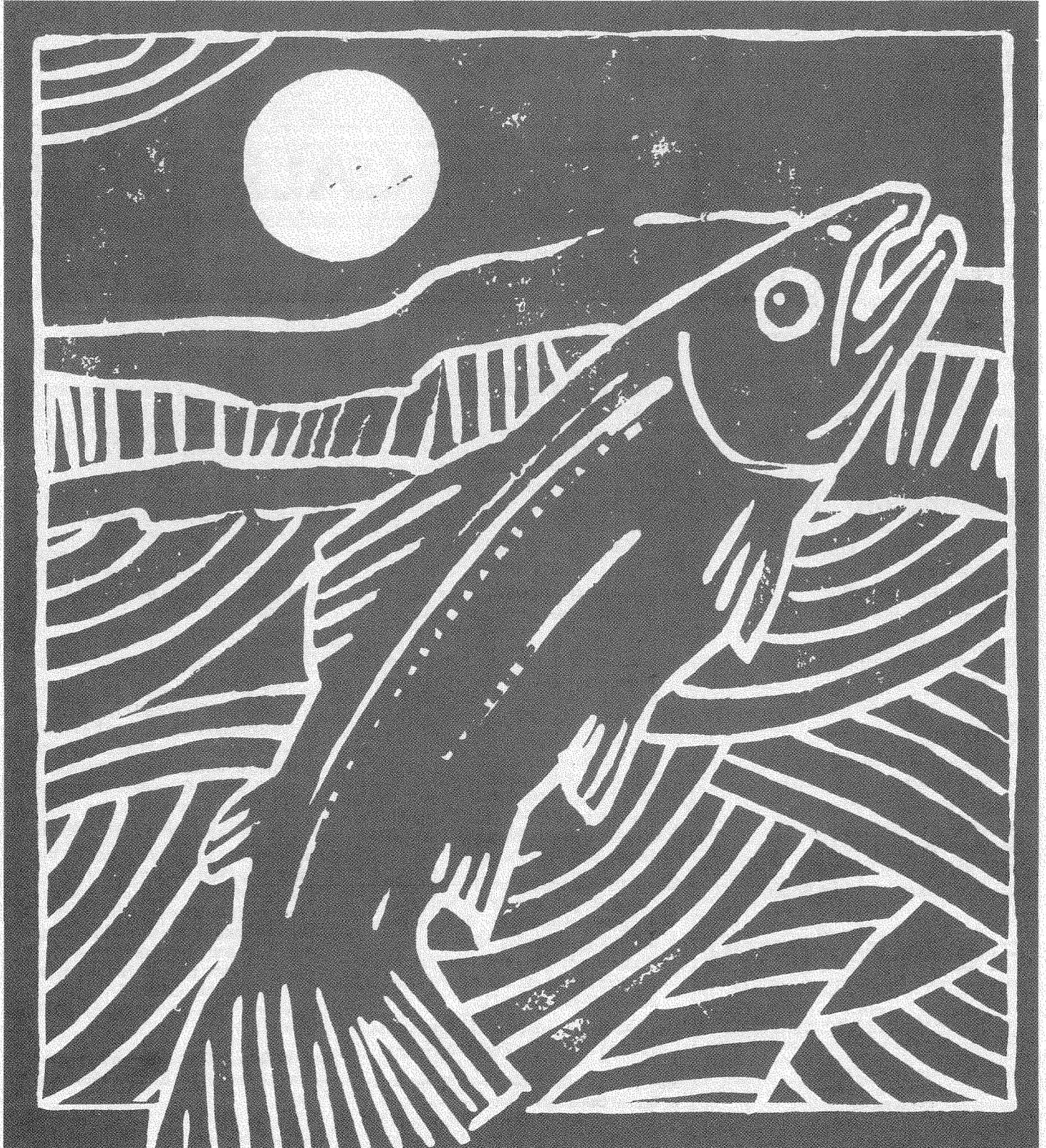


N O R T H W E S T
ENERGY NEWS

Volume 4, No. 2

Northwest Power Planning Council

March/April 1985



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NORTHWEST ENERGY NEWS

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The Northwest Power Planning Council is required to develop a
program to restore the Columbia fisheries and a regional electric
energy plan, to be carried out by the Bonneville Power Adminis-
tration, emphasizing cost-effective conservation and renewable
resources.

Executive Editor: Dulcy Mahar

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Features Editor: Carlotta Collette

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EDITOR'S NOTES

The Council's "calendar" (below) is available to announce meetings, workshops, and conferences dealing with energy and fish and wildlife issues. Send information to Ruth Curtis, special departments editor, at the Council's central office (see address this page). Please include the name of the event, time, date, place, sponsors, and a number and/or address for more information.

Deadline is the tenth of each even numbered month as *Energy News* comes out in the odd numbered months. Because of limited room, priority will be given to events of regionwide interest.

Cover illustration by Yasu Osawa/
Upstream Productions

CALENDAR

March 13-14 — Northwest Power Planning Council meeting in Portland, Oregon.

April 3-4 — Northwest Power Planning Council meeting in Missoula, Montana.

April 17-21 — "Globescop: A National Assembly of International Significance" in Portland, Oregon. A grassroots project to examine critical global environmental problems and determine how Americans can most effectively contribute to finding timely solutions. Contact Diane Lowrie, Global Tomorrow Coalition/Globescop, P.O. Box 15264, Portland, Oregon 97225. (503) 232-3495.

April 24-25 — Northwest Power Planning Council meeting in Seattle, Washington.

