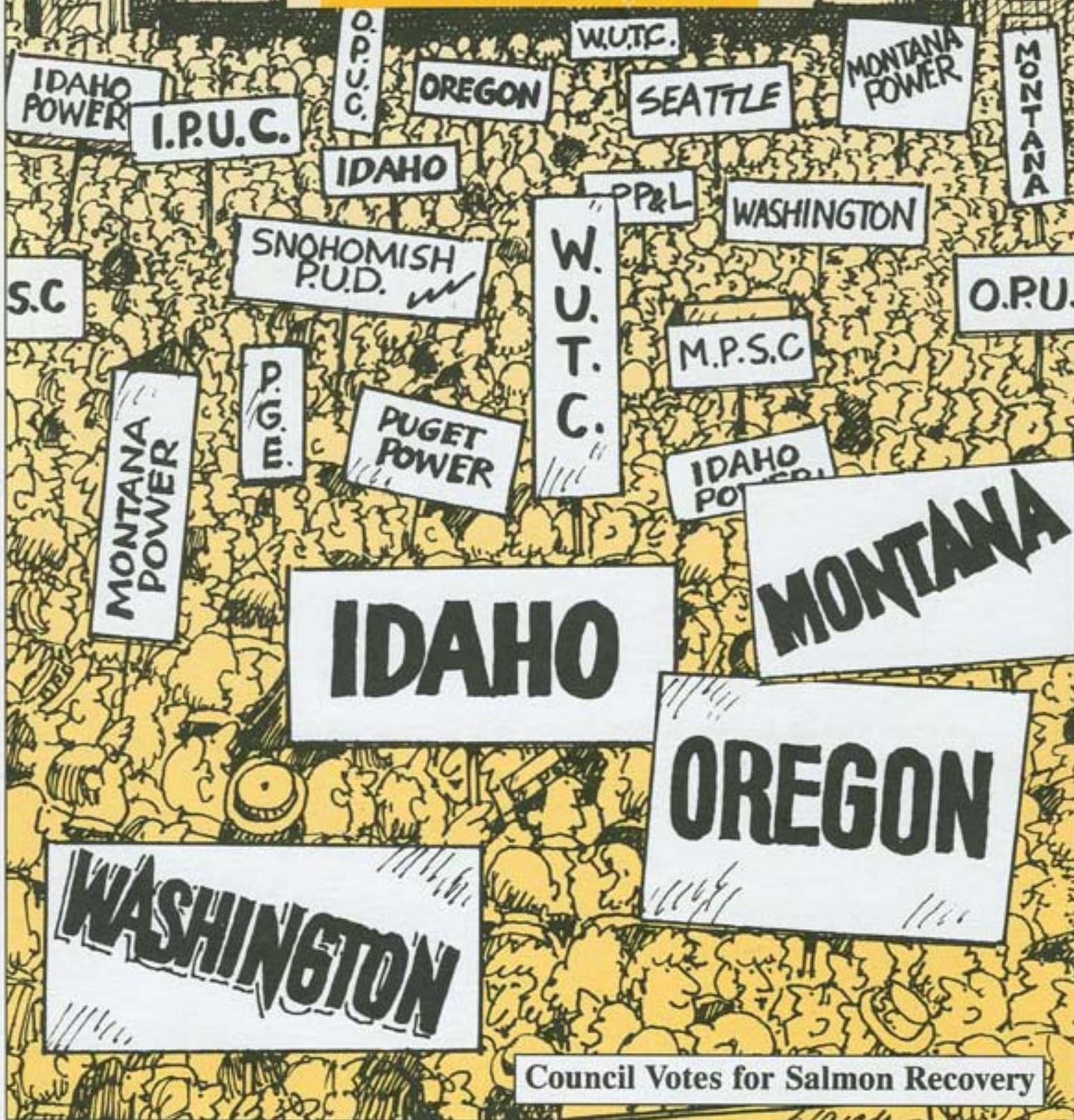


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Northwest Power Planning Council



Council Votes for Salmon Recovery

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This issue's cover illustration is by Frank Farah.

from the CHAIR

By the time you read this issue, the Council will have adopted a major chunk of its salmon and steelhead recovery plan. The plan is solid, but only our finned friends will be able to tell us if it was any good.

As any of my seven colleagues can attest, this was no small task. Is it time to breathe a sigh of relief? Hardly. Enjoy your holidays folks, because look what the new year will bring:

- Phase three and four remain in charting a path for fish and wildlife recovery. This path will support not just salmon, but all fish and wildlife in the Columbia and Snake river basins.
- Lest we forget, the region is also looking for new electric power at a time when:
 - Water normally reserved for hydropower production may be needed to aid salmon passage.
 - Transmission lines are loaded to near capacity.
 - Oregon's Trojan Nuclear Plant could be down again in 1992.
- The regional power plan points to conservation and renewables to meet future need, but can we hope for these resources as early as *this* winter?

Life becomes precarious when we need to pray for snow in the mountains to help fish, while simultaneously praying for mild temperatures in the flatlands to keep demand for power low.

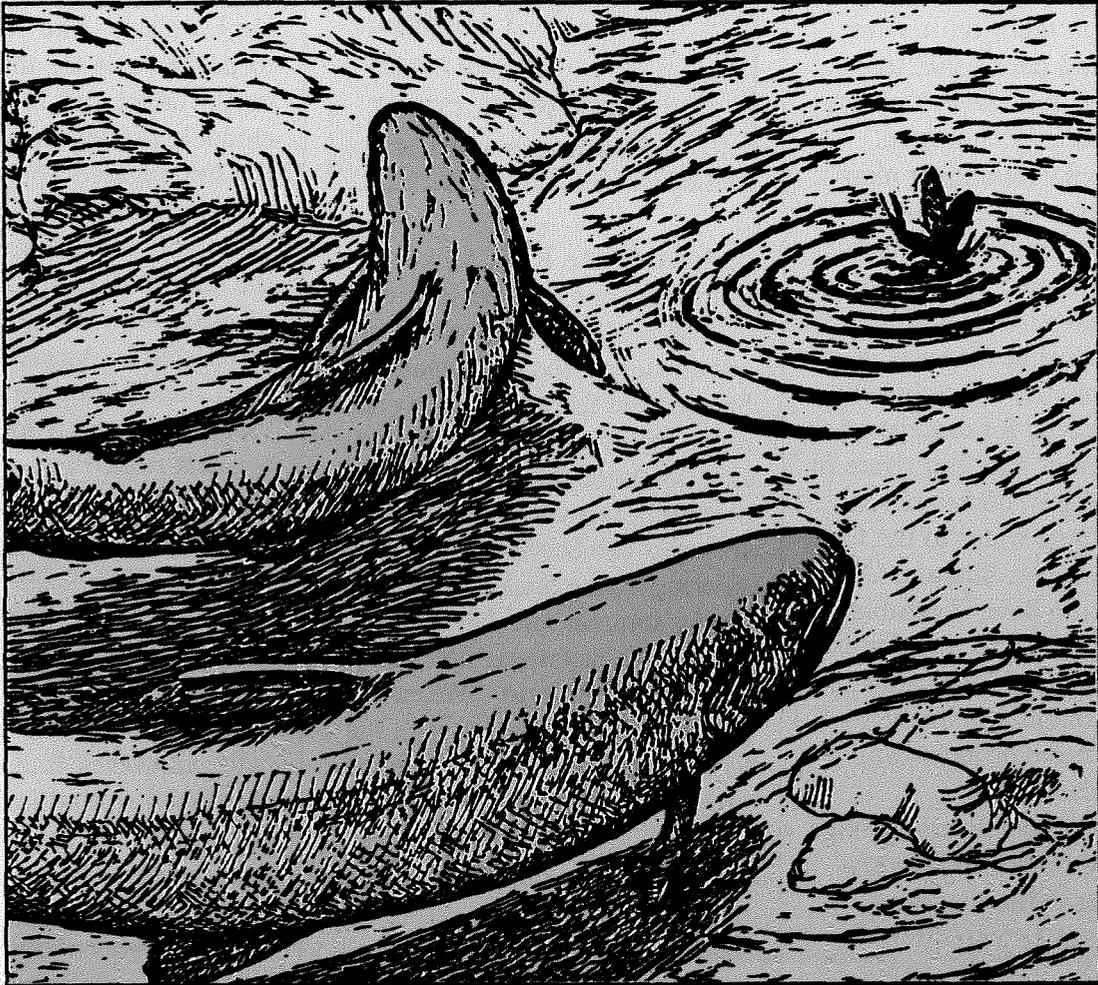
Happy New Year.

Very special thanks go to Jim Litchfield who, from the Council's first days, has led the power planning division with tremendous creativity. The entire Council joins me in wishing Jim unparalleled success in his new endeavors.



Tex Hallow

Unanimous Vote for Salmon



by John Harrison

Council members find common ground for salmon recovery actions.

Klieg lights glared, television cameras taped, reporters took notes and, within a few hours, the region learned that the Northwest Power Planning Council unanimously approved a num-

ber of actions to improve the survival of Columbia River Basin salmon and steelhead.

The scene, at a Council meeting in Portland on December 11, 1991, capped three months of in-

tensive work on measures aimed at reversing the decline of Columbia River Basin salmon runs.

The actions approved by the Council technically are amendments to the region's Columbia

River Basin Fish and Wildlife Program. They address increased river velocity during the annual downstream fish migration in the Snake and Columbia rivers, harvest reductions, fish passage improvements at hydroelectric dams and a temporary program to reduce commercial fishing.

"A successful recovery plan requires enhancing salmon survival at every stage of their lives, from birth through their journeys to the ocean and back again to spawn," said Ted Hallock of Oregon, the Council's chairman. "The Council's rebuilding plan calls for action on all fronts."

The eight Council members, who are appointed by the four Northwest governors, represent states with diverse interests, but a common link: the Columbia River Basin. Montana, for example, has no anadromous fish, but rivers in the northwestern corner of the state contribute water to the Columbia Basin. Washington, Oregon and Idaho have Columbia tributaries that support salmon and steelhead. All four states rely on the Columbia and Snake to ship and receive products and irrigate farmland.

"This is a very diverse group, but we have been able to come together," said Jim Goller, a Council member from Idaho.

Regional cooperation

The Council's unanimous approval of the survival-enhancing measures is a strong show of regional cooperation. That's important in light of another message the Pacific Northwest recently received. On November 14, 1991, under the authority of the Endangered Species Act of 1973, the National Marine Fisheries Service

"The Council's rebuilding plan calls for action on all fronts."

— Ted Hallock
Chairman
Northwest Power
Planning Council

declared Snake River sockeye salmon an endangered species.

The Service is responsible for administering the Endangered Species Act for oceangoing creatures, including salmon. The decision obligates the Service to prepare a recovery plan for the sockeye. The Service also is considering listing Snake River spring/summer and fall chinook.

"The decision was not a surprise," Hallock said. "We expected it. The key issue isn't the listing. The issue is developing a productive regional recovery plan."

Regional cooperation is essential, Hallock said. Without it, the federal government or courts will be left to devise and impose a recovery plan, and the people of the Northwest largely would be left out of the process. River users—farmers, barge line operators and commercial fishers, to name a few—would be virtually shut out of a process that could have a huge impact on their lives and livelihoods.

"The time for the region to act is now," agreed Stan Grace of Montana, Council vice chairman. "Several runs of salmon are at such critically low levels that they need immediate action."

It's not too late. The actions approved in December are part of a four-phased plan being developed by the Council to aid all fish and wildlife affected by hydropower development in the Columbia Basin. The plan could form the basis for the sockeye recovery effort and for Snake River chinook, if they are listed under the Endangered Species Act.

The actions approved by the Council in December comprised the second part of that four-phased plan. The first phase was completed in August 1991, when the Council adopted measures that could quickly focus on the weakest runs. First-phase measures included a large-scale program to screen water diversions and measures to protect the genetic integrity of weak stocks.

In the third phase, which the Council began in January and expects to complete by late spring 1992, an overall framework will be developed so that individual measures are integrated into a comprehensive, systemwide plan. Measurable performance standards, biological objectives and rebuilding schedules for major salmon populations will be developed to ensure that actions progress toward stated goals.

The fourth phase will address wildlife and non-seagoing fish that have been affected by the region's hydropower system.

Public participation is a key element of the Council's work. Hallock said he hopes public interest and participation will

remain high throughout the remaining months of the planning process.

Salmon Summit laid groundwork

The Salmon Summit, which was convened in late 1990 by the region's governors and U.S. Senator Mark Hatfield of Oregon, laid important groundwork for this regional plan. Summit participants included the user, policy and interest groups associated with the Columbia Basin's waterways. They devised critical short-term measures that were implemented in 1991 to stem further decline.

The Summit disbanded in April 1991, and the responsibility for developing a regional recovery plan shifted to the Power Planning Council. The Council, as a regional agency representing the four state governors, has provided a forum for fish recovery

efforts since 1982 through its Columbia River Basin Fish and Wildlife Program.

The fish and wildlife program, developed with extensive region-wide public participation, has the advantage of incorporating the unique values, perspectives and interests of Northwest citizens.

Costs of the program

The amendments approved by the Council in December will cost about \$90 million in years when the Columbia and Snake rivers have average flows. That figure includes \$60 million in lost hydropower income from storing additional water behind dams for release in the spring. Other new measures have an estimated cost in 1992 of about \$30 million.

The lost hydropower revenues could vary from about \$20 million in years when water is plentiful, to a high of as much as \$250 mil-

lion in low water years when the region has to purchase expensive power from outside the region.

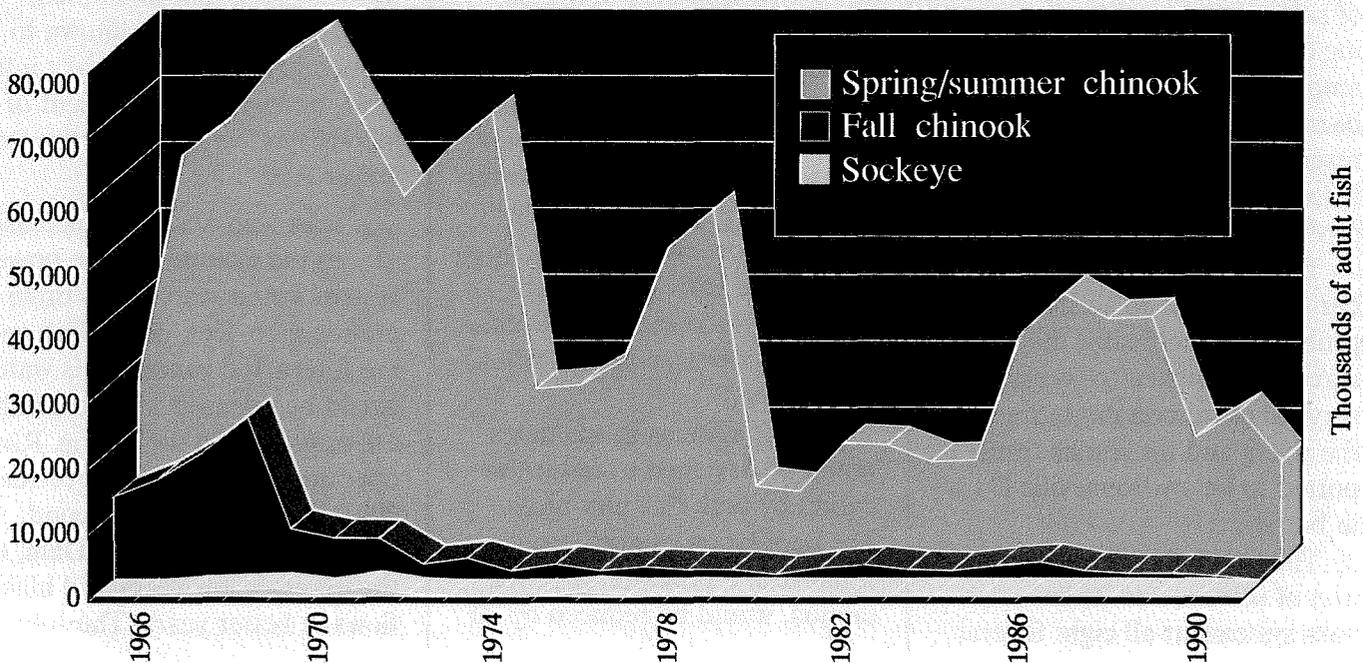
It is estimated that the \$90-million total cost could translate into a 4-percent increase in Bonneville's wholesale rates. That amount could increase if Bonneville has to acquire new resources to replace lost hydropower generation. The impact on retail rates is expected to be somewhat less than 4 percent, depending on how Bonneville's customer utilities pass on their costs.

The costs associated with the amendments are in addition to approximately \$90 million in Bonneville outlays to fund the current fish and wildlife program and to repay the U.S. Treasury for the costs of screens and fish ladders at the mainstem dams, as well as other fish mitigation obligations.

Here are highlights of the phase two amendments:

Snake River Runs

The number of returning adult fish has fallen dramatically on the Snake River.



Program framework

The Council set specific biological objectives and rebuilding schedules for Snake River fall chinook, which are proposed for protection as an endangered species. The National Marine Fisheries Service proposed listing the fall chinook last summer and may make a decision early in 1992.

In phase three of the amendment process, the Council has committed to setting biological objectives and rebuilding schedules for Snake River spring and summer chinook, which also are proposed for protection as threatened species. Other depleted stocks also will be considered at that time.

The program framework that will be developed in phase three will serve as a yardstick to evaluate the effectiveness of the program. Individual measures will be judged on how they meet specific performance standards.

Mainstem survival

Several factors affect passage of salmon and steelhead migrating to and from the sea. For example, dams present physical barriers; slow-moving water in reservoirs decreases travel time for smolts; and predators are a problem, particularly for smolts.

The Council adopted a number of measures to address these problems. Specifically, the measures are designed to increase survival of salmon migrating in the rivers and for smolts transported to below Bonneville Dam in barges.

The Council called for completion of screens and juvenile bypass systems at all eight federal

The fish and wildlife program has the advantage of incorporating the unique values, perspectives and interests of Northwest citizens.

dams on the mainstem Columbia and Snake rivers by 1998. At some dams, longer screens would be installed to guide more fish away from turbine intakes. Dam modifications that may be needed to accommodate reservoir drawdown measures also would be evaluated.

