers $77 million per year.
- **Water conservation:** Residential, commercial, and public-agency water users account for two-thirds of all non-farm water diverted from the region's streams[2]. Leaving more water in streams would help salmon and reduce costs. If simple conservation measures were adopted throughout Washington and Oregon, region-wide water consumption would fall by 14.9 billion gallons each year, and water customers would have a net savings of $12 million annually on their water bills.[3]
- **Erosion control:** Sediment from construction sites—typically 59,670 pounds per acre per year, vs. 27-44 pounds from general urban activities—chokes streams and destroys salmon habitat.[4] The excess from each acre also imposes about $110 in costs on others by clogging stream channels, raising the risk of flood damage, and increasing filtration costs for water users. Each year, construction occurs on 15,500 acres in Washington and Oregon. Eliminating excess sediment would save taxpayers $1.7 million annually.

The Case Studies chapter shows how individual projects have saved money through green building.

- **Toxic pollution:** Landscaping designs greatly influence the amount of pollution harmful to fish. For example, urban use of pesticides in the Puget Sound area—about 1.1 million pounds per year—is more than three times agricultural use and costs about $760,000.[5] Reducing usage to agricultural levels would save about $500,000. With similar reductions throughout the region the total savings would be $900,000 in Washington and $780,000 in Oregon.[6]
- **Stormwater runoff and forest conservation:** Green building practices can reduce impervious surfaces, which speed rainfall runoff, increasing floods and carrying pollutants into streams,[7] by at least 50%.[8] Green building practices also protect salmon by using less timber, allowing for valuable streamside shading in forest regions.

Green Building Practices Will Make Even More Sense in the Future

The monetary savings from using green building practices to help the environment and salmon should increase in the future, as these and other forces increase the demand for green building practices:

- **Consumer preferences.** Just as shoppers increasingly prefer "organic" foods, they are likely to prefer to shop in innovative, green buildings.
- **Green building supplies.** Home Depot and other building suppliers have made commitments to supply green-certified building materials. Builders that buck the trend face market sanctions.
- **International markets.** Local manufacturers increasingly will have to occupy green factories to have access to European and other markets where green standards are high.
- **The free lunch is over.** When builders use environmentally harmful materials and practices, somebody eventually has to pick up the tab. As the tab gets larger, society will press for greater use of green building practices.

In short, Green Building will help the region adopt more environmentally and economically sustainable paths. In doing so, the economy, communities and environment will all benefit.