May 1-3 — Symposium on "Small Hydropower and Fisheries" in Denver, Colorado. Sponsored by the Western Division and Bio-engineering Section of the American Fisheries Society. Contact Conferences and Institutes, College of Engineering and Architecture, Washington State University, Pullman, Washington 99164-2992. Phone: (509) 335-7225 (Nancy Mack) or (503) 335-1404 (John F. Orsborn).

May 9-10 — Seminar on "The Air-Tight Dry Wall Approach for the Northwest" in Seattle, Washington. Sponsored by the Energy Business Association of Washington, 300A Maritime Building, 911 Western Ave., Seattle, Washington 98104. (206) 622-7171.

May 15-16 — Northwest Power Planning Council meeting in Portland, Oregon.

May 19-22 — Conference on "Conservation in Buildings: Northwest Perspective" in Butte, Montana. Sponsored by the National Center for Appropriate

Technology (NCAT); Montana Department of Natural Resources and Conservation, Energy Division; Bonneville Power Administration; Northwest Power Planning Council; Battelle Pacific Northwest Laboratories; Washington State Energy Office; and Oregon Department of Energy. For information contact NCAT, attention: Conference, P.O. Box 3838, Butte, Montana 59702. (406) 494-4572.

June 3-6 — "Renewable Energy Technologies Symposium and International Exposition." Anaheim Convention Center and Marriott Hotel, Anaheim, California. Contact Linda Ladas, TMAS, 680 Beach St., Suite 428, San Francisco, California 94109. (415) 474-3000.

June 5-6 — Northwest Power Planning Council meeting in Portland, Oregon.

June 18-20 — "Northwest Energy Expo '85" at the Sea Tac Red Lion in Seattle, Washington. Sponsored by Puget Sound Power and Light, in cooperation with the Northwest Power Planning Council, Seattle City Light, Snohomish County PUD, Tacoma Lighting Division, and IES Puget Sound Section.

June 22-23 — 1985 short course on the Columbia, "The Columbia Gorge: A Unique American Treasure." Sponsored by the Washington State and Oregon State University Cooperative Extension and Sea Grant Programs. For information contact: Short Course on the Columbia, 1919 NE 78th St., Vancouver, Washington 98665. (206) 696-6018.

June 26-27 — Northwest Power Planning Council meeting in Seattle, Washington.

Compiled by Ruth Curtis

Northwest governors tell federal agencies they want strong Council

All four Northwest governors joined forces to send a strong letter to the heads of both the U.S. Department of Energy and the Bonneville Power Administration. The letter was a result of discussions by both agencies with the U.S. Department of Justice over the constitutionality of the Northwest Power Planning Council.

Governors Vic Atiyeh of Oregon, John Evans of Idaho, Booth Gardner of Washington, and Ted Schwinden of Montana expressed concern that the federal government could be breaking its half of an agreement with the Northwest states which resulted in the Northwest Power Act of 1980.

Earlier this year, then-Secretary of Energy Donald Hodel urged the Department of Justice to intervene in a suit against the Council brought by the Seattle Master Builders over the Council's model conservation standards. His concern centered on the Council's relationship with Bonneville. He suggested that if the Council were found to be more than "merely advisory" in regard to Bonneville, it should be declared unconstitutional and replaced by a federal panel.

Bonneville took the position that the present Council should be preserved and that the Justice Department could

avoid the constitutionality issue by asking the court to sever those provisions from the Act related to the Council which constrain Bonneville.

The governors saw little difference in the two positions, noting "the effects of either action would be to remove any constraints which the Northwest states can exercise over Bonneville actions."

In the letter, the governors objected to what they called attempts "to change unilaterally the agreement made with the states" which brought about the Act. "There would have been no Northwest Power Act had it not been for the strong role granted our states through the Council.

"Without a strong Council, our states have no effective way to constrain the acquisition of expensive regional resources which could push electrical rates up even higher or which could harm our environment. Without a strong Council, the Northwest citizens who pay Bonneville's bills have no real part in planning their own energy future," they said.

In an intervening brief, the U.S. Department of Justice refused to take the positions urged by either the Department of Energy or Bonneville, positions which would have

broadened the suit beyond the issues raised by the Seattle Master Builders.

The homebuilders suit focused primarily on the affordability of the standards, and the constitutionality challenge had been based on the U.S. Constitution's Appointments Clause. This clause requires officers of the United States to be appointed by the Executive Branch. The Council, which is an interstate compact agency whose members are appointed by Northwest governors, takes the position its members are not "officers of the United States." Rather, the Council is an interstate compact agency operating under the Compact Clause of the Constitution.

Justice concluded that the homebuilders' challenge to the constitutionality of the Council should be dismissed on the grounds that "the Council complies with the Appointments Clause with respect to the statutory provisions that are involved in this case."

Justice stated that the standards "are recommendations only; they impose no legal obligations on anyone."

The Council believes that the standards do impose some legal obligations; however, it had never contended it could impose either standards or a surcharge, nor was the matter even a subject for contention in the lawsuit. (Some newspaper reports incorrectly identified the surcharge as the

issue in the Justice Department brief, rather than the constitutional question.)

In its brief, Justice wrote, "... the power to make recommendations to a federal agency does not constitute the exercise of significant authority for purposes of the Appointments Clause. Otherwise, federal agencies could never receive recommendations from persons outside the Executive Branch."

The Justice Department also urged the court not to address the statutory relationship between Bonneville and the Council, and stated, "We express no view at this time as to how that issue should be resolved if the court should reach it."