Improvements at the second powerhouse at Bonneville Dam also would be expedited. Diversion screens at the second powerhouse have performed poorly since the powerhouse began operation in the early 1980s. Fish guidance problems at the Bonneville first powerhouse also would be evaluated.

Bypass systems at the dams would be designed to reduce predation by both fish and birds. The population of northern squawfish, a predator of young salmon, would be reduced by 20

percent through an expanded commercial and sport fishery.

The Council called for improvements in the barge transportation of young fish, such as shorter fish holding periods, use of cooler water and releasing the fish at more than one location below Bonneville Dam. Improvements also are needed to help adult fish migrating up the Columbia and Snake, the Council declared. The amendments call for improvements in fish ladders at dams, and for leaving fish diversion screens in place longer than usual to protect adult fish that might fall back into the turbine intakes.

The Council called for increased flows in the Snake during the spring smolt migration by lowering the reservoir pools to near minimum operating level. Additional water would come from behind Dworshak and Brownlee dams and from other projects in the Snake River Basin. Deeper reservoir drawdowns also are called for by 1995 to further improve survival. These deeper drawdowns would be implemented unless they are shown to be economically or structurally infeasible, biologically imprudent or inconsistent with the Northwest Power Act.

Flows also would be increased in the Columbia. The power system would store up to three million acre-feet, depending on the forecasted runoff. This water would be released when the fish are migrating in the spring. River operators would aim to provide 200,000 cubic feet per second, measured at The Dalles Dam, in the lowest water years and higher flows in better years. The John

Day reservoir would be drafted to minimum irrigation levels¹ during critical fish migration periods.

The Council established a new process for coordinating river operations. The Fish Operations Executive Committee will address flows, spill, transportation, other agency plans, coordinated system operations, research and monitoring efforts, and other mainstem passage matters. The committee will be made up of senior management representatives of the Council, fishery managers and river operators. It would meet annually to develop an implementation plan that would be carried out by the Fish Passage Center.

The Council hopes to see more water made available from the Snake River for the spring fish migration. To that end, the Council calls for water efficiency improvements, dry-year water option leasing, storage buy-backs and other measures to secure a substantial amount of additional Snake River water. In addition, the Council called on the Idaho Power Company to operate its Brownlee Reservoir on the Snake River in Hells Canyon in a way that will pass water through the Hells Canyon complex of dams to assist the spring-migrating fish. Flood control storage would be shifted from Dworshak and Brownlee dams to Columbia River dams in years when below-average runoff is forecasted.

Council members said seasonal power exchanges with utilities in the southwestern United States, for example, should be investigated, along with other options for reducing hydroelectric generation and storing more water for fish. The Council also called on the Bonneville Power

Administration to begin to secure options for more electricity resources to ensure that flows remain adequate for fish.

Adult fish returning to spawn also would benefit from actions in the phase two amendments. For example, cool water would be released from Dworshak and Hells Canyon dams in order to lower water temperatures for salmon returning up the Snake River. Collection screens at the dams would be left in place longer to deflect any adult fish that fall back into the turbine intakes. The growing shad population will be evaluated to determine whether those fish are clogging ladders and impeding passage. Video technology for counting and monitoring adult fish will be evaluated in the hope of providing a more accurate count of returning adults.

State agencies can help, too. The Council called on the states to deny new water appropriations that would harm fish and to acquire water rights from willing sellers to improve flows for fish.

State agencies can adjust harvest seasons to protect depleted runs, Council members said. The Council calls for no commercial harvest of sockeye below the confluence of the Columbia and Snake, except for a limited tribal ceremonial and subsistence fishery. Fall chinook harvest rates should be lowered to 55 percent of the annual run from the recent high of 77 percent, and low harvest rates—about 4 percent—should be maintained on Snake River spring and summer chinook, according to the amendments.

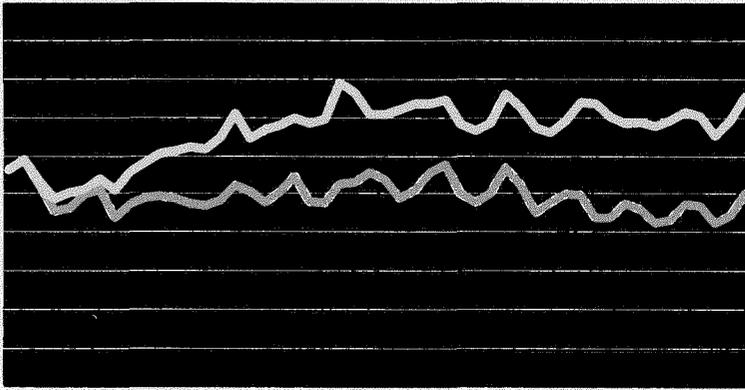
The Council also urged substantial reductions of the Canadian harvest of U.S. salmon and an end to drift-net fishing on the high seas. In November, Japan proposed a compromise United Nations resolution that would cut the drift-net fleet in half by June 30, 1992 and eliminate the drift-net fishery altogether by December 31, 1992.

1. This is the minimum level that still allows irrigation pumps and other features of the dam to operate.

Inriver Survival (excludes barge-transported fish)		
	Current Survival Rate	Survival Rate with Immediate Actions
8 lowest water years	4%	22%
12 next lowest water years	10%	33%
Total Survival (includes barge-transported fish)		
8 lowest water years	30%	39%
12 next lowest water years	33%	41%

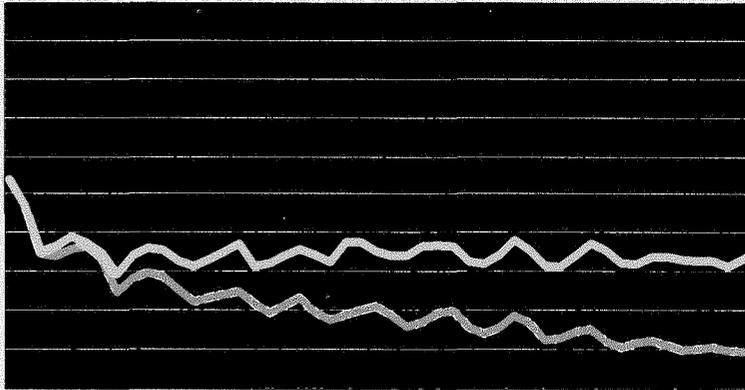
Productivity of spring chinook in good habitat

Where salmon habitat is in good shape and populations of fish are stable, the measures adopted by the Council should help the runs increase.



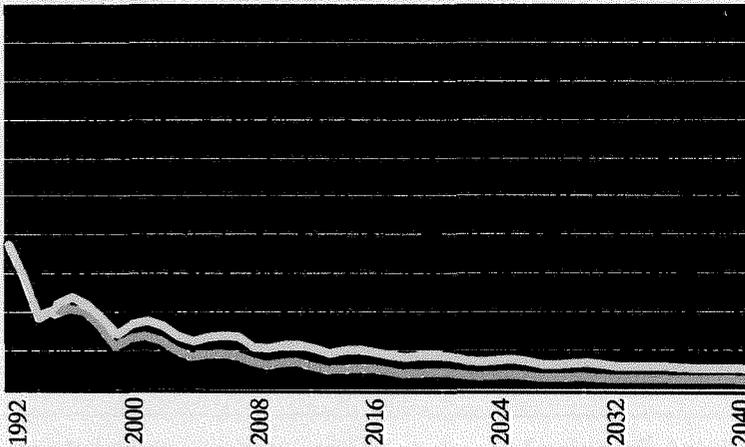
Productivity of spring chinook in average habitat

In river reaches where habitat is in average shape, but salmon populations have been declining, the new fish protections should stabilize those populations.



Productivity of spring chinook in poor habitat

In river reaches where habitat is in poor shape, and salmon populations have been declining, that decline will be slowed by implementing new salmon protection actions.



1992 2000 2008 2016 2024 2032 2040

— Baseline
— With measures

Among other harvest measures, the Council proposed a temporary leasing program to pay commercial fishers not to fish through 1995. At that time, the effort would be evaluated.

The Council also wants the states to review sport fishing regulations and adopt catch-and-release rules where appropriate. In addition, the states should shift harvest to known-stock and terminal fisheries, and encourage the development of gear that would allow selective harvest of strong stocks.

Habitat

Productivity of fish populations is extremely important to survival, especially for weak stocks. Productivity is a reflection of fish health, fertility and the quality of habitat. While the Council will address habitat measures in more detail in phase three, phase two calls for listing high-priority habitat projects for 1992 and 1993 with a focus on areas that have low productivity and low pre-spawning survival.

In addition, the Council called for streamlined funding processes for habitat projects that involve cooperation of private land owners or holders of water rights so that private parties aren't tied up in bureaucratic red tape.

Production

Production measures call for improved and consistent basin-wide hatchery practices, including performance audits every three years, so that hatchery fish are better able to survive in the natural environment and do not harm wild fish. The Council also wants its genetics advisory team to con-

tinue working on the question of how to diversify the region's salmon runs. The team comprises independent, nationally recognized experts on fish genetics.

The Council is as concerned with preserving the genetic diversity of the fish runs as with increasing the number of fish. Fishery managers should identify high-priority supplementation projects that would release hatchery fish into natural environments—"supplementing" existing runs—to increase natural production, Council members said. These projects would be carefully designed to minimize adverse effects on wild and naturally spawning fish.

Monitoring and evaluation

The Council plans to use an independent and impartial committee of scientists to monitor and evaluate the effectiveness of individual measures. In addition, the Council calls for coordinating salmon and steelhead information systems in the Columbia Basin so that data is readily available in a consistent form.

Additional research is needed to increase the region's knowledge about salmon survival in the mainstems of the Columbia and Snake and in the ocean.

Impacts on river users

The Council committed to evaluate the effects on river users of implementing the measures in the fish and wildlife program. This will include exploring potential sources of assistance, including financing for mitigating measures.

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The Council called for the completion of an inventory of expected economic, biological and operational effects by March 31, 1992. This inventory would address impacts to navigation, irrigation, recreation, harvest, electric power generation and use, as well as to resident fish and wildlife. A mitigation plan would be developed by June 30, 1992, and a report to Congress with specific recommendations would be prepared by July 31, 1992, according to the amendments.

Impact on salmon survival

If all of the immediate measures are implemented in time for the Snake River spring migration, they should lead to a slow and steady rebuilding of several stocks of fish. For others, the measures may do little more than stabilize populations.

The measures should provide the greatest benefits in the driest years, when fish are at greatest risk. For such years, with all of the measures in place, the survival rate for all juvenile spring chinook is expected to increase from just under 30 percent to 39 percent. The survival rate for fish that aren't transported downstream in barges should increase from a current rate of 4 percent (in dry years) to 22 percent.

Good habitat also plays an important role in improving the productivity of tributary watersheds. As the graphs on page 8 show, the most productive stocks—they come from subbasins with the best habitat and environmental conditions—increase over the coming decades with the help of the measures approved by the Council in phase two.

Less productive stocks, which typically come from more degraded watersheds, fare less well. It is clear that habitat improvements will be needed if low-productivity stocks are to improve. Habitat and production improvements are the focus of phase three of the Council's amendment process. ■■

Oh, how times have changed.

Just a decade ago or so, Northwest electric utility companies had a stock response when demand for electricity began to approach the limits of available supply: Build a new power plant.

Today, there is a new answer: Build conservation, not generation.

It's an answer that is embraced fervently by some Northwest utilities, courted by others and at least acknowledged by the rest. It is no longer an obscure concept, luckily, because acquiring conservation on a regionwide basis will require regional teamwork.

Northwest Power Planning Council Chairman Ted Hallock sums it up. "We face a great challenge. We want our future energy supply to be low cost, efficient, reliable and environmentally sound. That's a vision we all share."

Hallock spoke at the Council's Regional Utility Conference in Portland, a November gathering of the region's 10 largest utilities and utility regulators from the

four Northwest states. It was a historic regional conference, the first time these officials had gathered in one place to discuss their conservation achievements and goals, acquisition problems and solutions and their hopes for the future.

It was an event akin to breaking ground for a new power plant, but this is a conservation power plant. No concrete. No steel. No turbines or generators. A one-time investment with no ongoing fuel costs. Rather than serving an individual utility, the conservation power plant will serve the entire region.

In the 1991 Northwest Conservation and Electric Power Plan, which the Council approved last April, electricity demand forecasts suggest the region could need about 2,000 new megawatts of electricity by the year 2000. The plan says 1,500 megawatts of affordable conservation, enough to serve nearly 1 million people, ought to be acquired as quickly as possible. An additional 800 megawatts of low-cost hydropower and cogeneration (electricity

generated as a byproduct of a thermal industrial process) were also called for in the plan.

The Bonneville Power Administration and the utilities represented at the conference will be responsible for securing most of these resources.

Meeting demand without building a new, traditional-design power plant is an inviting proposal, executives at the conference seemed to agree. The regionwide cost—\$7 billion—is half the cost of acquiring the same amount of power from most other types of generation. But power companies are responding at different speeds and for differing reasons.

Council Chairman Hallock said he hoped the utilities would build on the conservation work already completed and that another conference could be convened in a year to publicize their results.

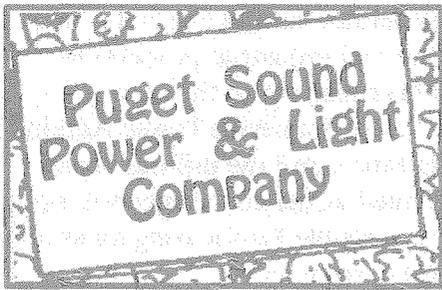
"If this conference is a ground-breaking, then we should gather again in a year to lay the cornerstone," he said.

Here are some highlights from conference presentations:

Breaking with Tradition

by John Harrison

Regional Utility Conference kicks off conservation campaign.



"We agree that the conservation power plant must be built," said Richard Sonsteli, president of the Bellevue, Washington-based company. In a sense, Puget Power is leading the way on conservation acquisition.

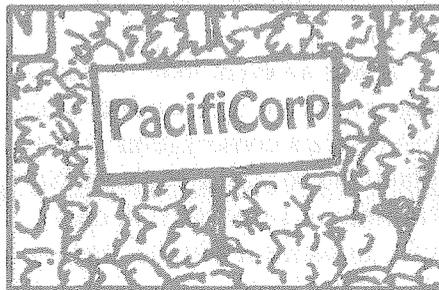
The company began a least-cost planning process in 1988, attempting to identify the lowest-cost, most reliable resources to meet future electricity demand.

Today, the company has contracts for renewable resources and cogeneration, and is pursuing bids for more renewables, including small hydroelectric projects and high-efficiency cogeneration.

Puget's conservation target for 1992 is 24 average megawatts—three times the company's 1990 goal—and probably will exceed its 1991 conservation goal of 16 average megawatts, Sonsteli said. Additionally, Puget and the Washington Utilities and Transportation Commission, that state's utility regulator, entered an innovative rate agreement earlier this year that ties Puget's profits to the number of customers served, not the amount of energy sold.

Puget's customers also embrace the conservation effort, Sonsteli said. It means rates won't go up as fast as they would to pay for more expensive forms of power, and conservation also is appealing because it is environmentally benign.

"The level of public concern and desire for public involvement is higher than ever, and will be a challenge to all utilities," he predicted.

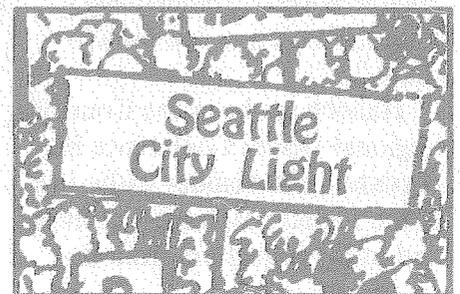


Portland-based PacifiCorp, with 1.2 million customers in a widely diverse service territory stretching from the Northwest to the Southwest, and east to Utah and Wyoming, also supports the conservation power plant, President David Bolender said. However, he added: "The Council's role is rather like a parent's—to nag us to do what is right. We usually follow the advice. But sometimes we try things on our own."

For PacifiCorp, that means pursuing what are called "seasonal peaking energy transactions." For example, PacifiCorp's recent merger with the Arizona Public Service Company brought the 350-megawatt Cholla coal-fired plant into PacifiCorp's resource portfolio. In the Northwest, demand for power is highest in the winter, when the weather is cold. In the Southwest, demand is highest in the summer, for air conditioning. The Cholla plant will help meet winter demand in the north, and PacifiCorp's northern resources, such as coal-fired plants in Wyoming, will help meet southern demand in the summer.

Bolender called this taking advantage of "seasonal diversities." Acquiring the Arizona utility will make available 275 megawatts of seasonal peaking power. PacifiCorp's merger with Utah Power and Light Company brought in an additional 340 megawatts, for a total gain in seasonal diversity exchanges of 615 megawatts, he said.

Other seasonal energy transactions, combined with ongoing commercial and residential conservation programs and acquisition of other resources, such as combustion turbines, should help the company maintain price stability for its customers, Bolender said. "We are very much interested in conservation—but we believe there is more than one way to gain regional resources," he added.



"We're pretty excited about the [1991 Power] plan," said Shani Taha, deputy superintendent at Seattle City Light. "Since the 1970s, we have had strong policy direction [from the Seattle City Council] that makes conservation our first priority. We have 15 years of financial commitment to conservation programs, and we have acquired 23 average megawatts in that time."

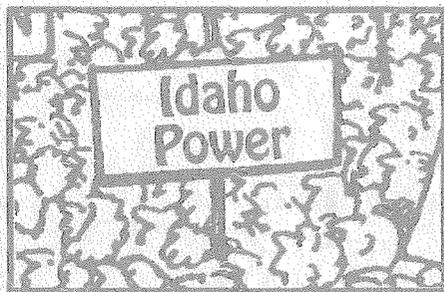
Taha called the 1991 Power Plan's conservation target "daring, far beyond anything we've ever achieved," and added, "we're

pleased to see an aggressive statement about the need for conservation."

But she cautioned that building the conservation power plant will take the region into uncharted waters.

"The conservation strategy stands in stark contrast to the experience of the past 10 years," she said. "We're being asked to triple and re-triple our conservation as a region."

She called on Bonneville to create a strong conservation partnership with its customer utilities, adding that Bonneville's conservation programs must be "clear, simple and predictable."