The governors said they were "pleased" with the Justice Department's position. However, they remained concerned over the actions taken by the Department of Energy and Bonneville, calling them "contrary to the intent of the Northwest Power Act." That intent, they said, was a "careful balance of regional and federal authority in the Northwest Power Act. This balance of authority is the essence of the Constitutional principle of federalism and is clearly consistent with the Compact Clause of the U.S. Constitution."—DM

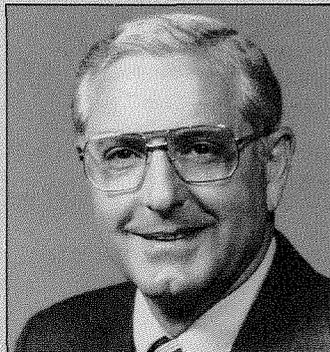
John Evans, Idaho



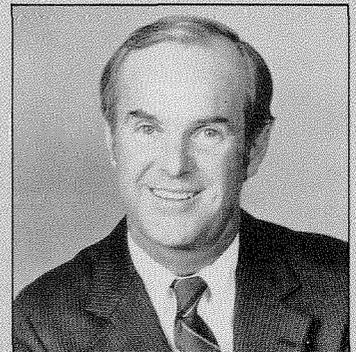
Ted Schwinden, Montana



Vic Atiyeh, Oregon



Booth Gardner, Washington



IN THE NEWS

continued

Preliminary demand forecasts released for public comment

Cautioning that "these results should be considered only a leading indicator of what further analysis may confirm," the Northwest Power Planning Council released four preliminary electrical energy demand forecasts for public review and comment. The forecasts cover the 20-year period 1985 to 2005.

After further analysis and review of public comment, the Council will develop draft forecasts for its new power plan. Estimates of future demand are critical to determining what additional new resources will be needed to meet the region's future electrical power needs.

The Council's four forecasts designate a range of possible future demands encompassing high, medium high, medium low, and low growth. The range system is designed to "define the extent of uncertainty that planning must address," according to Terry Morlan, the Council's manager of demand forecasting.

The new preliminary high forecast is approximately 3,200

average megawatts lower in the year 2002, a drop of 12 percent from the 1983 forecast. Over the 20-year forecast, the preliminary results are approximately 800 megawatts lower than in the 1983 power plan. Much of the reduction is due to the fact that the region is closer to the year 2002, and electrical loads between the years 1983 and 1985 did not show much growth. Of the 3,200 megawatt load reduction, 2,400 megawatts are accounted for through updating the base. For example, if the year-to-year load growth from the 1983 power plan were applied to a 1985 base level, the resulting forecast for the year 2002 would be 2,400 megawatts lower.

The Council's Power Planning Director Jim Litchfield terms the movement in the high forecast horizontal rather than vertical. The high scenario growth rate hasn't changed significantly he explains; but it has taken longer to begin. "The forecast that the region thought would

begin in 1983, has been updated to begin in 1985. The region has experienced relatively low growth during the last two years. We're still forecasting approximately the same growth rate, but it starts later. The load projections," he said, "have moved more to the right on the graph, not down. What we have found is that they didn't move closer with time, rather they moved further into the future."

A major reason for the delayed growth is that several factors considered cyclical in the 1983 plan, such as events in the forest products and manufacturing sectors, have now proven to be longer-term. Recovery from the recession which the region was in in 1983 has been slower than an-

anticipated. Another factor has been the regional economy's shift away from resource-based, heavy manufacturing industry to non-manufacturing and "high tech" industries which are not considered heavy users of electricity.

Despite the changes, the preliminary forecast, like its predecessor, is designed to ensure adequate power supplies for the region's economic growth. The preliminary high forecast still reflects the effects of record high economic growth and less competitive prices for alternative fuels. For example, the high forecast assumes total employment in the Northwest could grow 130 percent faster than the rest of the nation. This would mean that the region's economy

What's different about the forecast?

"The single most important difference in this forecast is that we've explicitly treated the risk associated with the possibility that a portion of the DSIs [direct service industries such as aluminum plants] leave the region. In our high forecast, we've assumed 100 percent of the DSIs will stay over the full 20 years. We've assumed 85 percent for the medium high, 70 percent for the medium low, and 50 percent for the low. These industries represent a very large uncertainty facing the region in its resource planning.

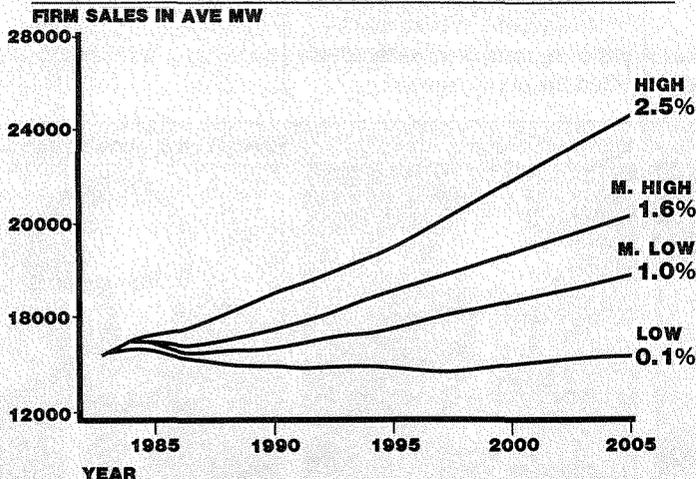
"The situation with the aluminum companies can't be forecast in traditional terms. You don't look at population demographics to figure out what's going to happen. The Council is not making predictions about what is going to happen to the aluminum companies. What we are doing is assessing what resources best respond to a wide variety of possibilities.