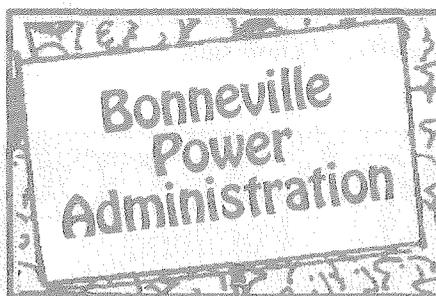
Idaho's largest electric utility recently moved into a new headquarters building that is heated with geothermal energy. The utility also plans to put solar panels on the roof, and recently joined the "Solar 2" project in Barstow, California, a solar energy demonstration effort.

Joe Marshall, Idaho Power chairman, said the utility plans to acquire 82 megawatts of conservation by the year 2000, about half of it from improvements to the company's existing generating resources. About one-quarter of the total will come from residential energy savings, through weatherization, building codes and

energy-efficient manufactured homes.

Marshall said Idaho Power is studying future resources in three categories: conservation, cogeneration and improvements to existing resources.

"Resource planning benefits Idaho Power," Marshall said. "We must plan for the needs of our customers. Our process has public input. The regional plan provides guidance to Idaho Power in making resource decisions."



Randy Hardy, who began work as Bonneville's 11th administrator on October 22 [see interview on page 19], said the region's conservation goals won't be achieved without leadership and "a partnership with utilities to aggressively acquire the resources."

Hardy, who formerly was superintendent of Seattle City Light, said Bonneville's share of the 1,500 megawatts of conservation called for in the plan is 660 megawatts. He said Bonneville anticipates acquiring 1,400 megawatts of new resources during the next 10 years, 780 megawatts of it conservation. He said Bonneville also plans to acquire options on future resources totaling 3,000 megawatts, all of it at a cost of around 35 mills per kilowatt-hour.

"That's a very, very aggressive goal, but we've met challenges in the past, and we'll meet this one," he predicted.

Hardy said he is encouraged by the response to Bonneville's recent call for resource development proposals. The agency received proposals for more than 5,000 megawatts of resources and will select 300 megawatts for financing.

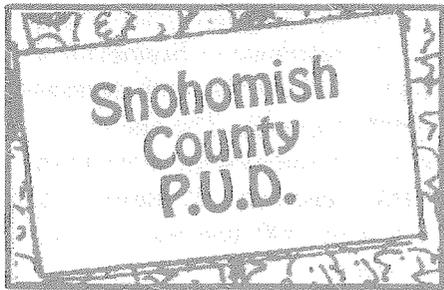
Bonneville also is investigating additional sources of generation, working on acquiring resources to meet the medium-high demand forecast in the 1991 Power Plan.

"The Council did an excellent job of laying out what is needed in the plan," Hardy said. He added that the Council has helped Bonneville focus on planning for future uncertainty.

Hardy agreed with Pacifi-Corp's Bolender that seasonal diversity power exchanges offer "tremendous potential." Cogeneration potential is enormous in the Northwest, as well, he said, and so is the potential for renewable resources. He said improved transmission lines will tie the region together more closely, allowing the opportunity for "some really great resources...to stretch our hydro system well into the future."

But it won't happen without leadership—from Bonneville, the Council and utilities, Hardy stressed. He said Bonneville recognizes the barriers that utilities face in acquiring conservation, such as risk sharing, the burden of paperwork, and revenue losses as energy sales decline.

"My commitment to you is that we will actively seek to solve those problems," he said. "We'll try to be flexible and tailor our programs to individual utilities. We'll find a way to make it work."



In the last 10 years, the Everett, Washington-based utility spent \$120 million on conservation, weatherizing nearly 50,000 homes and saving about 25 megawatts of electricity. As a percentage of revenues, that's more than any utility in the United States except the Sacramento [California] Municipal Utility District.

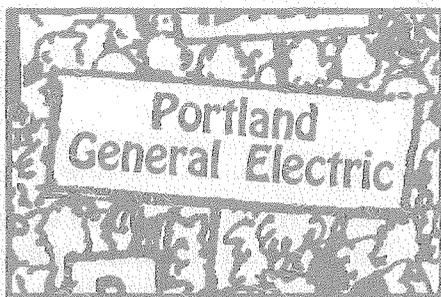
The utility plans to spend 6.8 percent of its budget on conservation in 1992, Commissioner Matt Dillon said. "I like the [1991 Power] plan. In theory, it's perfect. In reality, it has a couple of flaws."

The flaws, he said, are the partially completed Washington Public Power Supply System nuclear plants 1, at Hanford, and 3, at Satsop. The plan says the fate of the two plants should be looked at. It asks whether they can be completed in the event that demand grows rapidly and the acquisition of other resources doesn't keep pace.

"A lot of people are not convinced that conservation can do the job on a regional basis," Dillon said. "We still have a lot of convincing to do. Nuclear power is a costly and unreliable technology. I'm disappointed that we're spending money to study the viability of plants 1 and 3. The money being spent on them would be better spent on other resources. The Council should focus on resources that are available and reliable."

He said Snohomish is working on a large-scale cogeneration project and has proposed its own conservation power plant idea to Bonneville. The program would obligate the utility to guarantee energy savings to Bonneville. Snohomish would be rewarded for exceeding its conservation targets and penalized for failing to achieve them.

"If it were extended over the next 20 years, our conservation power plant would meet all of Snohomish's growth without acquiring new resources from Bonneville," Dillon said.



"There is a sense of urgency in the region," regarding future electricity resources, Portland General Electric President E. Kay Stepp said. "The electricity surplus is gone. Clearly, customers' wishes should influence our resource choices, and the customer has shown a clear preference for demand-side management."

She said Portland General Electric's conservation acquisition target will increase from 1.2 megawatts in 1991 to 12 megawatts in 1993. "We think we will exceed our 1991 goal."

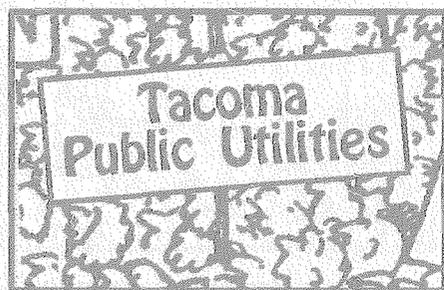
Portland General's conservation programs aim at residences, businesses and schools, she reported. For example, a new Fred Meyer store in Portland will save 4 million kilowatt-hours annually,

thanks to efficiency improvements designed into the building.

Stepp said her utility plans to increase its hydropower output 5 to 10 percent through improvements at its dams, but the company has no current plans to acquire new resources.

"Any acquisition would be consistent with our least-cost plan," she said.

Portland General Electric is the majority owner and operator of the Trojan Nuclear Plant, which will remain closed through the winter for evaluation and repairs of damaged steam tubes in the reactor. Stepp noted that the utility is discussing load curtailments with its largest customers.



Tacoma's public utility, which isn't regulated by the state of Washington and therefore isn't required to have a least-cost plan, wrote one anyway.

"Our plan recognizes the existence of major uncertainties on both the demand side and the supply side," said Mark Crisson, deputy superintendent in charge of the Light Division. He said the utility predicts demand growth of about 1.5 percent over the next 20 years. Tacoma's plan identifies 84.7 megawatts of savings in three major areas: residential, commercial and industrial. Commercial accounts for the largest share, 51.5 megawatts.

Crisson said Tacoma already has saved about 15 megawatts in commercial and residential structures, at a cost of \$75 million.

On the supply side, the utility will make improvements to its Steam Plant Number 2, which burns a combination of wood waste, processed municipal waste and coal. Tacoma also is studying a number of small hydroelectric projects, he said. In addition, the company's least-cost plan identifies some 220 megawatts of potential cogeneration.

Out-of-region seasonal power exchanges also hold great promise, he added.



Located east of the Cascade Mountains, where the demand for electricity isn't growing as fast as it is on the west side, The Washington Water Power Company doesn't anticipate acquiring new resources until 1995, said Les Bryan, vice president of power supply.

Water Power, officed in Spokane, is in the bidding process for 30 megawatts of new resources to bring online after that date.

The company also is proceeding with improvements to its system of hydroelectric dams. The first upgrade, at the Monroe Street Dam in downtown Spokane, will be completed in 1992, he said.

Water Power has a license to build a coal-fired power plant at Creston, Washington, but Bryan announced that the company does not intend to renew the license when it expires in January 1993.

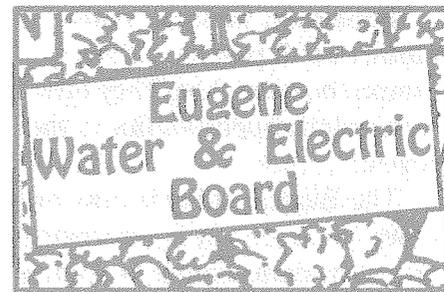
The 1991 Power Plan, however, recognizes the Creston site as one of three places in the region where a new power plant could be built to back up the Columbia Basin hydropower system. The plan recommends that Water Power maintain the Creston license.

But demand-side management is the cornerstone of Water Power's least-cost plan, Bryan said. The company plans to acquire 40 megawatts of conservation by the year 2000, representing 25 percent of anticipated load growth during that time.

The company's least-cost plan calls for an upgrade of the residential conservation program; financial support for insulation measures in new, electrically heated homes to meet the state energy code; and incentives to commercial and industrial customers for efficient lighting, heating and new motors.

Bryan said the company also is considering building a new transmission line to Canada to hook up with BC Hydro.

On regulatory matters, Bryan said his utility "is struggling with barriers to resources that are preferred from an environmental standpoint." He said Water Power anticipates acquiring cogeneration and conservation, "but we're concerned about the impact on shareholders and the company."



Eugene Water & Electric Board (EWEB), the public utility in Eugene, Oregon, developed a resource strategy for the future with the help of a committee of customers.

"The decision was that we needed more diversity," said General Manager Randy Berggren. "The committee said we should acquire conservation and direct-application renewables, such as solar and industrial cogeneration."

The customers clearly wanted no involvement with nuclear power, Berggren noted. That's a change from the past. The Eugene company is a part owner of the Trojan Nuclear Plant.

The committee's recommendations will be embodied in the Board's first least-cost plan, which is due to be completed by January 1992.

"EWEB shares the vision of the Council in the 1991 [Power] plan," Berggren said. He said the utility's goal is to lower its power purchases from Bonneville to 50 percent of its load. Currently, the company buys 70 percent of its power from Bonneville.

"That means we need to acquire 120 more megawatts in the next 20 years," he said. "We need to do that in partnership. We see substantial synergy in partnerships, and substantial benefits to the region."

Bonneville, he said, "is the mother of all partners, if you'll excuse the metaphor. They offer tremendous opportunities to the region."

The Eugene utility is busy on other fronts, too. It is relicensing two of its dams on the McKenzie River, exploring a 50-megawatt cogeneration project with the Clatskanie [Oregon] People's Utility District, as well as other cogeneration projects, and participating with other utilities in a regional wind power research project.

In addition, the utility has been active in conservation, having weatherized about 25,000 homes, saving 15 megawatts, during the last 10 years. The company's conservation goal for the next 10 years is 30 megawatts.



Bob Gannon, president of the utility division of the Montana Power Company, wanted to be sure he had the attention of the audience as he stood at the podium as the last speaker of the day.

"Due to rapid population growth in Montana," he began, "Montana Power Company is announcing today the construction of two new, Chernobyl-style nuclear power plants, one of them in Glacier Park..."

He didn't get a chance to finish. Laughter, some of it nervous, drowned the rest of his words. He laughed along with the audience and said he just wanted to be sure everyone still was paying attention.

There was a purpose, however, to his story. "Until a few years ago we would have responded to the need for new power by building new plants," he said.

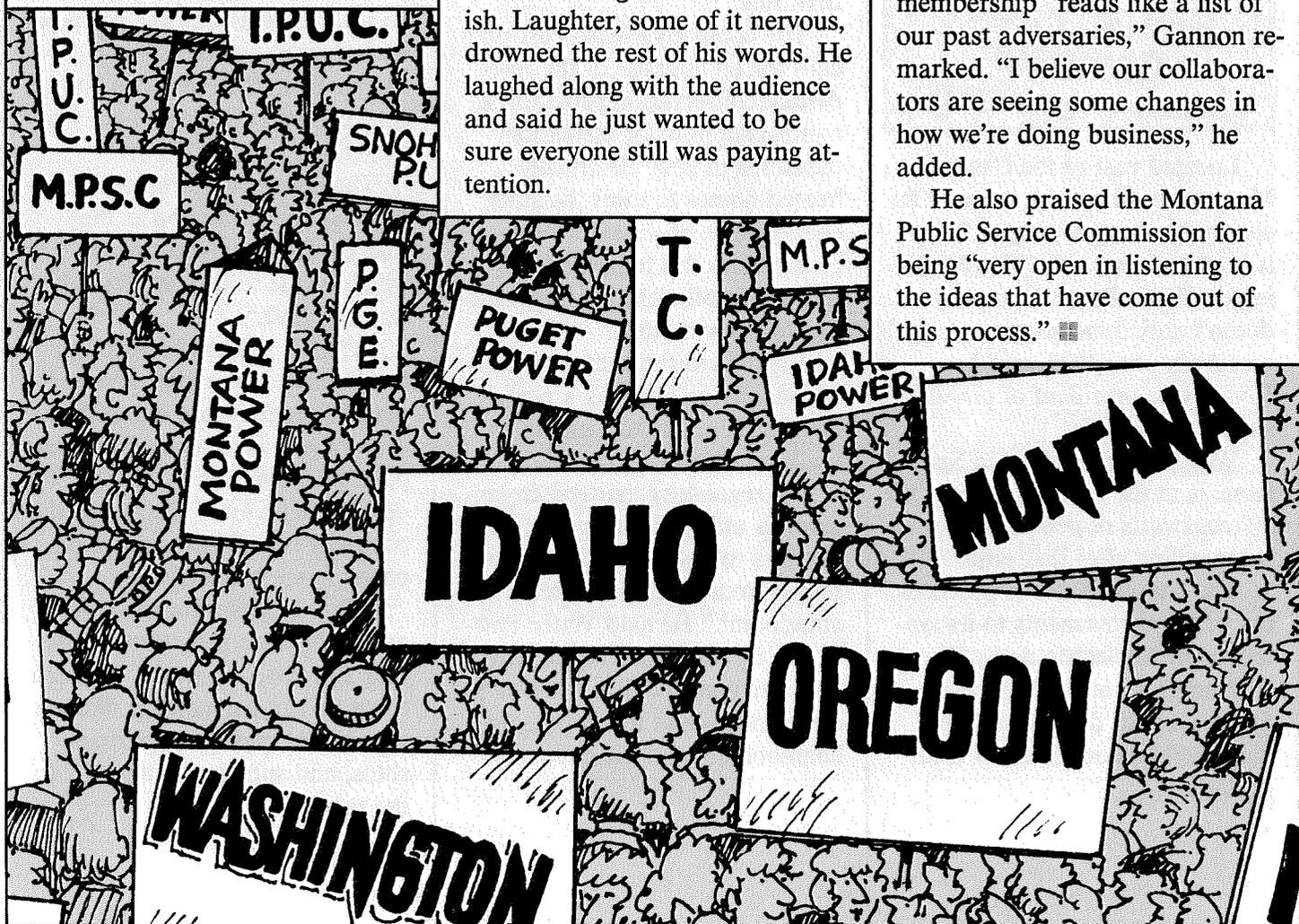
Today, the company makes resource decisions with the help of a committee of customers known as the Montana Collaborative.

"We're working together to pursue conservation," Gannon said.

The company predicts growth in demand for power of about 1 percent per year, or about 430 megawatts over the next 10 years. Of that, the plan anticipates 130 megawatts of new conservation. The company also plans to gain about 140 megawatts from upgrading its existing generation facilities.

The Montana Collaborative's membership "reads like a list of our past adversaries," Gannon remarked. "I believe our collaborators are seeing some changes in how we're doing business," he added.

He also praised the Montana Public Service Commission for being "very open in listening to the ideas that have come out of this process." ■■



Tracking the CAT FORCE

Conservation Acquisition Task

Conservation Acquisition Task Force convened.

Note: Northwest Energy News will be following the activities of the region's Conservation Acquisition Task Force in this regular section.

Two dozen experts on energy conservation took their first collective step toward securing the region's most cost-effective new electricity resource recently. The experts, invited by the Northwest Power Planning Council, comprise the region's Conservation Acquisition Task Force. They represent utilities, local governments, state energy agencies, the Council and citizen groups that advocate conservation. Their combined expertise covers commercial, industrial and residential conservation programs, and utility regulatory practices. They were convened by the Council to identify the barriers to conservation acquisition and begin the search for solutions.

Council Chairman Ted Hallock welcomed the experts to the inaugural meeting, urging them to work together to achieve the Northwest's conservation goal of at least 1,500 megawatts by the year 2000.

Tom Eckman, conservation manager at the Council, said the work needs to begin soon and progress quickly. Acquiring 1,500 megawatts of conservation will require that the region invest about

\$100,000 per hour in energy-efficiency improvements for the next nine years. In utility worlds, that's a bargain, roughly half the cost of the same amount of power from a new thermal power plant.

Analyzing the work that lies ahead, the task force members identified the following issues:

Decouple power sales from power profits

The 1991 Power Plan calls on states to make regulatory changes that provide a positive incentive for pursuing energy savings. For example, the states could allow utilities to make money from energy savings rather than just energy sales. This is called "decoupling," as corporate profits are disconnected—decoupled—from energy sales. Puget Sound Power & Light Company of Bellevue, Washington, won approval of a decoupling rate last April. Task force members hope other utilities will do the same.

Public information

Many people still don't see conservation as a realistic resource. The group agreed that disbelievers need to be convinced, and that a coordinated public information campaign would help. To motivate customers to save energy, the marketing campaign could tie energy efficiency to envi-

ronmental goals such as restoring salmon runs. Customers also need to be educated about the costs of various resources so that they don't revolt against their utilities if rates increase to pay for conservation.

Proof of savings

Verifying savings from conservation programs is important to securing financing or receiving payment for conservation secured. But energy savings can be difficult to quantify. A lot is known about some types of conservation, such as residential weatherization, and simple verification techniques should be developable. Groups of utilities could work to develop verification techniques for newer types of conservation.