"This is a risk management issue, and we're not going to solve it through a forecast. We have to deal with the problem by properly managing resources. The strategy has to deal with both the cost and mix of resources. The Council recognizes there is uncertainty, but we aren't going to leave it in vague terms. Instead, we are trying to define that uncertainty and prepare proper responses."

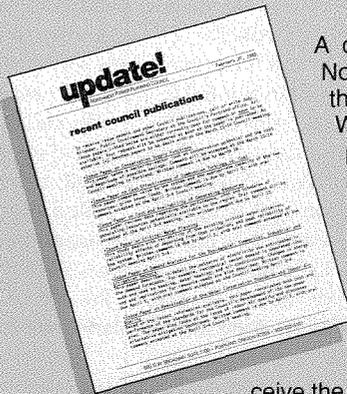
—Chuck Collins
Council Chairman

ELECTRICITY DEMAND FORECASTS

PRELIMINARY DRAFT FORECASTS



update!



A convenient way to keep up to date on the Northwest Power Planning Council's activities is through **update!**, the Council's new newsletter. While the bimonthly *Northwest Energy News* provides background on major regional issues, it can not always provide timely information. **update!**, which is mailed every three weeks with the Council's agenda, provides a quick listing of all Council publications available or soon to be published (particularly issue papers), meetings and hearings, and information for public comment.

It is automatically sent to all people who receive the agenda. If you are not on that mailing list and would like to receive **update!**, please check the appropriate box on the back cover and send it to the address listed or call the Council's central office (see phone numbers on inside front cover).—RC

would grow faster over 20 years than the highest relative growth rate for any previous five-year period.

"We have forecast a high range which accommodates a very aggressive and strong regional economy, although it is less likely than a more mid-range economic growth. As a balance, we have a low range forecast that is as unlikely as the high. Together, these ranges allow us to adapt to either outcome," Litchfield said.

The preliminary forecast, without completion of any new resources, has the region's electrical energy surplus ending in 1990 in the high forecast, in 1994 in the medium high, in 1998 in the medium low, and continuing through the end of the 20-year period in the low forecast.

The annual growth rate for the four ranges is projected to be 2.5 percent in the high, 1.6 percent in the medium high, 1.0 in the medium low, and 0.1 in the low. This reflects current changes in economic and demographic assumptions and fuel price assumptions. These preliminary assumptions were adopted in draft form in January by the Council after a public comment period.—DM

Two new task forces look at conservation

Two new conservation task forces, made up of members from throughout the Northwest, began work in February to help shape the Northwest Power Planning Council's upcoming power plan.

Mark Cherniack, the Council staff member who chairs the Conservation Programs Task Force, said that group will assess results of residential, commercial and irrigation measures called for in the 1983 Action Plan. They will then make recommendations for the new Action Plan, "including what ought to be done, who can do it, and how to pay for it," he said.

According to Tom Eckman of the Council staff, the Residential Conservation Standards Task Force he chairs "will review the quality and significance of data obtained from several demonstration projects. The conclusions they draw about costs, cost effectiveness and performance will be used to evaluate and revise the residential model conservation standards for the new Power Plan."

All task force meetings are open to the public. Copies of

task force agendas and minutes are available on request.

—SE

Two-nation salmon pact ratified by U.S. Senate

Northwest salmon fisheries representatives are calling it "the best news in decades for the salmon resource," and Tim Wapato, executive director of Columbia River Inter-Tribal Fish Commission, feels that it signifies "the dawning of a new day in fishery management." What they are excited

about is the March 7 ratification by the U.S. Senate of the U.S. - Canada Salmon Interception Treaty.

The new Treaty sets limits on the ocean harvest of Pacific salmon stocks. It took nearly 20 years for the four states, two nations and 23 Indian tribes who share an interest in the salmon to come up with a treaty they could all live with.

After only two weeks of debate, the Senate unanimously passed both the Treaty and the implementing legislation needed for fisheries enhancement and harvest regulation contained in the Treaty. Bill Wilkerson, director of Washington's Department of Fisheries, commented, "It is a credit to all involved . . . that it could pass through the congressional process in only two weeks."

Anticipating equally swift ratification from the Canadians, Wilkerson added, "Now all of us can concentrate on new and creative ways to rebuild and enhance our stocks so that all fishermen have a future."—CC

Power lines will grace postage stamps this year. The U.S. Post Office plans to issue a stamp commemorating the 50th anniversary of the Rural Electrification Administration.



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IN THE NEWS

continued

Super Good Cents signs 33 utilities to operate program

Thirty-three utilities have signed contracts with the Bonneville Power Administration to carry out the new Super Good Cents program in the areas they serve.

Under this agreement, utilities will inspect builders' plans to estimate how much electricity the home will save if it's built to model conservation standards developed by the Northwest Power Planning Council. A utility representative will inspect the home during construction to ensure that it will meet the standards. If it does, the utility will certify the completed home as a Super Good Cents home.

Super Good Cents program manager Pat Durocher said Bonneville is pleased that it has already met its goal to enter into contracts with at least 25 utilities in the region. "The response is really positive. Utilities are excited about having a program that's basically their program," she said.

Durocher said Bonneville

hopes the program will stimulate construction and certification of 5,000 Super Good Cents homes in 1985, and hopes that two-thirds of all homes built over the three-year life of the program will be Super Good Cents.

Utility representatives from Washington, Oregon, Idaho and Montana have been going back to class to familiarize themselves with efficient construction techniques and with the computer software used to review builder plans. They're also learning how to promote the Super Good Cents program to the shelter industry and consumers. — Susan Skog

Council cosponsors regional conference

The Pacific Northwest will be the site of a major conference on energy conservation for buildings. The National Center for Appropriate Technology is conducting the conference, "Conservation in Buildings: Northwest Perspective," May 19-22 in Butte, Montana.

The conference, which is

cosponsored by the Northwest Power Planning Council among others, will focus on new information in the field. Over 50 experts from the Northwest and Canada will speak on performance and cost, ventilation and airtightness, prediction and design models, domestic hot water systems, as well as other areas of technical information aimed at a professional audience. It will also serve as a forum for information exchange and review.

For information, contact the National Center for Appropriate Technology, PO Box 3838, Butte, Montana 59702. (406-494-4572). —RC

Three new localities adopt model standards

At diagonal ends of Washington, and in different climate zones, one county and two cities joined the ranks of early adopters of the Northwest Power Planning Council's model conservation standards for energy efficient buildings.

Grays Harbor in western

Washington became the first county to adopt codes which incorporate the standards. A city in that county, Elma, also adopted a complying code. (Elma sponsors an annual Slug Festival but certainly cannot be called sluggish about energy conservation.) Up in ski country, near the Canadian border, the city of Republic also adopted the standards.

Previous adopters include the Washington cities of Tacoma, Stanwood, and McCleary. —SE

Amendments adopted: goals study, Zone 2

Two amendments, one to its power plan and one to its fish and wildlife program, have been adopted by the Northwest Power Planning Council. Both were considered non-substantive.

The Council adopted an amendment to Section 201 and 1504 (Action Item 36) of its Columbia River Basin Fish and Wildlife Program. This transfers funding of the goals study to the Council and modifies some procedures. It does not affect the substance of the study which is designed to assess salmon and steelhead losses caused by hydroelectric development and to set goals for restoration of these fish.

The Council also changed the model conservation performance standard for residential buildings in climate zone 2. The action raises the annual energy budget from 2.6 kilowatt hours per square foot for a single-family home to 3.2. This change reflects a technical correction on the cost of wall insulation, one component of the standards. The Council also corrected a typographical error in the 1983 plan which showed the Zone 3 budget as 3.1. It was corrected to 3.2.

—DM

Local government officials addressed the Council on Bonneville's code reimbursement policy for the model conservation standards. From left are Dale Horton, Montana; Lynn Carmichael, Washington; Tom Townsend, Idaho; and Larry Tuttle, Oregon.



Since you ask . . .

wish list for the new power plan

When the Northwest Power Planning

Council adopted the region's first blueprint for a low-cost energy future in 1983, the Council was determined that the plan wouldn't become another document gathering dust on the shelf. Then-Chairman Dan Evans asserted that the first Northwest Conservation and Electric Power Plan would "guide the Northwest to a better electric energy future." Now, almost two years later, the changing needs of the region are being weighed as the Council gears up to adopt a new power plan. *Northwest Energy News* asked a number of people who worked on the first plan to share their hopes and expectations for the upcoming plan.

by Susan Skog

"We've got all kinds of resource uncertainty, and I hope the Council comes to grips with it."

WALT POLLOCK

*Bonneville Power Administration
assistant power manager for resources,
planning and acquisition*

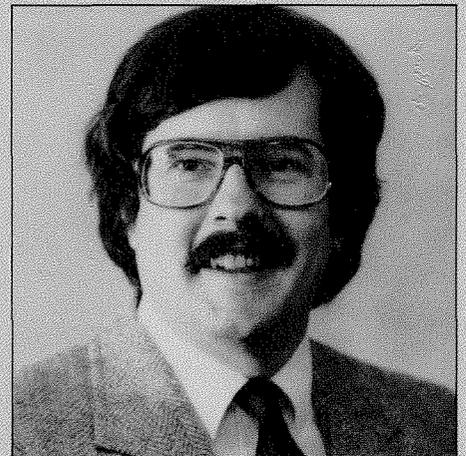
Pollock believes the first regional power plan was valuable because it combined sound analysis with an ordered, logical approach to decision making. It also reflected creative thinking, he adds. "I would hope that these three would be the cornerstones of the next plan," he says.

The assumptions which support the energy resources targeted by the Council to meet future loads are critical, according to Pollock. "We've got all kinds of resource uncertainty, and I hope the Council comes to grips with it." Uncertainty, he stresses, still plagues sources of power such as small hydro and conservation because more information is needed on their cost,

how long it takes to develop them, and how much power they can be depended upon to produce.

He also hopes the Council can act as a catalyst to "bind the region together, rather than fracture it." When the Northwest Power Act was passed, according to Pollock, the prevailing thought was that lawsuits would be a thing of the past, but now there's more litigation than in 1980.

He feels the Council is off to a good start in bridging the gap between the region's disparate interests with its recent meeting with public utility commissioners to discuss how the future will unfold.