Conservation installation

Escalating the region's conservation push will require trained personnel to carry out the programs. Part of this effort should aim at community colleges and vocational schools, which can offer job training in conservation installation techniques and technologies. Utilities also need to consider future staffing needs and determine the optimum mix of engineering and technical expertise for the conservation work. Utilities need to express long-

Tracking the CAT FORCE

Conservation Acquisition Task

term commitments to conservation so individuals know that career opportunities exist.

Rate incentives

Bonneville should consider multitiered wholesale rates to encourage its customers to pursue conservation. Tiered rates set a low price for a certain amount of energy and then a higher price for additional energy.

An offshoot of the rate incentives issue is concern about Bonneville's "average system cost methodology" used in the residential exchange. The residential exchange is an energy exchange between Bonneville and investor-owned utilities in the Northwest. The exchange was created in the Northwest Power Act to allow the region's investor-owned utilities' residential and small farm customers to share in the benefits of the low-cost federal hydropower system. Bonneville reduces the cost of serving these loads by purchasing energy from the utility at the utility's cost and selling energy back to the utility at the rate that applies to Bonneville's public utility loads.

The average system cost methodology has provisions that hinder the implementation of conservation actions. Some costs, such as advertising, auditing and payments to home buyers, are excluded from a utility's exchangeable costs, even though they are necessary to the conservation program. That discourages conservation investments. The Council's 1991 Power Plan calls on Bonneville to reopen the method-

ology for the limited purpose of changing the rules that discourage utilities from taking actions consistent with the plan.

Financing

The task force expressed concern about Bonneville's borrowing authority to finance conservation. Currently, there is a limit set by law, which could constrain acquisition. Another approach is for Bonneville to back conservation bonds sold by utilities. But it could be difficult to win local support for issuing such bonds because repaying the debt may raise electric rates.

On another matter, task force members agreed that it is wrong for the Internal Revenue Service to tax as income payments made by utilities to homeowners to finance conservation measures. The task force agreed that the Council, representing the governors of the four Northwest states, could put more pressure on the Service to change the policy than could individual utilities.

Lost income

How will small utilities, or those that are not growing, or those that buy most of their power from the Bonneville Power Administration, make up the income that would be lost if conservation is effective and power sales drop? There were several proposed solutions:

First, focus initially on conservation that reduces transmission line losses. The purpose of this program is to increase income. Electricity that is lost due to inef-

iciency cannot be sold to customers, but it still must be purchased from Bonneville.

Second, work with local economic development agencies to attract new developments that are energy-efficient.

Third, find a way to make money from conservation. The problem is that conservation cuts demand for electricity. When demand drops, so do sales, and when sales drop, so does income. These utilities need a way to "sell" conservation to Bonneville.

Chains, franchises, industries

Business chains, franchises, and industries with multiple facilities in the region offer great opportunities for conservation because the buildings in the chain generally are similar in design, and energy decisions for all buildings are made from a central office. Work already is under way on a conservation program for Northwest chains and franchises. The program is called "Regional Resource Coordination," and it is being developed by Bonneville, utilities, businesses and energy-related organizations. The goal is to create a "one-stop" regionwide commercial conservation program for retail chains and franchises.

The Regional Conservation Task Force plans to meet again January 15, 1992, at 1 p.m. in the Council's central office main conference room. ☐

—John Harrison

Point of View:

Randall Hardy

with Carlotta Collette

Bonneville's new administrator is an optimist.

In the presence of Randy Hardy, the term "policy-maker" comes to mind, maybe even "leader." Without question, as the new head of the Bonneville Power Administration, he will be called on to make policy, at a time when the Pacific Northwest is confronting numerous critical choices. But it is less Hardy's official

standing than his self confidence that gives the impression that he could make policy by simple decree.

After more than 14 years of service in the Northwest's electric power industry, Hardy

has proven himself to be among the most knowledgeable and skilled managers in the business. He has earned almost unanimous respect and approval from his peers. Like some artists, he is practiced enough at what he does to make it look easy. And like the best of them, he loves what he does.

Seven years ago, when Hardy was selected by the Seattle City Council to supervise the municipal utility that serves that city, regional utility watchers said that he had inherited the "hot seat at City Light." Within months of his tenure there, tensions had cooled, the utility had been stabilized, and few people could remember just what all the concerns had been.

He had come to Seattle City Light from



Illustration by Fredrika Spillman

the Pacific Northwest Utilities Conference Committee (PNUCC), where, as executive director, he had steered that organization (representing Bonneville's major customers) during the regional transition years following passage of the Northwest Power Act of 1980 and creation of the Northwest Power Planning Council. He succeeded in raising the stature of the utility group and positioning it near the pivot point where energy-related decisions are made in the Northwest. The toughest task of his term with the utility group was pulling from the diverse membership unified positions to bring to regional debates. He was generally successful.

Before that, Hardy had been the Puget Sound area manager for Bonneville and, earlier, special assistant to Jack B. Robertson, then regional representative to the U.S. Department of Energy for Region X.

But the energy field was not Hardy's first career choice. He had programmed himself for a life in the Navy, starting with a stint at the U.S. Naval Academy at Annapolis, where he earned a bachelor of science degree. After Annapolis, but still in the Navy, Hardy went on to graduate school at the University of Washington, where he earned a master's degree in public administration and met Jane Van Louven, the woman he would marry.

In 1975, he was named a "White House Fellow" and was sent to work for Frank Zarb, then head of the Federal Energy Administration (one of the precursors of the current U.S. Department of Energy). It was about two years after the Arab oil embargo, "an exciting time to be involved in that agency," Hardy says.

That experience, and the prospect of prolonged family separations, plus a desire to return to the Northwest, convinced Hardy to turn from the Navy to the energy field. During his 10-year stint with the Navy, he had become one of the youngest ship captains in the service.

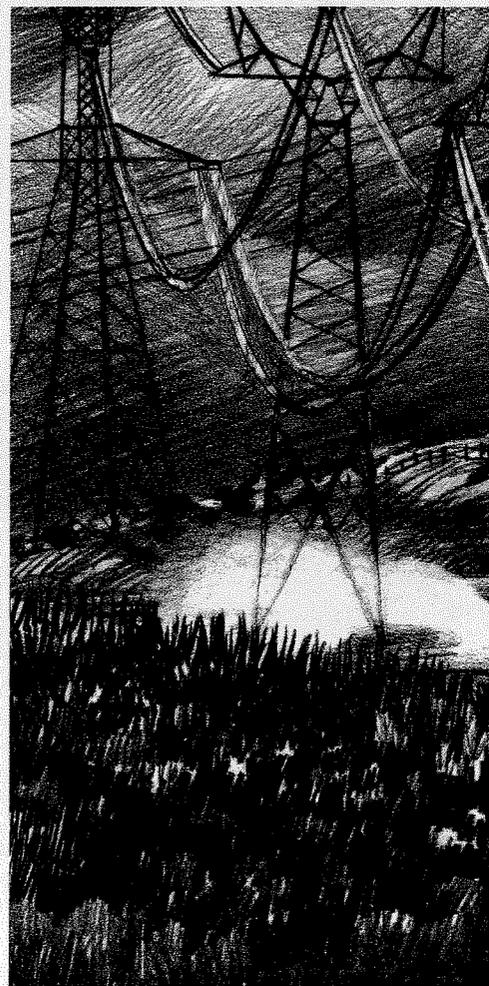
Now, a decade and a half later, and settling into the corner office at Bonneville, Hardy is not merely prepared to meet the challenges he faces, he's as spirited as this somewhat cool fellow gets. When asked what about the new job gives him the most anxiety, he is genuinely stumped. "Anxiety?" He reflects on the word as though it comes from another language. "The challenges we face today are different than those that Peter Johnson or Jim Jura [his predecessors at Bonneville] faced, but they're no greater."

Instead, Hardy turns again to the "really tremendous opportunities that we have in the years ahead," and his optimism is catching.

Q. What is it about the administrator's job that most interests you? What special talents do you bring to the job?

I enjoy challenges. I enjoy solving problems. And I enjoy trying to lead and motivate people so that they can grow bigger than themselves. You can build a team where the whole is literally greater than the sum of its parts.

I did that in a couple of my Navy jobs. I'd like to think I did that, both at PNUCC [Pacific Northwest Utilities Conference Committee] and at Seattle City Light, and I hope to do that here at Bonneville. That's enormously personally and professionally satisfying for me. That's what public service is all about, and I've been a public servant all of my life.



I think I have pretty good credibility with the Bonneville customers. I've worked with most of them for 10 plus years now in a variety of different capacities. They know who I am. They have a good measure of what my capabilities are. I think I've been able to demonstrate to them that I'm able to make and keep commitments and follow through on things. That's the essence of building the trust we're all going to need.

I don't have that with all the different actors in the region, yet. I hope to build trust with the tribes and fisheries agencies and others who are very important players.

We don't have any other choice than to go down this road together, and we need to do that

whether it's the Endangered Species Act, or resource acquisitions or any of the other myriad of things that both Bonneville and the Council are involved in.

Q. Where will you begin? What are your priorities?

I think we're in pretty good shape in the resource acquisition area. You look at the resource stack that's in the Council's [1991 Northwest Conservation and Electric Power] plan and what we have in our resource strategy, and they're mirror images.

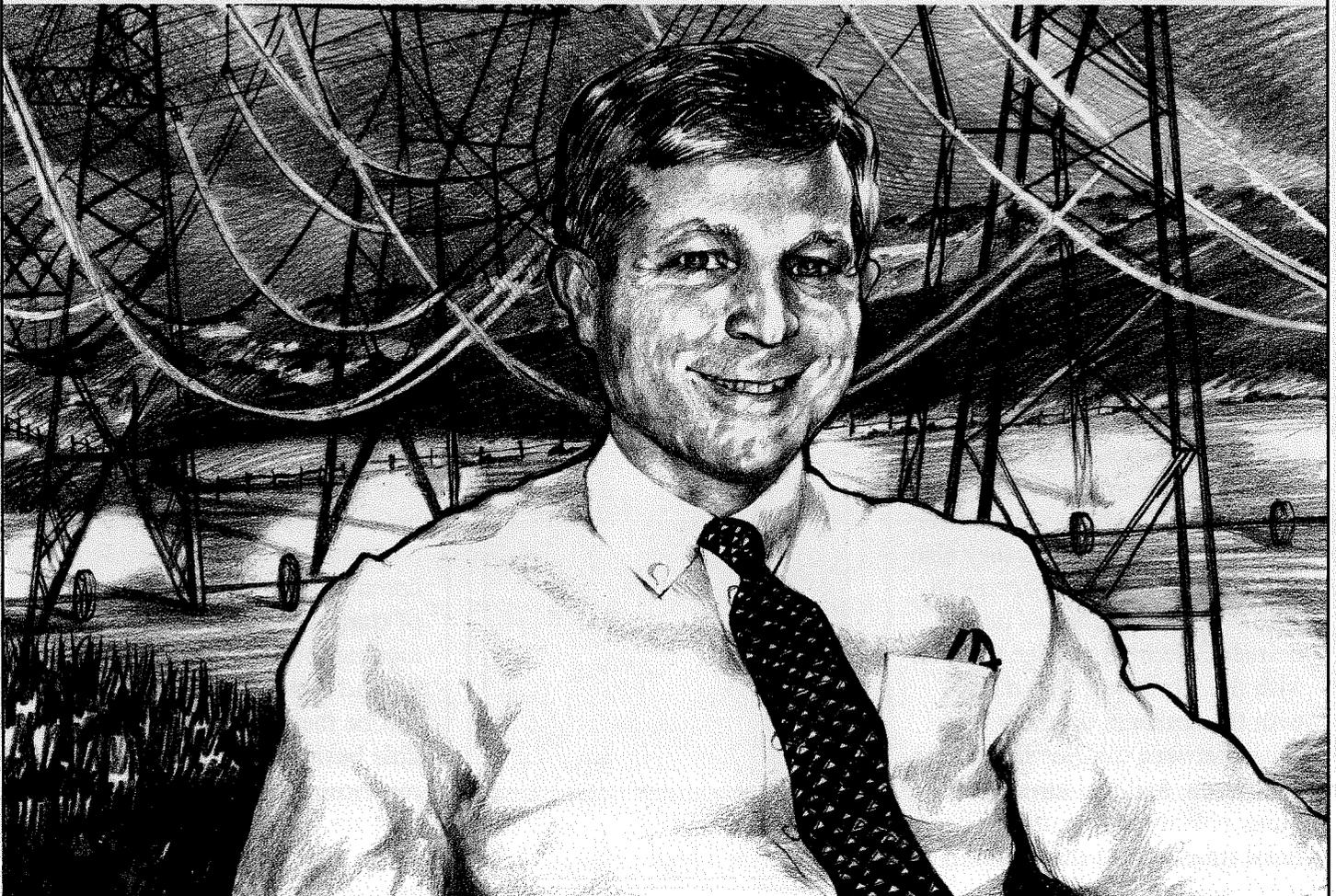
The encouraging thing about that is you compare them to the resource stacks that other major utilities have—whether that's Puget Power or Seattle City Light, or

others—and they're very, very similar.

Where that takes us is, first and foremost, to a very aggressive conservation program. We've committed to acquire 660 megawatts of conservation over the next 10 years, which is our share of the 1,500-megawatt total for the region that the Council has mapped out. That's a very aggressive goal, but I think it's achievable.

The next cheapest resource is probably seasonal diversity exchanges¹ on an expanded transmission system. The Third AC [transmission line between the

1. Because California needs more electricity in the summer and the Northwest requires more in the winter, the two regions seasonally exchange resources.



Northwest and the Southwest] will be completed, hopefully, late next year. That will enable Bonneville to do some transactions that will be beneficial, not only from a power supply standpoint, but also from a fish standpoint.

We can use this system flexibility to give us a better capability to handle some of the flow proposals that we're now talking about under ESA [Endangered Species Act listings of Columbia River salmon].

The vision that I have in this area is of a West Coast grid at the wholesale [power sales] level. We have three entities here—British Columbia, the Northwest and California. They all have very important things to bring to the table.

British Columbia has a large hydro system and tremendous storage capacity. We have a great hydro system, but we're storage deficient. We need a certain amount of rainfall every single year or we're in trouble. California has a large load base that is seasonally diverse from the Northwest and British Columbia.

We need to get sufficient transmission capacity and multiple ownership to tie those things together. We need access to British Columbia storage. British Columbia wants access to the California market. There are mutual benefits here for everybody.

Northwest utilities want better access to California, but they also would like to get some access to British Columbia. So we tie the British Columbia storage together with the Northwest hydro base, with the seasonal diversity that exists between the Northwest and California, and you have enormous potential for mutually beneficial transactions that not only

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are in the best economic interest of our customers, but also in the best environmental interests of the respective regions.

Q. Historically, Bonneville's been fairly protective of its transmission system, hasn't it?

Historically, it has been. And that's going to change. The Bonneville staff was already moving in this direction. The Third AC is a good example. While Bonneville started out being somewhat resistant to third-party ownership in the Third AC, we eventually got to the point where there are going to be multiple owners. That was long before I came aboard, although I was one of the principle people on the other side pushing for that as the head of Seattle City Light.

The Third AC is going to be the model of how we're going to do business in the future. There'll be strong emphasis on expanding the transmission system, really building transmission in lieu of building generation. That means, if Bonneville is a participant in, for example, the Southwest intertie project, we don't have to be the owner/operator. Instead we can be satisfied as a minority participant.

My message to the other utilities, both Northwest and California, is: Let's look forward; let's not look backward. You have my commitment that Bonneville is committed to multiple ownership of transmission and is actively looking for ways to promote that up and down the West Coast. We will be there with you as a reliable business partner in facilitating those kinds of arrangements that are both in our economic in-

terests and the economic interests of other utilities.

The third category of potential resources are combustion turbines, primarily to firm up non-firm hydro.² This is an area the Council gets the credit, frankly, for pioneering. The utilities weren't paying much attention to this when Jim Litchfield [former Council director of power planning] and others started to push on this issue back in about 1986.

While I think some of the Council projections on combustion turbine firming are a bit optimistic, there's no question we can do a substantial amount of it. My own guess would be something in the neighborhood of 500 to 700 megawatts.

And Bonneville won't be the only one seeking to acquire this resource. We've already seen Puget Power doing essentially that same thing, and I think we'll see Seattle City Light and others building turbines to firm up their own nonfirm hydro.

Finally, I think we're at the price levels now where we'll start to see some really good cogeneration³ projects coming online. Puget Power and its resource acquisition program and others have already seen that. We've received some of those proposals in our competitive bid resource solicitation, and I would expect that we'll see some of those resources developed.

Between those four resources—conservation, transmission-related exchanges, combustion turbines and cogeneration—we have probably 3,000 to 5,000 megawatts worth of resources in the resource stack that are all at or

The vision that I have is of a West Coast grid.



below the cost to complete WPPSS [Washington Public Power Supply System nuclear plants] 1 and 3. And I think that will last us *well* past the year 2000.

The beauty of the kinds of resources we're looking at is that they're resources that can be built in three or four years. They're not big nuclear or coal plants that take 10 or 12 or 15 years to build and have substantial risks associated with them. They're ones that have, by and large, low capital costs and high operating costs. Low risk on the construction side. Your risk comes more on the operating side. But those are risks that, when integrated with the flexibility we have in the hydro system, are quite manageable.

Between those kinds of flexible decentralized resources and an aggressive push in the conservation area, I think we're in pretty good shape. We don't want to be complacent about this, but I don't think there's any reason to panic, or run out and acquire everything. We can still be pretty deliberate and pretty careful, so we make sure we get the best buy in the resources that are offered to us, and we also pick the ones that are the most environmentally benign.

2. Hydroelectric power is divided into "firm" and "nonfirm" categories. Firm power can be guaranteed and sold to meet firm loads because it is the amount of electricity the dams can provide under even the worst recorded water conditions. Nonfirm power is what is available in any year that has additional water. If nonfirm power could be backed up by other resources, it could be counted on to serve firm loads.

3. Cogeneration is power generated in conjunction with a thermal industrial process.

Q. When you were at Seattle City Light, you were on the outside. One of the concerns we hear from people on the outside is that getting a conservation program out of Bonneville is a lengthy, complex process. Do you have any plans to streamline that process?

Again, we're already moving, I think, in the right direction. We're moving toward a much more decentralized mode of program operation in the conservation area. The whole targeted acquisition program that we're talking about, at least with the larger utilities, is an approach tailored to the specific needs of individual utilities. Whether that's Snohomish's conservation power plant, or Seattle or Tacoma's unique commercial and industrial conservation potential.