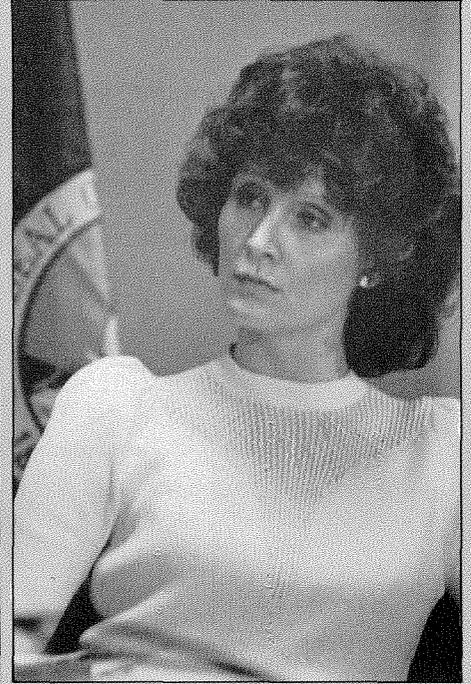
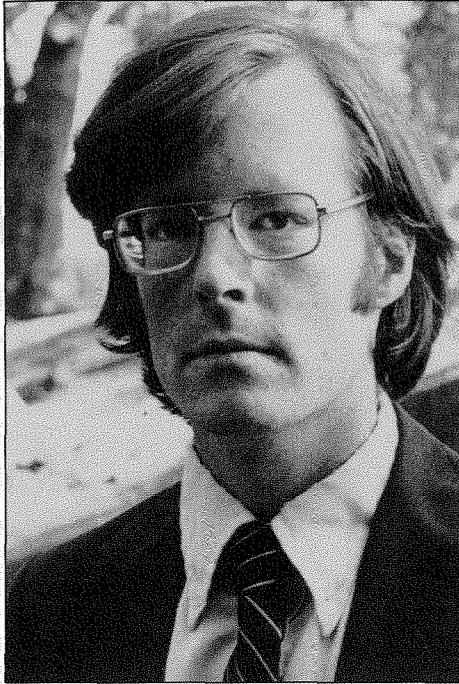


RALPH CAVANAGH

*Natural Resources Defense Council
senior staff attorney*

Cavanagh says the possible loss of WNP plants 1 and 3 adds greater urgency to the Council's task to identify all the cost effective conservation available in the region. He urges the Council to study the Coalition petition because it details a plan which will allow the region to survive the loss of the two nuclear plants and still be in a good position to avoid construction of more costly resources.

In addition to exploring new conservation technologies, Cavanagh believes the Council should continue to examine the possibility of Bonneville increasing the portion of the direct service industries' load which is interruptible. "If we can make parts of it (DSI load) interruptible instead of adding a new coal plant, it makes everyone better off."



DIANA SNOWDEN

*Pacific Northwest Utilities Conference
Committee (PNUCC) executive director*

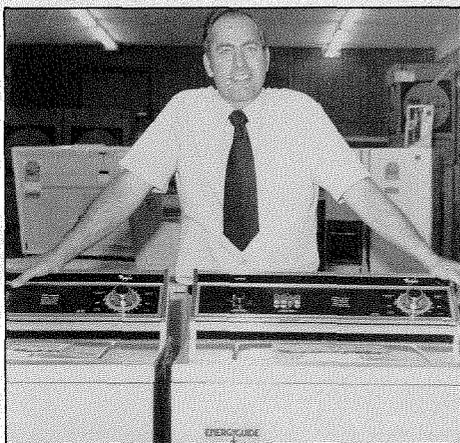
Snowden feels the biggest issue facing the Council is management of the region's surplus power. She cautions the Council to re-think what she sees as a hands-off approach to the surplus sales problem. It's "very shortsighted" for the Council as the region's planning entity to ignore these sales because of antitrust implications, Snowden says.

She feels the Council is in an ideal position to help analyze how the surplus should be sold out of region and to create an environment for such a sale. The Council is ideally positioned, she believes, to work with the region's public utility commissions and organizations on the surplus problem.

On the other hand, there's another surplus sales issue PNUCC would just as soon the Council backed away from — the question of limiting access to the Pacific Northwest-Southwest Intertie. Any policy statement or regulations that restrict the sale, which would be based on existing resources, is "inherently premature," Snowden says.

Finally, PNUCC hopes the Council will scrutinize carefully the resources for its new plan to determine whether combustion turbines, conservation and other resources can provide peak energy as projected in the last plan. "The closer we get to the end of the surplus, particularly with the uncertainties over WNP 1 and 3, the more it's necessary that those numbers be realistic and accurate."

*"If we can't make what we've
got in the present plan work, then
no one will care how much we can expand
the portfolio."*



EDWARD SNOECK

City council member from Cut Bank, Montana

Snoeck wants the Council to place a moratorium on the model conservation standards until the Residential Standards Demonstration Program homes have been metered for at least two heating seasons. Insulating homes is a great idea, he feels, but he advocates making it voluntary. "Don't force people to do something and then expect them to pay for it," Snoeck says.

ELLEN KNIGHT

*Montana League of Women Voters
energy chairperson*

Knight urges the Council to educate the public about the value of conservation in extending the surplus. She also asks the Council to remain flexible on the model standards and to take a "realistic approach" in their application. Finally, Knight stresses the need for public participation in the new plan, especially for those who have found it difficult to participate actively in the implementation of the 1983 plan.



MARC SULLIVAN

Executive director of the Northwest Conservation Act Coalition

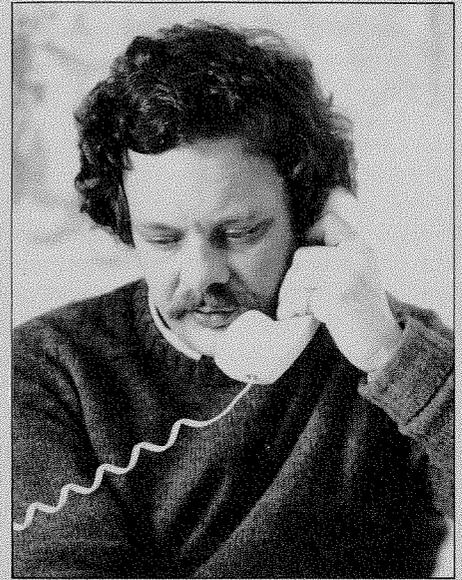
Sullivan believes the top priority should be to make conservation programs in the original plan work instead of expanding the resource portfolio. "If we can't make what we've got in the present plan work, then no one will care how much we can expand the portfolio."

Last November, the Coalition issued a petition outlining how the original plan could be perfected. Among other things, the petition called for the Council to remove Washington Public Power Supply System nuclear plants (WNP) 1 and 3 from its list of "assumed resources." The original plan treats the plants "as if they were as reliable as Grand Coulee," Sullivan says. "That's not the real world."

The Council "could do themselves and the region a good turn," he asserts, by getting an independent estimate of the

costs to complete the two plants and the decommissioning, operation, maintenance and other costs.

With proper incentives, Sullivan says, conservation can be relied upon to meet the region's future energy needs. As one example, the Coalition wants an incentive program to encourage more efficient lighting in the commercial sector. It also wants Bonneville to pay the full cost of weatherization in existing homes as opposed to the partial financing called for in the current plan. The petition also urges the Council to pursue appliance efficiency standards. Sullivan feels incentives should also be woven into the model conservation standards to ensure their survival. "It's no secret they're in trouble. The key to breaking the political logjam is to redistribute the costs."

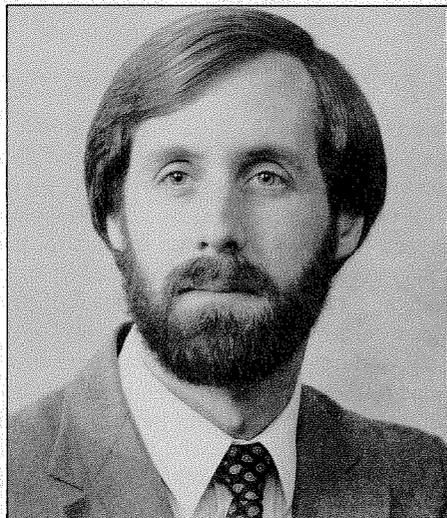


STEVE HICKOK

Bonneville assistant administrator for conservation

Hickok hopes the upcoming plan will reflect the capabilities and responsibilities of others — from private utilities to local governments — to develop conservation. "In the first plan, the Council looked at BPA as a bank that anyone could come to for any purpose," he feels.

He also urges the Council to "bite the bullet" and look at adopting appliance efficiency standards. California's recent efforts to implement such standards, Hickok believes, will aid the Northwest's ability to include such standards in its model conservation standards.



NANCY MCKAY

Association of Washington Cities and Washington State Association of Counties energy project coordinator

McKay says that topping her "wish list" for the upcoming plan is the desire that the Council build more consensus among utilities and local governments on how conservation programs and the model standards should be treated. McKay's second desire is for the Council "to put the meat on the bones" of conservation programs already contained in the original plan. The Council needs to be more specific about stating "what needs to be done, by whom and by when," she says. "I'm looking for more concrete direction for the region in conservation programs."

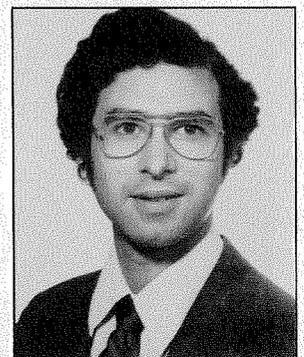
Local government officials hope the next plan will also give them clear direction on how alternate plans could achieve savings comparable to the model conservation standards, she adds. McKay urges more consultations with the Council, local governments and utilities.

DAVID GOLDSTEIN

Senior staff scientist for the Natural Resources Defense Council

Goldstein seconds the Coalition's idea about incentives to promote more conservation, particularly for more efficient appliances, in the commercial and industrial sectors, in weatherization of existing homes, and in the use of model conservation standards for new homes. The Council needs to ask itself, he says, how serious it is about conservation. "We have a number of promising conservation options not included in the last plan that could be included in the next plan if we want to get serious about the principle of minimizing costs."

Goldstein feels the Council is headed in the right direction, but that the current plan is "unreasonably weighted toward residential conservation when in reality, the conservation potential is distributed more evenly over all the sectors."



CHRIS CARLSON

Kaiser Aluminum Chemical Corporation's regional vice president for public affairs

Carlson, a former Council member, says the aluminum company will zero in on conservation as the issue it wants the Council to pursue aggressively. He hopes the Council will reaffirm its commitment to the acquisition of cost-effective conservation as the top priority for Bonneville. Specifically, he adds, "We think and hope the plan will direct BPA to proceed diligently with acquiring industrial conservation from the direct service industries."

In December, Kaiser unveiled a proposal which looked at the installation of more energy efficient pots at its Mead,

Washington smelter coupled with gradually increasing purchases of interruptible power from Bonneville. In exchange for its industrial conservation efforts, Kaiser hopes it would receive billing credits from Bonneville.

Kaiser is confident its industrial conservation steps could produce 170 megawatts of "firm, predictable, quantifiable and verifiable power," Carlson says. "This is the kind of proposal that ought to be sanctioned by the Council. It's clearly a win-win situation for the region and industry."