We don't have to have perfect continuity; we can do different types of programs in different areas. An irrigation conservation program or even a water conservation program may make sense in Eastern Oregon or Southern Idaho, but it doesn't make any sense in the Puget Sound area.

So we will be more flexible, I think, and we will take more risks than we've been willing to take in the past.

Frankly, if I have a concern in this area, it's more of a concern about whether the utilities are staffing up and gearing up fast enough to handle this additional work load, rather than Bonneville loosening up on our end.

Q. Where do you see the most promise for energy savings?

The most megawatts come from the west side. Now that creates some tensions—east to west—but, in fact, that's where most of the growth is. That's where the biggest loads are, so that's where your highest conservation potential is.

I think, in particular, we've got an enormous potential in the commercial and industrial sectors. We've still got a fair amount in residential. But rather than operating almost exclusively residential programs, which was what we did for most of the 1980s, you're going to see about an even split of the 660 megawatts between residential programs on one hand, and commercial and industrial on the other.

You just have to look at the high-rise buildings in Seattle or the enormous kind of industrial capacity in Tacoma, and it doesn't take a rocket scientist to figure out there's a lot of conservation potential there. I think we're putting together a set of programs that will start to tap that potential and realize those benefits for everybody.

Q. Bonneville has set itself the goal of being the most competitive and yet socially responsible utility in the nation. How do you plan to achieve that?

The resource package that we just discussed illustrates that. Those resources, by and large, have the twin characteristics of being, first, the lowest cost resources available, and second, the most environmentally benign resources available. There is no

central station generation anywhere in our resource stack, at least not very high up in the resource stack.

If you use "socially responsible" as a synonym for "environmentally responsible," (that's not all of it, but that's a significant portion of our socially responsible motto) I think our whole resource program and the Council's resource plan, which we're basically following, is designed with just that in mind. We're going to be competitive because these are going to be the lowest cost resources, and we're going to be socially responsible because they're the most environmentally benign.

An added benefit of our resource portfolio is that it's low risk. It is the lowest risk portfolio that I think we could put together for the region. There are some operating risks, primarily in terms of what gas prices are going to do in the future. But the construction risks and the regulatory risks are much, much smaller than those that we've experienced or subjected ourselves to in the past.

Those are the three things that are guiding me in resource acquisitions and, for that matter, in transmission policies: what's the least costly, what's the most environmentally benign or best environmental outcome, and what's the lowest risk.

The reassuring thing about this is that I don't think there's much argument about it across the Northwest. I think most of the utilities are in absolute agreement with Bonneville and with the Council about the kinds of characteristics that constitute our resource stack.

Increasingly, you see utilities in other sections of the country are coming to precisely the same conclusions. You don't have to build new central-station generation, or you can defer the need to incur the cost of the environmental impacts of building new central-station generation, if you do aggressive demand-side management programs, and if you increase your transmission access or build strategic transmission in lieu of generation.

Q. Do you see a collision course with the people that are concerned about electromagnetic fields [EMFs] and the people who are interested in expanding the transmission system?

I hope not. There are some issues there, no question about it. The electromagnetic fields issue has been one of the most troublesome issues that I had a fair amount of personal experience with at Seattle City Light.

We know something is happening out there relative to effects of electromagnetic fields. We don't know what it is. The evidence is very contradictory, frankly. So you're in the worst possible position as a utility executive of not knowing whether there's a problem or what that problem is. And, therefore, having really no idea of what to mitigate for if there is a problem.

We don't want to appear to have our heads in the sand and be accused of repeating the kind of things that were generally perceived during the acid rain debate. The industry as a whole nationally, was denying there was a problem [with acid rain] when, in fact, there was a problem.

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With electromagnetic fields, we simply don't know. I think the best we can do is practice prudent avoidance, which is low-cost, no-cost measures to avoid what might be a potential problem and try to buy ourselves some time, while aggressively pushing electromagnetic field research programs to try to nail down whether we have a problem, and, if we do, what's the nature of that problem.

Generally, the transmission activities that we will be engaged in will be upgrades of facilities on existing right-of-ways. I don't think you'll see a whole lot of new transmission construction. That, I think, will help minimize concerns, because in many cases you won't be changing the electromagnetic field levels to any significant extent outside that right-of-way area.

When you look at those kinds of environmental risks, which are fairly speculative, and you measure that kind of risk (if there is one) against undeniable impacts associated with building a coal plant, for example, you have to make some kinds of judgments. I think that it's a question of doing the thing where there's less risk, once you've done all the conservation demand-side management you can do.

Q. Can you speak briefly about the fish side, the salmon side?

To provide for adequate recovery of endangered wild salmon stocks, we need a *comprehensive, biologically based* program. I think the Council's plan meets those objectives. Having such a recovery plan is a biological necessity to demonstrate, at least with the models that we have, that we'll get increased returns in the species.

Frankly, it's also a political necessity. There has to be a perception among all the players that there's an equitable sharing of the pain. There's going to be pain all the way around.

The flow proposals that are in the Council's plan are significant, but we can manage them. They represent a loss of roughly 400 megawatts and probably a 4- to 8-percent wholesale rate impact, not immediately, but over the next three to five years as we acquire the resources to replace that 400 megawatts that we're going to remove from the power system. I am committed to doing that, *if it will provide a solution.*

My bottom line is, I'm willing to implement programs where the power system will take a significant hit as long as I can have a very high confidence level that those actions will result in increased returns in the endangered species back up into the Columbia and lower Snake rivers. And for that we need a balanced, comprehensive program.

We need strong harvest controls. We also need the kind of hatchery operational changes and habitat preservation measures

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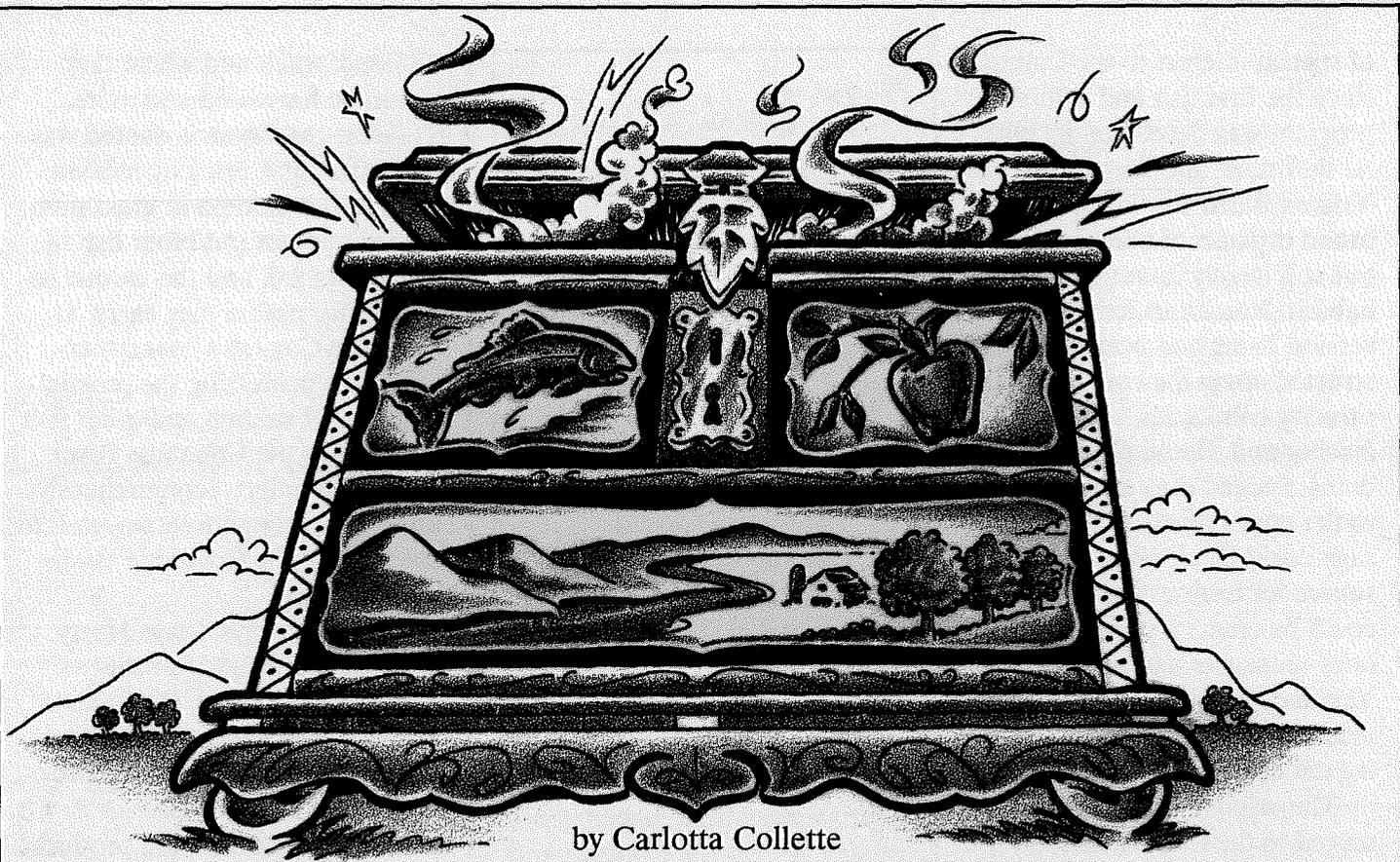
that go along with the flow proposals and the other things that are in the power part of the plan. I think the Council's plan does that, and should provide a suitable framework for NMFS [National Marine Fisheries Service] to use in developing its recovery plan.

I am committed to solving this problem. But I only have one set of tools, and they're not the whole answer. They're a large part of the answer, and the hydro system bears a significant part of the responsibility for the decline of the salmon runs, but we can't do it alone. We need to have those other measures, have a balanced program, and then I think we can get the "yes" on this whole thing.

My commitment to the Council members is, if we can have a balanced program and can agree on what the goal is for flows and other things, and then give us some flexibility to meet that goal, and we can get there.

We have an enormous potential to solve problems in this region. The Council has made a great contribution to that. I think Bonneville has. I think the region's utilities have—some more willingly than others. The tribes and the fish and wildlife agencies and that side of the coin have the same potential.

If we work together, we can solve these problems. They are not insurmountable. ■■



by Carlotta Collette

Yakima Basin Project asks more questions than it answers.

In a roomful of fisheries managers, planners, biologists and policy-makers, Roy Sampsel stands tall and challenging. He has come before this group to paint a picture of years of planning that seem to stretch out behind and in front of him almost infinitely. He is agitated and makes no effort to conceal his agitation.

"My frustration is that we can't get ourselves out of the planning mode," he fairly shouts, raising his arms over his head

and bringing them down hard on the table in front of him. "If we keep this up," he adds, "we won't need any more workshops because we will have destroyed every fish in the system."

Sampsel is project leader on the Yakima Fishery Production

Project, perhaps the biggest salmon and steelhead recovery effort in the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. The Yakima Production Project is the latest in a multiphased effort to bring back to this central Wash-

ington watershed some sizable fraction of the half a million or more salmon and steelhead that once navigated freely and abundantly in this valley.

The Yakima River Basin has been

Pandora's Basin

Illustration by Larry Milam

of special interest to the Council since the first fish and wildlife program was developed in 1982. At that time, and long before, the Yakima Basin was identified as a broad expanse of underutilized, but still largely intact, salmon habitat. Numerous irrigation diversion dams had been constructed along the river and its primary tributaries, the Cle Elum, Naches and Tieton rivers. The dams blocked easy salmon access to the upper reaches. But if passage could be cleared and a source for healthy young fish could be created, regional fisheries managers agreed that the Yakima could become a showplace for future salmon rebuilding endeavors.

The original proposals submitted to the Council called for a hatchery on Outlet Creek Springs in the Klickitat River Basin. The hatchery would produce about 300,000 pounds of fish for the Yakima. The estimated cost of the project was set at \$12 million, with about half a million dollars in annual expenses.

The Council agreed that the Yakima Indian Nation and Washington's Departments of Fisheries and Wildlife could begin designing the hatchery, but hinged its support on tighter regulation of the harvest of Columbia River salmon.

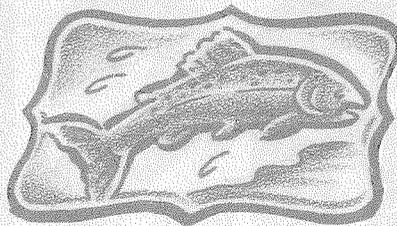
That was the plan, circa 1982.

By 1984, when the Council amended the fish and wildlife program, there were better controls on salmon catches both in-river and in the ocean. Work had begun on fish ladders and screens at diversion dams in the Yakima Valley to aid fish passage into the upper reaches of the river basin. Stream levels in some areas were in better shape than they had

If fish could reproduce the way questions do, there would be a river full of fish up there today.

been for years, because of a court decision that mandated minimum water levels to protect spawning salmon and their young. Habitat improvements were ongoing, reversing streamside damages and creating resting areas for both adult and young salmon.

The Council agreed that work should proceed with detailed planning on the hatchery project. It was hoped that the Yakima hatchery could become the model for future salmon production facilities. The Council urged interested parties to devise a "master plan" for the Yakima, one that would delineate not only how many fish would be reared there and at what cost, but also precisely how the hatchery would operate, how it would protect the Yakima's existing salmon stocks, how and where the fish would be



released, when and where they would be harvested and more.

What the Council wanted was assurance that bringing salmon back to the Yakima in great numbers would not put other fish in the watershed, and the unique genetic information they carry, at risk. The Council's concern extended to protecting the genetic diversity of salmon and other fish throughout the Columbia River Basin. It wanted a comprehensive approach, thoughtfully woven into the fiber of the Columbia Basin-wide strategy.

"In many ways," says Harry Wagner, the Council's fisheries biologist working on the Yakima Project, "the Yakima was seen as a model not just for how to produce more fish, but also for a process for approaching production questions. If fish could reproduce the way questions do," Wagner laughs, "there would be a river full of fish up there today."

There *are* more fish in the Yakima than before, but the questions are the basin's best breeders.

In October 1987, the Council released for public comment, reviewed and approved, with conditions, the three-inch thick master plan for the Yakima. A preliminary design report followed in 1989. In accepting the report, the Council reiterated that particular attention must be paid to the assessment and minimizing of genetic risk to indigenous stocks in the basin.

And this was the issue that stalled the Yakima Project: The more planners attempted to understand and account for the genetics risks, the more it complicated the project design. The budget grew. The number of facilities was expanded.

When, for example, a unique strain of fall chinook was discovered in an irrigation drain, planners decided to slow down and reconsider the project with an eye to protecting that small group of fish. They questioned whether aspects of the project needed to be redesigned to protect the remnant run. Ideally, the project would be adapted to make certain the irrigation drain chinook would not mingle with fall chinook in the rest of the basin. That would cost about \$5 million.

Similar delays and budget fluctuations were caused by findings about other substocks. Each new bit of information added to the complexity.

By 1990, the hatchery wasn't a "hatchery" any longer. The new concept was to have three central incubation facilities with 33 acclimation ponds and release sites throughout the basin. Each facility was designed to test specific theories and rear specific stocks. One of the facilities could successfully isolate up to 15 discrete stocks in experimental units.

All the carefully conceived design features added up to a new budget that had grown from \$12 million to about \$50 million, including several years' of research at the facilities. The Council voted to send the Yakima planners back to consider whether a scaled-down version would be less risky and return to the table with a modified final design proposal.

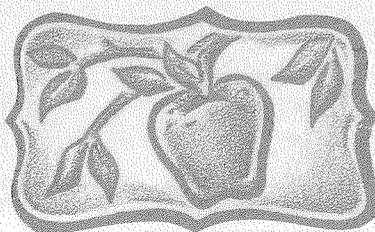
There was a seeming inability to turn new information into an asset. And as planning progressed, public scrutiny increased. Anglers who fished the "blue ribbon" waters above Rosa Dam on the Yakima, for example, were unnerved that the proposed

The Yakima planners are trying to restore an ecosystem, and they are learning just how elaborate ecosystems can be.

reintroduction of steelhead into that drainage might affect the non-seagoing fish they caught there. They demanded an environmental impact statement on the project and were granted one.

The Bonneville Power Administration, which is funding the project and conducting the study, expects it to delay the final design by at least another 15 months. That puts ground breaking well beyond 1993.

Hence, Roy Sampsel's despair. As he faces the gathered fisheries professionals at the Council's third genetics workshop, he is pounding his fist on the table and asking: "How can you help us move forward?"



"Of course this thing is dumbfounding all of us," says Wagner. "The big issue is biology, and biology is tricky."

The goal of the whole project is to aid natural production of the fish, not to replace wild runs with hatchery fish. The hatchery spawn would come from the highest quality brood stock available, carefully matched to bear the closest possible resemblance to wild stock from those basins.

The planning team includes staff from the Bonneville Power Administration, the Washington Departments of Fisheries and Wildlife, the Yakima Indian Nation (which would assume long-term oversight of the project) and consulting scientists. There are six teams addressing specific scientific questions. Sampsel calls the scientists the "brightest people" he could find, but all of their intellects and political savvy could not move the Yakima Production Project. "If we can't figure out how to do this in the Yakima, how are we going to do it Columbia Basinwide?" he moans.

The Yakima planners are trying to restore an ecosystem, and they are learning, the hard way, just how elaborate ecosystems can be.

But what about "learning by doing?" Sampsel seems to be saying. That's Columbia Basin shorthand for a scientific methodology known as "adaptive management." Adaptive management prescribes action in the face of uncertainty. Not "damn the torpedoes, full speed ahead" action, but tentative, exploratory steps, which can and must be evaluated

and altered in response to their effects.

“Who’s to say this isn’t adaptive management?” Wagner counters. “We’re going to be facing some of these same hurdles on all the production projects in the Columbia system,” he says, “We just need to figure out how to do this more efficiently.”

But Sampsel argues that he and his collaborators are caught in a “Catch 22.” “How do we take the best science and get enough information to proceed?” He is finding that adaptive management is likely to be expensive and time consuming, even before the project has the opportunity to begin.

What is ironic is that not too long ago the existence of a unique strain of salmon would have gone completely unnoticed. Salmon from any hatchery in the Northwest could have been released or could have strayed on their own into the Yakima Basin. A hatchery proposal like the Yakima Project, if it was approved at all, would have had few if any considerations for the long-term ecosystem impacts of the progeny of that facility.

Today’s Columbia Basin fisheries community is painfully conscious of the results of that early management approach. Of the 10 million to 16 million salmon and steelhead that once swam the

This is like opening Pandora’s box. There appears to be an endless supply of difficult questions inside.

Columbia, fewer than 3 million survive today. The region’s hydro-power dams, overfishing and other developments cut the runs to a fraction of their former bounty.

Only about 5 percent of the basin’s wild stocks remain. “We know we’ve lost big chunks of real estate salmon used to inhabit,” explains Wagner. “We’re not really sure how many wild stocks were there.”

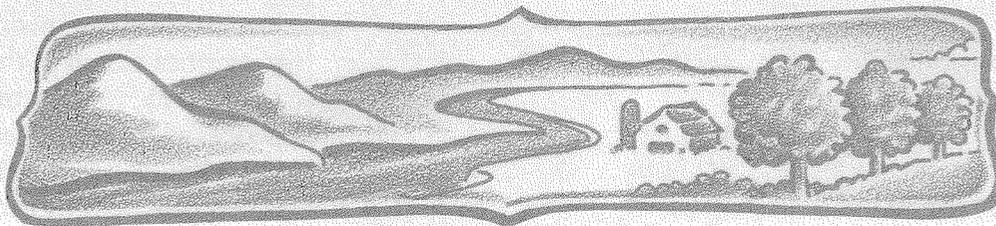
About 80 percent of the region’s salmon are now produced in hatcheries. And the American Fisheries Society has identified 67 populations of wild Columbia Basin salmon and

steelhead that are close enough to extinction to warrant concern. Three Columbia Basin salmon stocks are currently under review for inclusion on the national endangered species list. Snake River sockeye were listed in November.

Because hatchery production concentrates certain genetic traits and eliminates others, fisheries managers today are increasingly concerned about the imbalance of wild and hatchery stocks. If one thinks of genetic traits as survival skills, an appropriate analogy, say scientists, the more diverse and numerous the skills the better. The broader the skill base, the more likely the odds of enduring hardships. But scientists are uncertain exactly how many fish of any given strain should be preserved for the future, or at what cost.

“This is like opening Pandora’s box,” says Wagner. “There appears to be an endless supply of difficult questions inside.”

Having acknowledged that the lid is indeed off, Sampsel must devise a way of leading the exploration into and out of the situation. In February, he is planning to host a discussion of the problems and the possibilities for resolving them. His encounter with the Council’s geneticists and other workshop participants was by way of an invitation to attend. ■



What to do before the lights GO OUT

by Carlotta Collette

Regional power planners prepare for power shortages.

In the dry fall of 1973, then Oregon Governor Tom McCall ordered that outdoor lighting throughout his state be turned off. The governor wanted Oregon to do its part to save the region's river-generated electricity. He also wanted to send a message: There is a limit to this resource. It was a message the governor was fond of repeating with reference to all of the resources sheltered in the state.

The effect of the governor's order was sobering. At night, flying over the region, the vast stretch between California and Washington was reported to resemble a broad harbor of the dark sea. Few lights flickered below the clouds over Oregon. Energy use dropped off quickly.

Many Northwest utilities followed the governor's example. They began conservation programs that, when coupled with the subdued Northwest economy of the time, reduced electricity use and spread the benefits of the finite power system. Then Oregon and the region were rescued by a

wet October and an equally rain-filled 1974.

When the economy and electricity use began to pick up in the late '70s, Northwest states and utilities once again faced the likelihood of energy supply deficits.

This time they quickly began planning for ways to cope with the shortfalls. Their planning took on urgency in the winter of 1976-1977.

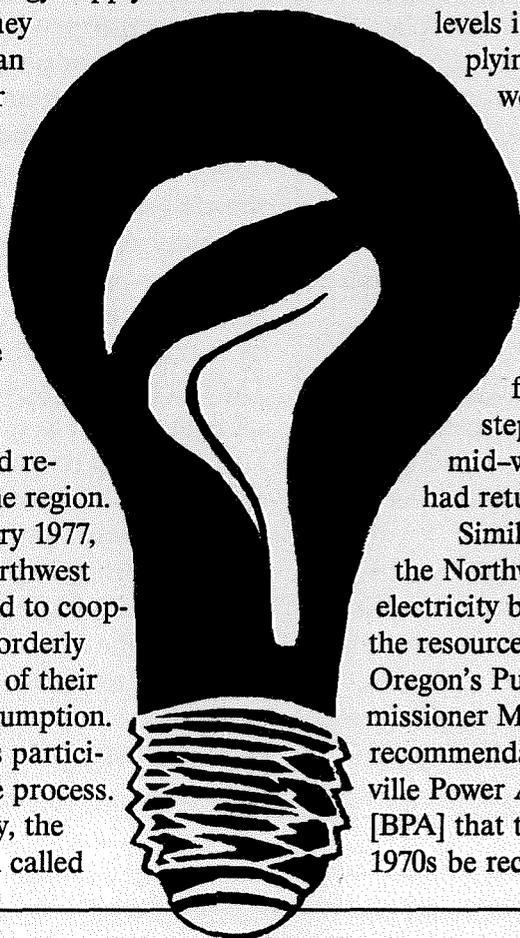
Drought had returned to the region.

In January 1977, the four Northwest states agreed to cooperate in an orderly curtailment of their energy consumption. The utilities participated in the process. By February, the utilities had called

for voluntary cuts in electricity use, the first of the agreed-upon two voluntary and three mandatory stages of electricity load curtailment. The effect was gradual, but evident by early summer.

In the autumn of 1977, water levels in the power-supplying Columbia River were easily as poor as they had been in 1973, but this time the region had acted in advance of need. A plan was in place, and the first voluntary steps had sufficed. By mid-winter the rains had returned.

Similarly, in 1989, as the Northwest's demand for electricity began to outstrip the resources that supply it, Oregon's Public Utility Commissioner Mike Katz made a recommendation to the Bonneville Power Administration [BPA] that the lessons of the 1970s be recalled for the 1990s.



"I suggest that BPA, the state regulatory agencies, the major utilities, the Northwest Power Pool,¹ the direct service industries [large industrial Bonneville customers], and perhaps the Power Planning Council take a renewed look at contingency plans for short-to-medium term (several months) energy shortages," he wrote.

Preparing for short-term energy shortages is an ongoing practice among utilities, and the Power Council plans for long-term load and resource unbalances. But the mid-range shortages hadn't been seriously explored since the end of the '70s. If the region continues to grow quickly, and a major thermal power plant is taken out of service, or rainfall and runoff are particularly low, shortages lasting several months could result.

Bonneville, the states, utilities, Power Pool planners, industries and the Council went back to their files, pulled out the plan that had been produced in the '70s and began working on a strategy for the 90s. The organizing concept was simple enough: "One short, all short."

But the draft strategy that emerged from the process is detailed and complex. The initial task force had divided into two groups: one would try to resolve utility and system operating issues, and the other would study and make recommendations for state policy issues.

They had two goals: to produce an official agreement among utilities to share whatever shortage could occur and to develop plans for each state caught by a regionwide energy shortage of

The organizing concept was simple enough: "One short, all short."

some duration (not a weather-related crisis like the February 1989 freeze, for example).

Share-the-shortage agreement

Even though the region may not suffer as a whole when one utility has insufficient resources to meet its customers' needs, that one utility could be the forerunner of a larger problem. Consequently, the first phase of the three-phased agreement the utilities are reviewing specifies actions a single utility with a power shortfall should take.

Under the draft agreement, the power-poor utility would be able to buy electricity from a utility that is not low on resources. The price of this power would be set high enough to discourage utilities counting on power purchases as an alternative to reducing consumption and resource planning in general. It could cost the buying utility several times the normal wholesale power rate to purchase electricity in the face of a potential regionwide shortfall.

If implementing the first phase of the utility agreement fails to balance the regional power system, the deficit utility would try to further reduce its energy requirements, including severing some so-called "interruptible loads," such as a portion of the electricity required for industrial processes. Power-rich utilities would continue selling their excess to utilities in need, making a wider than usual profit from the emergency sales.

In the third phase of the utility agreement, the states would begin taking action.

State plans

Key to the regionwide character of the curtailment strategy is the understanding that the four states must declare a shortage and call for implementation of the plan. The curtailment plan would be authorized by state laws. The states would have enforcement responsibility. If they call for power curtailment, the following plan would be set in motion.

1. The Northwest Power Pool Coordinating Group is an association that helps generating utilities in the Northwest United States, British Columbia and Alberta coordinate their power plant operations.

*Stage One:
Voluntary conservation*

In the early stages of an anticipated regional power deficit, the states would call for voluntary reductions in electricity use. The call would go to all electricity consumers; no one class or group would be singled out. Television, radio and print advertising would stress the need to conserve, without attempting to trigger panic and overreaction.

*Stage Two:
Increased voluntary action*

If response to the first stage of curtailment is not adequate to cope with the pending or real shortage, the states would set a target of 5-percent reduction in electricity demand across all customer groups. Media activity would be accelerated. The utilities would step up their customer education about the problem, including reiteration of the 5-percent target for load reductions.

*Stage Three:
Mandatory curtailment*

If voluntary actions do not resolve the region's electricity dilemma, mandatory steps would be called for. The four state governors could declare an emergency, and decreases in energy use ranging from 5 percent to 15 percent could be required of all power consumers.

In the early stages of an anticipated regional power deficit, the states would call for voluntary reductions in electricity use.

*Stage Four:
Increased mandatory curtailment*

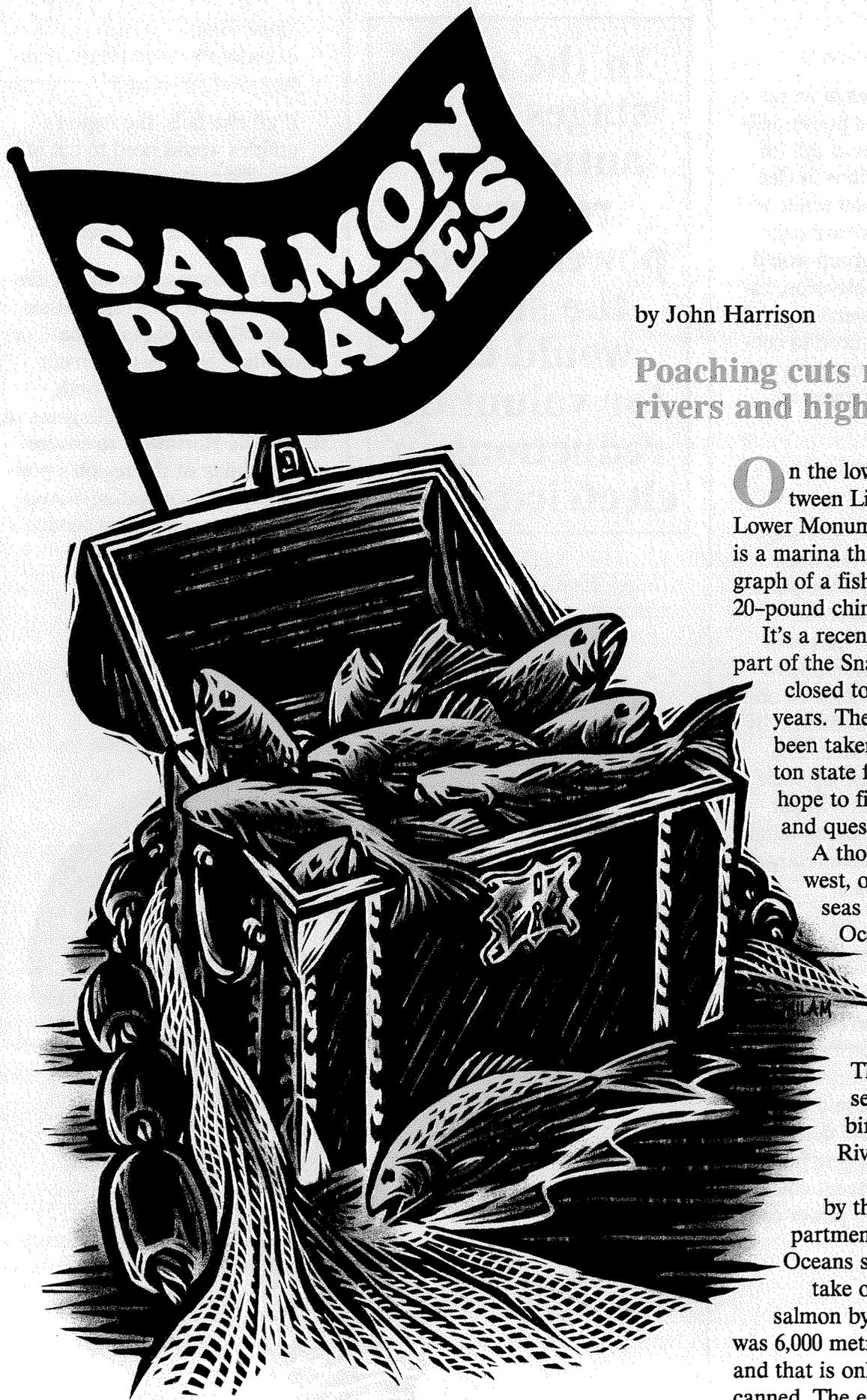
At stage four, cuts in the demand for electricity would be targeted at 15 percent or better for all customers, with rates as high as 25 percent for major power users, such as industries that require large amounts of electricity in their manufacturing processes. The goal of requiring equal cuts from all customer groups would be given up.

*Stage Five:
Mandatory curtailment plus potential blackouts*

If all else fails, the region's utilities would need to cut off specific customers or areas. The energy shortfall will have reached full crisis levels.

As this issue of *Northwest Energy News* went to press, neither the curtailment plan nor the share-the-shortage agreement had been finalized. But both strategies indicate a willingness in the Pacific Northwest to ensure the reliability of the region's power supply by cooperating across state borders and utility service territories. ■■





by John Harrison

Poaching cuts run sizes on rivers and high seas.

On the lower Snake River between Little Goose and Lower Monumental dams, there is a marina that displays a photograph of a fisherman holding a 20-pound chinook salmon.

It's a recent photo, but that part of the Snake River has been closed to salmon fishing for years. The chinook may have been taken illegally. Washington state fisheries agents hope to find the fisherman and question him.

A thousand miles to the west, on the gray, rolling seas of the North Pacific Ocean, Asian drift-net fishers reel out 30-mile long nets. Their quarry: squid.

Their catch: squid, sea mammals, birds—and Columbia River Basin salmon.

Statistics compiled by the Canadian Department of Fisheries and Oceans suggest the illegal take of all Pacific Coast salmon by drift-net fishers was 6,000 metric tons in 1990, and that is only for fish that were canned. The estimate does not in-

clude the number that were frozen and smuggled whole to Asian nations, where raw salmon is a delicacy.

If the Snake River fisherman caught his salmon illegally, he'll have something in common with ocean drift-net fishers: piracy.

From the high seas to the Columbia River Basin, illegal fishing is exacting a toll on salmon that can't be measured in dollars alone. In the case of Snake River sockeye salmon, illegal fishing may be contributing to the extinction of the species. In November, the National Marine Fisheries Service listed Snake River sockeye as an endangered species. Only four adults—three males and a female—returned to spawn last year at Redfish Lake in central Idaho.

Efforts to stop illegal fishing are as wide-ranging as the fish themselves, from surprise sweeps of fishermen on the Columbia and Snake rivers to sweeping resolutions adopted by the General Assembly of the United Nations.

Last September, the Bonneville Power Administration announced plans to spend \$9.7 million through 1995 to increase enforcement of salmon and steelhead regulations in the Columbia and Snake systems. The same month, the Northwest Power Planning Council, which authorized the Bonneville-financed crackdown on illegal fishing, approved a resolution supporting the United Nations' effort to end drift-net fishing in the Pacific Ocean.

The illegal take of all Pacific Coast salmon by drift-net fishers was 6,000 metric tons in 1990, and that is only for fish that were canned.



The Council's resolution said the destructive practice must stop, and the United States should pursue sanctions against nations that continue to fish with ocean drift nets. The Council expressed similar sentiment in a letter to Congress two years ago.

There have been results

In late November, after three years of United Nations pressure to end drift-net fishing, Japan's Cabinet approved a compromise that bans the practice by December 31, 1992. It was a remarkable decision. Japan has the world's largest drift-net fishing fleet, and the country had been lobbying

hard to convince the United Nations to bypass a drift-net moratorium scheduled to go into effect on June 30, 1992.

Under terms of the compromise, Japan will cut its drift-net fleet by one-half by June 30, 1992, and then co-sponsor a United Nations' resolution with the United States that will phase out drift nets, with no exceptions, by December 31, 1992.

Ted Hallock, chairman of the Power Planning Council, said he welcomed Japan's decision.

"Right now we are amending our [Columbia River Basin] fish and wildlife program to improve salmon survival and increase the runs, and we can't expect success if Asian nations are allowed to continue this indiscriminate slaughter of salmon on the high seas," Hallock said.

After learning of Japan's decision, Curtis Bohlen, U.S. assistant secretary of state, told *The Oregonian* newspaper of Portland, Oregon: "We think it's the best possible thing that could have happened for the ocean environment of the North Pacific. It reflects a growing recognition by the Japanese of the importance of the marine ecosystem."

The newspaper also quoted an unnamed official of the Japan Fisheries Agency who said: "It's too bad we have to stop. Unfortunately, world opinion has not been so sympathetic to our position as we had expected."

International treaties are in place to protect salmon in the Gulf of Alaska, but pirate drift-net boats sneak north from their customary fishing areas. The pirates, some of whom conceal the identifying numbers and flags on their vessels, and the legitimate

drift-net fishing fleet wreak an incredible toll on marine life. Collectively, they are suspected of drowning 120,000 dolphins, whales and seabirds each year in the relentless hunt for squid.

Washington Congresswoman Jolene Unsoeld, Senator Bob Packwood of Oregon and other lawmakers campaigned against the drift-net fishery and helped push for the United Nations' ban.

In a recent news article, Unsoeld said: "This pirate fishery is just too easy and too profitable. And the international agreements on drift nets have too many loopholes."

Problems on the river

Meanwhile, surprise sweeps of fishers in the Columbia Basin began in October. Fisheries agents and law enforcement officers from Washington, Idaho, Oregon

and Columbia River Indian tribes used aircraft, boats and land vehicles to make unannounced inspections of fishing parties.

During a three-day sweep, the agents contacted 250 fishers and issued 12 citations for various violations. No illegal fish were discovered, but state and tribal officials estimate that 50,000 to 250,000 of the adult salmon migrating up the Columbia are caught illegally each year. That is between 2 percent and 10 percent of all the salmon and steelhead in the Columbia and Snake system.

"There are enforcement needs from one end of the river to the other," said Lieutenant Andy Meriweather, lower Columbia enforcement chief for the Washington Department of Fisheries. "Primarily, poaching has a commercial aspect, but it can be done

by either sport or commercial fishermen."

Meriweather said fall probably is the heaviest poaching season because there are plenty of salmon in the rivers, and the eggs of adult females can be sold for a good price. Poachers often leave behind the flesh of adult spawners, he said. In the spring, it's just the opposite. The firmer flesh of spring adults means a good market for whole fish.

"In the past, we've had big operations in which we have recovered tons of fish," Meriweather recalled. "In fact, whenever we have initiated an operation, we've always been able to buy out-of-season fish."

Illegal fishing is a misdemeanor, but it can be a felony if the value of the stolen fish exceeds \$250. Law enforcement officers typically seize a fisherman's gear



as well as the fish, and conviction can bring a fine and jail time.

But the Columbia is a big river. Even with the additional enforcement being financed with the Bonneville money, illegal fishing is difficult to discover. Meriweather's approach is to "...create an expectation of being caught."

Bob Schafer, who works for the Washington Department of Wildlife in Yakima, agreed that it is important to create that expectation and to educate law-abiding fishers that they should release the big fish they catch out of season. Schafer took part in the recent surprise inspections on the Snake River.

"They might be so excited because they've just caught the biggest fish of their lives, and now they're going to go home and have a party. But they need to understand that by keeping that fish they are damaging the resource," Schafer explained.

He said poaching "isn't the biggest problem we have on the river, but it's significant." Poaching also isn't a localized problem, he added. It takes place up and down the river.

"It's a lot of little operations, and that's just the problem," he said. "Cumulatively, it adds up to a hell of a lot of fish."

"A publicity stunt"

To many commercial fishermen, the recent crackdown on illegal fishing is nothing more than a big budget for a small problem.

"We view it as a publicity stunt by Bonneville," said Frances Clark of Chinook, Washington. She and her husband, Les, are longtime gill-net fishers. "There just isn't that much going on, at least with gill-netters." She said

State and tribal officials estimate that 50,000 to 250,000 of the adult salmon migrating up the Columbia are caught illegally each year.



sport fishers, who often crowd tributaries in search of salmon and steelhead, take more fish illegally than commercial fishers.

Steve King, program leader for Columbia River management at the Oregon Department of Fish and Wildlife, said poaching was a greater problem in the 1970s than it is today.

"In the 1980s, there was some big enforcement," he said, recalling the 1982 "Salmonscam." In that sting operation, fisheries agents infiltrated a fish poaching ring in the Columbia River Gorge and arrested a number of people for catching and selling tons of fish illegally.

Law enforcement increased, including stronger enforcement of Indian fishing by the Columbia River Inter-Tribal Fish Commission. In addition, the growing public recognition of the critical problems with some runs has increased peer pressure to halt illegal fishing and changed public attitudes, he reasoned.

Mark Doumit, a gill-net fisherman and Wahkiakum County, Washington, commissioner, said more enforcement is needed, especially of recreational fishers.

"There needs to be more enforcement of the Buoy 10 fishery [in the lower Columbia River], particularly," he said. "Some of those people go back several times a day. There's a lack of accountability on punch cards." Doumit recalled that the Washington Department of Fisheries once had an enforcement officer stationed at Cathlamet, the county seat, but no longer does.

Fred Johnson, the Wahkiakum County prosecutor, said he has seen stiff penalties imposed for fishing—a year in jail in one recent case—but that prosecutions are too few and far between.

"Once, a district court judge saw a set net in the river and reported it to the fisheries department, but it took three days to get an officer here. By then, it was

gone," he said. "I know a lot of sport fishermen are fishing year round and selling the fish illegally. I have heard anecdotal stories about people coming up here from Arizona in motor homes to catch and can salmon. They come up here with orders."

What's needed, he said, is a commitment from the state to step up enforcement.

Chasing pirates

More enforcement appears likely as a result of the Bonneville financing, but the problem won't be approached as easily on the high seas. That is because policing the drift-net fishery in the vast expanse of international waters is much more difficult than policing fishing in the Columbia River Basin.

Japan, South Korea and Taiwan all appear willing to go along with a ban. But Hong An, a lobbyist for the Korean Deepsea Fisheries Association, told the States News Service in June 1990 that Korean fishermen resent international agreements that force them to buy locating devices for their boats and allow foreign observers on board.

"This is still the high seas," he said. "Most fishermen consider it a freedom, a right, to harvest anywhere in the sea."

Hong An and other spokesmen for the Asian drift-net fleet either deny their vessels catch salmon or say the salmon catch is very small as a percentage of the squid catch. However, in 1989, a sting operation caught a single Taiwanese merchant with 3.3 million pounds of illegal salmon.

Policing the drift-net fishery in the vast expanse of international waters is much more difficult than policing fishing in the Columbia River Basin.



In 1990, observers from the United States and Canada were allowed on board 45 Japanese drift-net vessels—10 percent of the fleet. During the squid fishing season, the nets from those boats killed thousands of sea birds, mammals and fish, including 9,747 salmon and steelhead. About one-third of the salmon and steelhead were identified by species, and of these, a fraction bore tags marking them as Snake River steelhead.

If 10 percent of the Japanese fleet killed nearly 10,000 salmon, then the number killed by the entire legal drift-net fishery probably is in the hundreds of thousands.

Then there is the problem of pirate drift-net vessels—the illegal fishery—which ignore all fishing regulations. The number of sea creatures—salmon included—killed by pirate vessels can only be estimated.

In 1990, 10 pirate drift-net vessels flying North Korean flags were caught in Soviet waters fishing for salmon. Most of the crew members were Japanese. They were arrested and taken to the Soviet Union to stand trial.

Patrolling the legal drift-net fleet and the shadowy pirates across the vast Pacific is a difficult task, to say the least. Political pressure directed at drift-netting nations may prove to be more effective at controlling the slaughter. To that end, Congresswoman Unsoeld said she was pleased by Japan's decision to phase out drift-net fishing by the end of 1992.

A week before the decision was announced, she made a lobbying trip to the United Nations with Charles Gauvin, executive director of Trout Unlimited, and Billy Frank, chairman of the Northwest Indian Fisheries Commission.

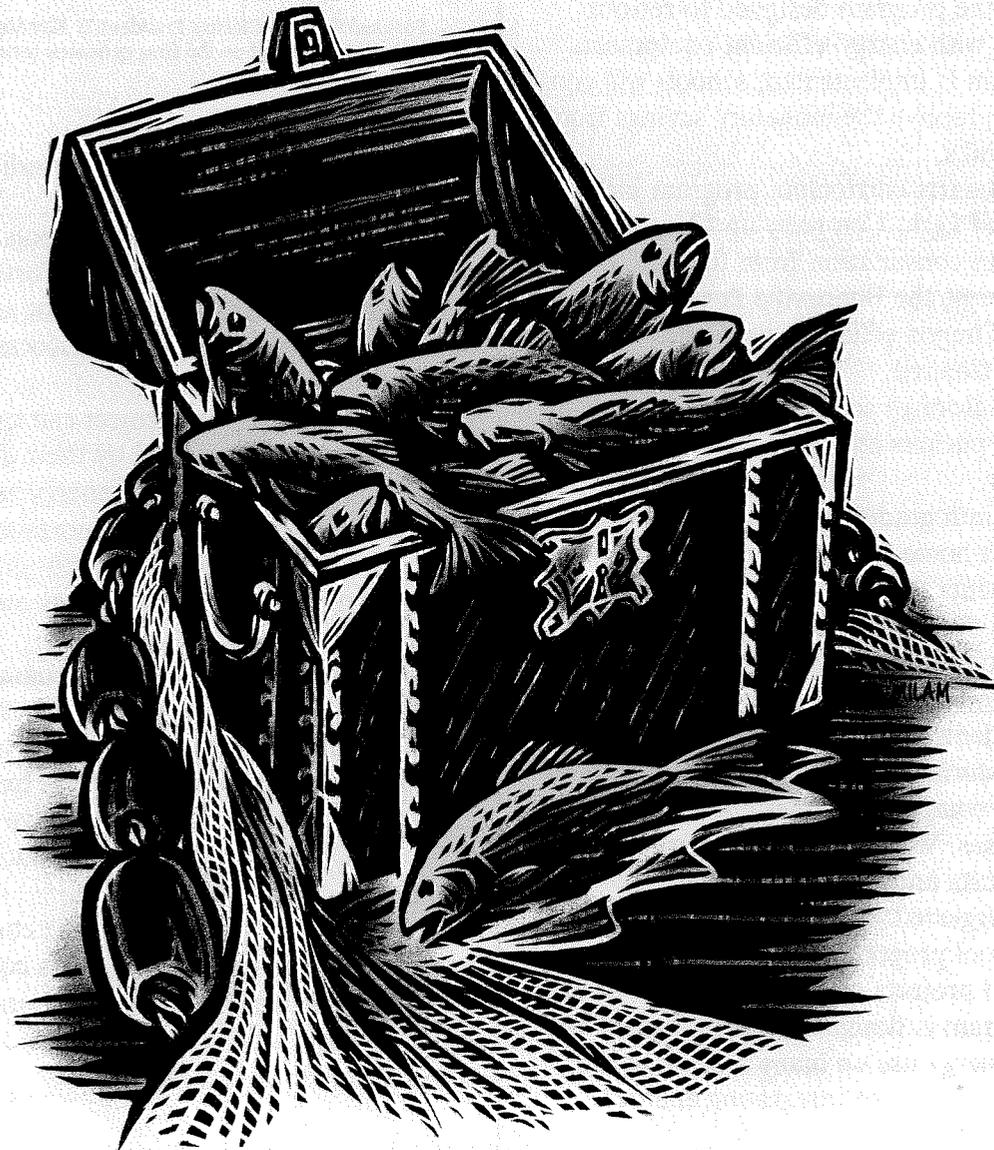
In a statement released at the time, the three wrote, "The world's marine resources simply cannot withstand the onslaught of a technology that—counting Japan's 1990 take—killed more than 41 million marine animals as 'by-catch,' to say nothing of the tens of thousands of U.S. salmon and steelhead stolen each year."

Unsoeld called the Japanese decision "a very gratifying step," but she noted much work remains to be done. For example, the U.N. General Assembly has not approved the compromise, and the problem of pirate vessels remains.

"Even our own State Department acknowledges that these vessels will be on the high seas after the new U.N. resolution is in place," she said.

Unsoeld said the U.S. Coast Guard needs help in patrolling the ocean for pirates. Currently, the Coast Guard has only one cutter to patrol the entire North Pacific.

However, she added, "I am very pleased with this progress to ban the use of these curtains of death. It is gratifying to see our State Department and the world community understand that our worldwide marine resources, abundant as they may be, cannot withstand the onslaught of these 30-mile-long nets." ■



Students Getting (Energy) Smarter

Oregon students are learning conservation first hand, thanks to a new energy education program. Selected Portland and Salem area elementary and high schools are participating in Energy Smarts, a pilot curriculum program designed to demonstrate more efficient energy use to students and their parents.

Energy Smarts is part of the Energy Efficiency in Oregon Schools program. Portland General Electric and the Oregon Departments of Energy and Education introduced the program designed to retrofit school buildings with energy-efficient equipment. Once the program is implemented, schools will conserve energy and receive the monetary savings from reduced energy bills.

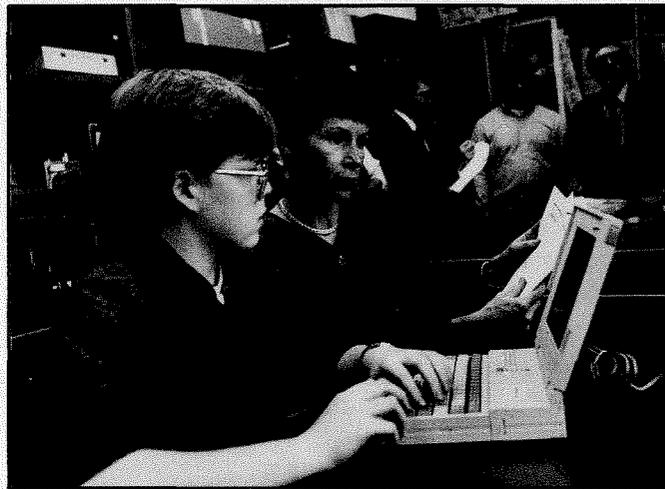
The Energy Smarts curriculum program includes Pacific Power and Light Company and Northwest Natural Gas, with consultation from the U.S. Department of Energy, the Bonneville Power Administration and the Oregon office of the Northwest Power Planning Council.

Kindergarten through seventh graders receive information study packets and carry out activities on energy efficiency.

Eighth and ninth graders complete energy use questionnaires at home with their parents. These surveys ask students to assess the size and age of their homes and the amount of insulation in them. Students also look at their electrical appliance use. Lap top computers are then brought into the classroom where students complete home energy audits.

The survey information is entered into a computer program that compares current energy costs to question responses. Ways to improve energy efficiency and reduce costs and environmental impacts of electricity are suggested.

The high school program offers "ecogrants" to fund educational projects on energy and the environment. This program is designed to demonstrate the importance of energy use on many aspects of the environment. It encourages integrating energy



Portland General Electric President E. Kay Stepp working with high school student on the Energy Smarts program.

studies into such areas as social studies, history and art projects.

Lincoln and Madison high schools and the Metropolitan Learning Center, all in Portland, as well as schools in Salem, make up the pilot area for Energy Smarts. If the program proves successful, it will be implemented statewide.

Students in the pilot project can qualify for low-flow showerheads provided by their utilities. They also will receive coupons for energy saving household items, such as compact fluorescent light bulbs. Utilities will be able to account for residential conservation through the home energy audit conducted by students.

The school building retrofit program provides schools with a free energy audit and financial assistance to make energy improvements on the facility. Schools will receive energy savings from greater energy efficiency and students will have the opportunity to assist energy auditors in evaluating the school's energy use.

Oregon is continuing to pursue energy education and efficiency in the schools. This collaborative effort is just the first of future programs. ■■■

—Lisa Karnopp
Oregon Council staff

Idaho's Capitol Rotunda Re-Lights

Over a year ago, Idaho's capitol rotunda had 583 40-watt incandescent bulbs burning 12 hours each day. Every 83 days the bulbs needed to be replaced. Anyone who has visited Idaho's capitol can immediately see that changing these bulbs is no easy task. Some of the lights in the dome area are in extremely high, difficult-to-reach locations.

Now each incandescent bulb has been replaced with an energy-efficient, 15-watt, compact-fluorescent, magnetically ballasted lamp. But the lighting was not changed for energy conservation reasons. The compact fluorescents were installed because they last 10 times longer than an incandescent. The energy savings were a bonus.

The state of Idaho made the decision to change the lights without a utility incentive program and without even calculating the potential energy savings. When the energy division of the Idaho Department of Water Resources did make its estimates of energy savings, it found that the 583 replacement bulbs are saving 45,474 kilowatt-hours of electricity annually, the equivalent of what three average Idaho residences consume in a year. This saves the state \$1,400 each year.

The reduced heat output of the lower wattage lamps also reduces air conditioning at the Capitol by about 11,250 kilowatt-hours. Because incandescents burn out every 83 days, and the new bulbs should last more than two years, replace-

ment savings and avoided labor costs greatly increase the benefits of the new bulbs.

Despite the bulbs cost—\$10.84 a piece, for a total cost of \$6,320—they still are a better buy than incandescents. State building maintenance staff are currently studying energy-efficient lighting for the remainder of the capitol building and for other state facilities.

Idaho is also looking into the Environmental Protection Agency's (EPA) new, voluntary program called Green Lights. The program was designed to encourage businesses across the nation to install energy-efficient lighting in their facilities. Green Lights' goal is to prevent pollution and increase the nation's economic competitiveness through energy efficiency. More than 150 major U.S. corporations have already joined the program, agreeing to upgrade the lighting in 90 percent of their facilities over five years, wherever it can be shown to be profitable and quality-enhancing.

Several states have expressed an interest in the program, so the federal agency recently launched a State Partner program. By signing up for the program, the state agrees to meet the same lighting upgrade standards as the corporate partners meet in their facilities. The state also commits to encourag-

ing major corporations headquartered in their state to join Green Lights and to work with EPA to raise the public awareness of the economic and environmental benefits of energy-efficient lighting. The federal agency provides the partner with technical assistance, supplier referrals and publicity on the projects.



New energy-efficient bulbs light Idaho's capitol rotunda.

If efficient lighting were used wherever profitable, EPA estimates that 4 percent of the nation's carbon dioxide emissions, 7 percent of sulfur dioxide emissions and 4 percent of nitrogen oxide emissions could be prevented. These lighting improvements could enhance worker productivity by improving lighting quality and save more than \$18.6 billion in electricity bills each year, the agency added. ■■

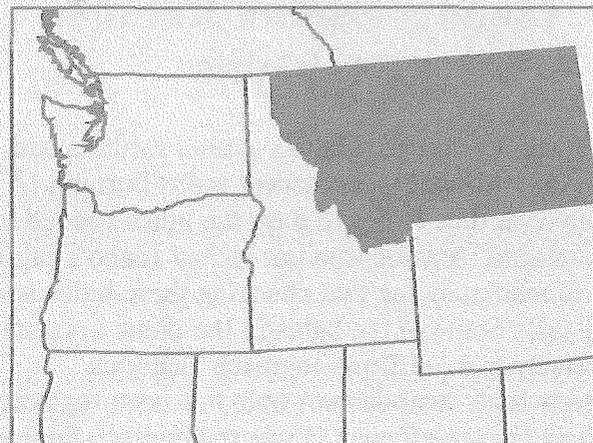
—Karen Nelson
Idaho Council staff

Montana's Inventory of Energy Laws

The Montana office of the Northwest Power Planning Council is presently working with that state's Environmental Quality Council to conduct the first comprehensive inventory of Montana's energy-related statutes, regulations and rules. Over the years, the Montana Legislature has enacted a diverse array of programs, regulations, taxes, incentives and other measures to influence energy production, consumption and conservation patterns.

The types of legislation to be incorporated in the research will include the following:

1. Those that affect the production, consumption and development of various energy sources, including coal, natural gas, petroleum, electricity produced from any sources, renewable energy sources (e.g., hydroelectric, wind, solar, biomass), uranium and cogeneration;
2. Those that establish conservation programs and incentives;
3. Those that establish taxes, incentives, royalties, fees and other fiscal measures, and policies that influence energy exploration, production, consumption and conservation patterns;
4. Those that establish or regulate the terms and conditions under which leasing, exploration and production of primary energy sources must occur; and



5. Those that establish waste management programs and provisions that require or encourage conversion of waste products to energy.

The Power Planning Council-sponsored research has two major goals: it will provide the legislature with a snapshot in time of the status quo, and it will help the Environmental Council identify the existing scope of and conflicts among the statutes, regulations and rules. The information gleaned from this legislative and statutory review may also help identify barriers to the acquisition of all types of resources that may be used to meet the energy needs of Montana and the region.

This work is a component of a state energy policy development project that is being conducted by the Environmental Quality Council under the auspices of House Joint Resolution 31 (HJR31). The Montana Power Council office also will participate in a second project originating from the House Resolution—the design of a state energy policy analysis methodology.

This methodology will be a tool for the legislature, executive branch and other interested parties to use in uniformly and comprehensively evaluating all types of energy policy proposals. The purpose of the methodology is to enable policy-makers to explicitly identify the tradeoffs among policy alternatives in order to make informed choices when considering various resource options. ■■

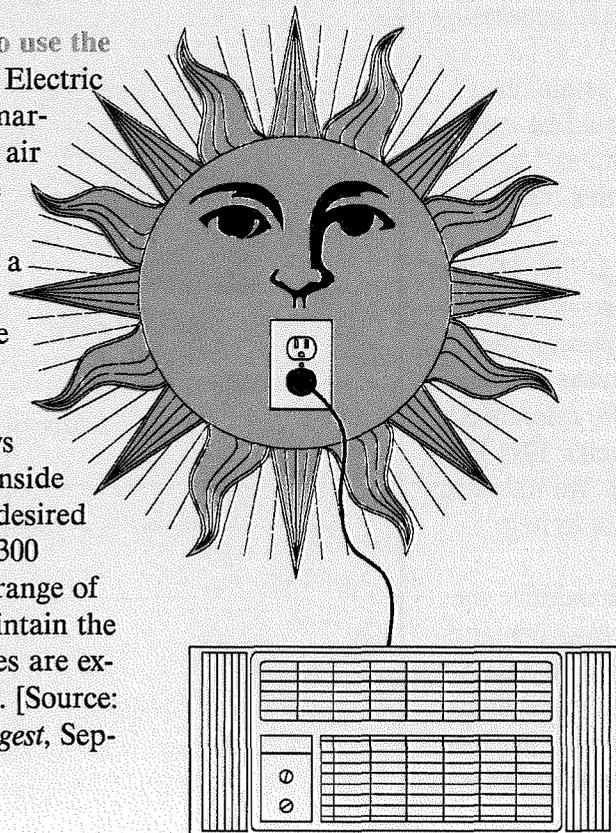
—Ti Dahlseide
Montana Council staff

SHORTS

Royal Dutch Shell, one of the world's largest oil corporations, is hedging its bets against global warming. This year, the company began raising its North Sea drilling platforms higher above the waves. The company will pay \$32 million to raise each platform six feet. The global warming theory holds that carbon dioxide and other organic gasses released by the combustion of fossil fuels are being trapped in the atmosphere, and that the accumulated gasses trap heat radiating from the Earth, thus warming the atmosphere. One result of global warming could be a reduction of the polar ice caps and a resulting rise in the level of oceans.

[Source: *The Columbian*, Vancouver, Washington, September 27, 1991].

Soon you will be able to use the sun to stay cool. Sanyo Electric Company, Limited, is marketing a solar-powered air conditioner. The device uses a 5-square-meter photovoltaic array with a peak generating power of 500 watts. The device also is connected to a conventional electric power supply and draws 900 watts to bring the inside air temperature to the desired level. Then it uses just 300 watts—well within the range of the solar panel—to maintain the temperature. Retail sales are expected to begin in 1992. [Source: *Energy Conservation Digest*, September 30, 1991.]



Energy efficiency is contributing to lower electricity prices in the northeastern and southwestern United States. Some reasons for the price drop are considered temporary, such as low prices for natural gas and sluggish regional economies. But a factor that probably will last longer is the efficient use of electricity by regional utilities, partly as the result of subsidies for new light bulbs and efficient electric motors. *The New York Times* reported that efficiency measures are responsible for slowing the growth in demand for electricity throughout the nation and also delaying price increases for consumers. [Source: *The New York Times*, September 24, 1991.]

A new wind power research cooperative has been formed at Oregon State University in Corvallis. The purpose of the cooperative is to speed wind power research in the Pacific Northwest. The cooperative was formed by some of the region's largest utilities, including Pacific Power and Light Company, Portland General Electric, Eugene Water & Electric Board, Idaho Power Company and Puget Sound Power & Light Company. The Bonneville Power Administration and the Oregon Department of Energy also are involved. [Source: *Oregon Morning Newswatch*, November 21, 1991.]

The Shoreham Nuclear Power Station in Wading River, New York, is about to make history as the first fully licensed nuclear plant in the United States to be dismantled without ever operating. The controversial plant on Long Island passed its tests and was ready to generate 809 megawatts of electricity before Long Island Lighting Company, decided to pull the plug. Politics, energy policy and local pressure all played a part in the decision to close the plant. Parts will be sold, and the building will be turned into a fuel storage warehouse. Decommissioning the plant will take two years and cost \$186 million. [Source: *The Oregonian*, Portland, Oregon, October 27, 1991.]

Washington CARES

There was a time when Washington public utility districts were forced to watch other, larger utilities take the initiative to acquire conservation and renewable energy resources. Many public utility districts were too small to run conservation programs. They lacked the infrastructure and incentive for participation. Lost revenue was the only outcome they could envision from cutting customers' energy use. But those limitations are gone forever as Washington public utility districts take a bold step toward offsetting some of the roadblocks inherent in small to medium sized public utility districts acquiring resources.

In December, eight Washington public utility districts filed an application with the Washington State Department of Ecology to become a "joint operating agency." The joint operating agency, currently referred to as the Conservation and Renewable Energy System (CARES), will provide tax-exempt financing and technical services to foster the development of conservation and small renewable energy generating resources.

Once the joint operating agency is established and proves successful, membership could be expanded to include other Washington public and municipal utilities. Non-member public utilities could also participate in programs and projects.

Steve Johnson, Washington Public Utility District Association director, anticipates no problems in approval of the application. "We have followed the provisions of the operating agency statute for Washington to the letter," says Johnson. "We referenced the [Northwest Power Planning] Council's 1991 Power Plan many times in our application. We followed the plan and used it as an effective tool to help achieve our desired goals."

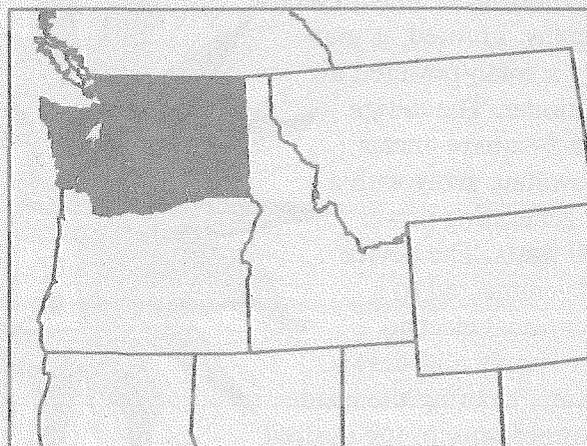
In this case, the desired goal is to maximize the ability of public utility districts to develop demand- and supply-side resources for the region. CARES in-house staff will provide a variety of services, including oversight of resource development projects and programs, risk management, contract negoti-

ations, and preparation of requests for proposals. Contracted services, both utility and non-utility, will be shared with participating utilities' staff, thus increasing technical knowledge and coordination of resource acquisition.

Financially, CARES will be able to increase the tax-exempt financing capabilities of the participating public utilities. By pooling projects and programs, the collective funding requirements will allow for larger bond issues, resulting in lower transaction costs. CARES also will provide another source of customer financing, reducing the Bonneville Power Administration's need to borrow from the U.S. Treasury to finance resource acquisition. The bottom line is lower costs to the region for resource development.

For more information on the CARES joint operating agency, contact Brian Walters, Washington Public Utility District Association, at 206-682-3110. ■■

—Carol Raczykowski
Washington Council staff



CALENDAR

January 29-30—“Environmental and Licensing Conference” at the Hyatt Regency in Bellevue, Washington. Sponsored by the Northwest Hydroelectric Association in cooperation with the Federal Energy Regulatory Commission. For more information: Northwest Hydroelectric Association, P.O. Box 3610, Salem, Oregon 97302, phone 503-363-0121, FAX 503-371-4926.

January 30—1992 Energy Managers Forum at the Quality Inn in Salem, Oregon. Christine Ervin, director of the Oregon Department of Energy (ODOE), will deliver the keynote address. Sponsored by the Oregon chapter of the Association of Professional Energy Managers. For more information: Curt Nichols or Mark Kendall, Oregon Department of Energy, phone 1-800-221-8035 or 503-378-4040.

February 4-5—Yakima River Basin Natural Resource Enhancement Program meeting at Cavanaugh's Motor Inn in Yakima, Washington. The Yakima River Basin Natural Resource Enhancement Program is a cooperative effort of federal and state agencies, the Yakima Indian Nation, local governments, irrigation districts and others. This meeting will review the scientific and technical progress of the program. Sponsored by the Bonneville Power Administration, the Yakima Indian Nation and the Washington Departments of Fisheries and Wildlife. For more information: Sharon Rice, Bonneville Power Administration, 103 S. 3rd Street, Yakima, Washington 98901, phone 509-575-5805.

February 12-13—Northwest Power Planning Council meeting at the Stouffer Madison Hotel in Seattle, Washington.

March 11-12—Northwest Power Planning Council meeting at the Baxter Hotel in Bozeman, Montana.

March 16-20—“Affordable Comfort VI,” the sixth annual affordable comfort conference at the Pittsburgh Hilton and Towers in Pittsburgh, Pennsylvania. The conference will address energy efficiency and affordability in existing housing. Sponsored by the Pennsylvania Energy Office and the Southwestern Pennsylvania Energy Center. For more information: Diane Tirio 412-373-0482.

March 25-26—“Globalcon '92: The Marketplace for Energy and Environmental Technologies” conference at the San Jose Convention Center in San Jose, California. The conference will address all segments of efficiency improvement, demand-side management, power generation and environmental management. Sponsored by the Association of Energy Engineers, Western Area Power Administration and others. For more information: Ruth Bennett, Association of Energy Engineers, 4025 Pleasantdale Road, Suite 420, Atlanta, Georgia 30340, phone 404-447-5083, FAX 404-446-3969.

March 31-April 3—“The Crystal Ball Conference—An Insight to Your Energy Futures,” at the Aotea Centre in Auckland, New Zealand. The conference will explore energy, economic and environmental trends and their impact on business. For more information: The Conference Company, P.O. Box 90-040, Auckland, New Zealand, phone 64-9-360 1240, FAX 64-9-360 1242.

April 8-9—Northwest Power Planning Council meeting at Kahneeta Resort in Warm Springs, Oregon.

April 24-26—“Theory to Practice,” the second annual conference of the Environmental Education Association of Washington (EEAW) at the Cispus Conference and Learning Center in Randle, Washington, near Mount Saint Helens. Sponsored by the Environmental Education Association of Washington. For more information: Peggy Britt, conference committee chair, phone 206-357-6333.

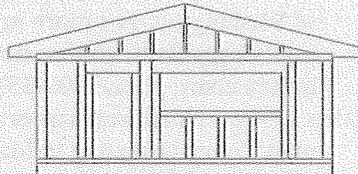
May 13-14—Northwest Power Planning Council meeting in Idaho.

June 1-12—“Earth Summit,” the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil. In an effort to maintain the quality of the environment and achieve environmentally sound, sustainable development in all countries, the conference will address protection of the atmosphere, land and freshwater resources. For more information: UNCED, Room S-3060, United Nations, New York, New York 10017, phone 212-963-5959, FAX 212-963-1010.

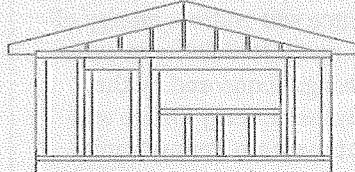
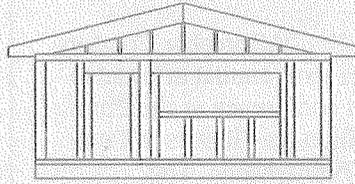
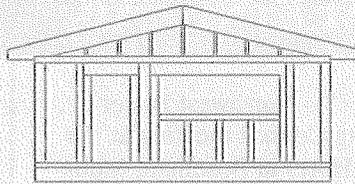
October 2-3—“Western Regional Instream Flow Conference II” in Jackson Hole, Wyoming. The theme of the conference will be “Tools and Strategies for the Enhancement and Maintenance of Instream Flow.” Sponsored by Trout Unlimited and the U.S. Bureau of Reclamation. For more information: Suzanne VanGytenbeek, Trout Unlimited, P.O. Box 1212, Jackson Hole, Wyoming 83001, phone 307-733-0484, FAX 307-733-9678.

A more detailed calendar of Council committee meetings and consultations is carried each month in *Update*. See order form inside back cover.

—Compiled by Judy A. Gibson



1990

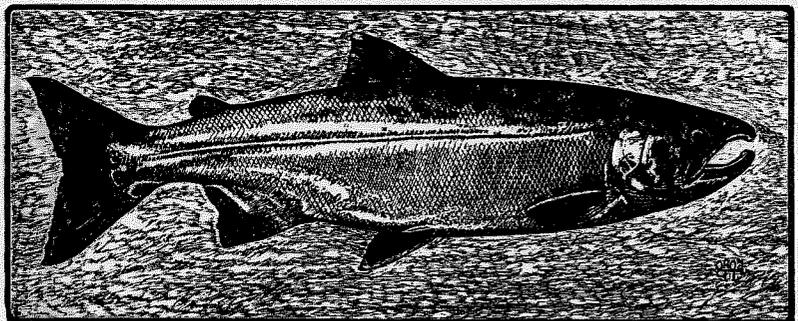


1991

Production of energy-efficient manufactured homes in Washington tripled in 1991, compared to 1990, the Bonneville Power Administration reported. Builders completed 485 efficient homes, compared to 115 in 1990. Manufactured homes built to the energy-saving standards of Bonneville's Super Good Cents program are about 50 percent more efficient than required by the federal Department of Housing and Urban Development, which regulates manufactured housing construction. [Source: Bonneville Power Administration news release, November 21, 1991.]

BC Hydro reported that 80 percent of the households in British Columbia were aware of Power Smart Night. It's an annual event that focuses on energy efficiency. A total of 56 percent of the households participated in the event by turning off an average of six lights to save energy, a poll of BC Hydro customers showed. [Source: *Clearing Up*, October 25, 1991.]

Alaska's total salmon landings set a new record last fall. As of mid-October, salmon landings were at 184 million fish, well above the 1990 record level of 154 million fish. Pink salmon were the most prolific. Records or near-records were set in nearly every major pink fishery in 1991. There were so many pinks, in fact, that fishermen donated tons of them to the Soviet Union. [Source: *Seafood Report*.]



A United Nations report says it will cost \$1.28 trillion over the next decade to ensure the survival of the Earth. The report was four years in the making. It lays out 132 measures it says must be accomplished if the planet is to remain capable of supporting life. The measures include controlling use of pesticides, reducing energy use, controlling population growth, changing personal attitudes, and writing off the official debts of Third-World countries so they can deal with environmental problems. [Source: *Calgary Herald*, October 22, 1991, as quoted in *Clearing Up*.]

—Compiled by John Harrison

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The Northwest Power Planning Council is required by an Act of Congress to develop a program to protect, mitigate and enhance the Columbia Basin's fisheries and a regional electric energy plan that provides a reliable electricity supply at the lowest cost. For further information, see Pacific Northwest Electric Power and Conservation Act—Public Law 96-501.



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COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council. (Note: not all publications are available immediately, but they will be sent to you as soon as possible.)

Publications

- 91-04 1991 Northwest Power Plan—Volume I
- 91-05 1991 Northwest Power Plan—Volume II
- 91-07 1991 Directory of Organizations
- 91-16 Final Integrated System Plan
- 91-25 Proposed Amendments with Technical Appendices to the Columbia River Basin Fish and Wildlife Program on Mainstem Survival, Harvest, Production and Other Measures to Protect Salmon and Steelhead
- 91-26 1991 Annual Report to Congress
- 91-27 Priority Salmon and Steelhead Production and Habitat Amendments
- 91-29 Priority Salmon Habitat and Production Proposals—Summary and Response to Comments
- 91-31 Amendments to the Columbia River Basin Fish and Wildlife Program (Phase Two) on Mainstem Survival, Harvest, Production and Other Measures to Protect Salmon and Steelhead
- 91-32 Power Planning Division Work Plan
- 91-33 Response to Comments on Proposed Amendments to the Columbia River Basin Fish and Wildlife Program on Mainstem Survival, Harvest, Production and Other Measures to Protect Salmon and Steelhead.
- 1987 Columbia River Basin Fish and Wildlife Program

Mailing Lists

Please add my name to the mailing lists for the following newsletters. (Note: do not check if you already are receiving them.)

- Northwest Energy News* (this bimonthly magazine)
- Update* (monthly public involvement newsletter that contains the Council meeting agenda, deadlines for public comment and a more detailed publications list)

Name _____

Organization _____

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City/State/Zip _____

(Or call the public affairs division at the Council's central office, 503-222-5161, or toll free 1-800-222-3355.)

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Hardy

Breaking
with
Tradition

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Basin