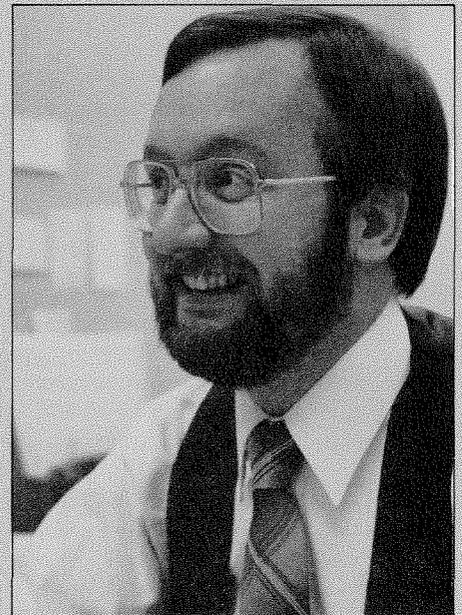
"This is the kind of proposal that ought to be sanctioned by the Council. It's clearly a win-win situation for the region and industry."

RANDY BARCUS

Washington Water Power Company senior economist

Barcus feels an additional action plan which covers a longer period than the current two-year action plan is a better approach to securing a low cost energy future. "Otherwise, we're lost in a maze of short-run decisions and we'll never make any long-run decisions."

His company will monitor development of the new plan because the utility is managing many energy resources targeted in the plan, he says. Barcus feels the utility can share its experiences and concerns with the Council. "Washington Water Power is intertwined with the region" and sees its own planning process as a smaller version of the Council's plan.



MERRILL SCHULTZ

Director of the Intercompany Pool, a utility organization

Schultz says he will be operating from a clean slate during the upcoming plan development and won't advocate specific actions or the addition of certain energy resources. On the other hand, he wants the Council to deal with the region's energy needs in what he calls a more realistic light. Schultz cautions the Council not to bank on "things that may not come true." He stresses the conservation and generating resources in the plan must be attainable, particularly the options concept.

His organization will again monitor the Council's treatment of combustion tur-

bines, conservation and small hydro-power. Schultz continues to be concerned about the region's ability to rely on power from combustion turbines, to develop as much conservation as the Council originally forecast and to acquire small hydro-power given major concerns over fish and wildlife.

While he acknowledges there are hurdles ahead — such as developing the options concept — Schultz has faith in the planning staff to "come up with a mixed program for the future that is indeed cost effective."



TACOMA:

Confessions of An Early Adopter

"Most of the customers who buy these homes are happy customers."

by Jim Nybo

That was the assessment of Mayor Doug Sutherland of Tacoma, Washington. His city was the first entity in the region to adopt the Northwest Power Planning Council's model conservation standards, which set forth energy efficiency levels for new residential and commercial construction.

As the first adopter, Tacoma has found itself in the spotlight as other communities in the region watch the city's efforts closely. What has it been like to be the pioneer?

Mayor Sutherland answered that question in part with a status report at a Council meeting earlier this year in Seattle, Washington. The standards were adopted by the city in November 1983 and have been in force as building codes since last June. They have been a utility service standard in Tacoma City Light's service territory since October.

Mayor Sutherland pointed out that the four essential facets of Tacoma's success are training and education, technical assistance, builder incentives, and the Super Good Cents marketing program.

Although Tacoma's code offers a designer various ways to comply, most builders (68 percent) chose a straightforward prescriptive path which includes R-38 ceiling insulation, R-19 walls, R-30 under floor, an insulated door, triple-glazed windows, and an air-to-air heat exchanger.

Tacoma's enforcement process has relied heavily on working closely with builders, usually prior to permit application, to provide specific information and technical assistance. The plan review phase is an important opportunity to check design details, such as air-to-air heat exchanger specifications, to avoid installation problems. Tacoma has found that a builder's first home is difficult in terms of inspections and understanding the required materials, but as builders gain experience, the program appears more successful than problematical.

On-site inspections are also an impor-

tant aspect of Tacoma's enforcement. The first 20 homes completed required an average of about four inspections. Tacoma inspects for energy compliance at four stages of construction: footings, framing, insulation, and final.

Tacoma officials monitor all costs, and they estimate that thus far the enforcement costs per dwelling unit range around \$170. Mayor Sutherland said they expect enforcement costs to stabilize at a lower level as they gain more experience. Jacob Fey, Tacoma's energy conservation coordinator, who accompanied the Mayor, told the Council, "Enforcing the standards has added one additional inspection visit and has lengthened each of the traditional inspections because of what needs to be looked at."

As the first adopter, the city is expected to face more "bugs" in the system than those who follow. Some of the typical problems Tacoma has observed are installing windows that do not meet the specifications, improper installation of air-to-air heat exchangers, and lack of thorough caulking and sealing.

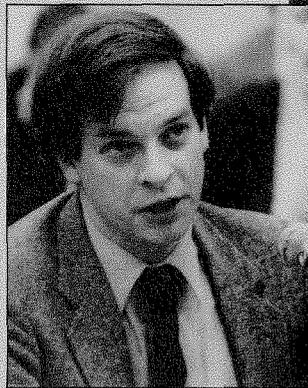
Approximately 500 persons have attended Tacoma's training programs on the standards. Fey felt the initial training

dwelt too much on state-of-the-art construction. "Future training," he said, "will emphasize minimum paths to compliance, and will focus on specific construction details of buildings built to the standards. The design flexibility in the standards allows the builder to build a home at the least cost and still meet the performance standard."

Mayor Sutherland also discussed builder attitudes. "As the real reason for the standards becomes apparent," he said, "the builders are becoming excited about it because what it basically does is require them to build a quality product. . . . Builders have found that if the quality of their product is good, the standards are not difficult to meet. And they have found that the additional cost of \$1.50 to \$2.10 per square foot to meet the standards is within reason."

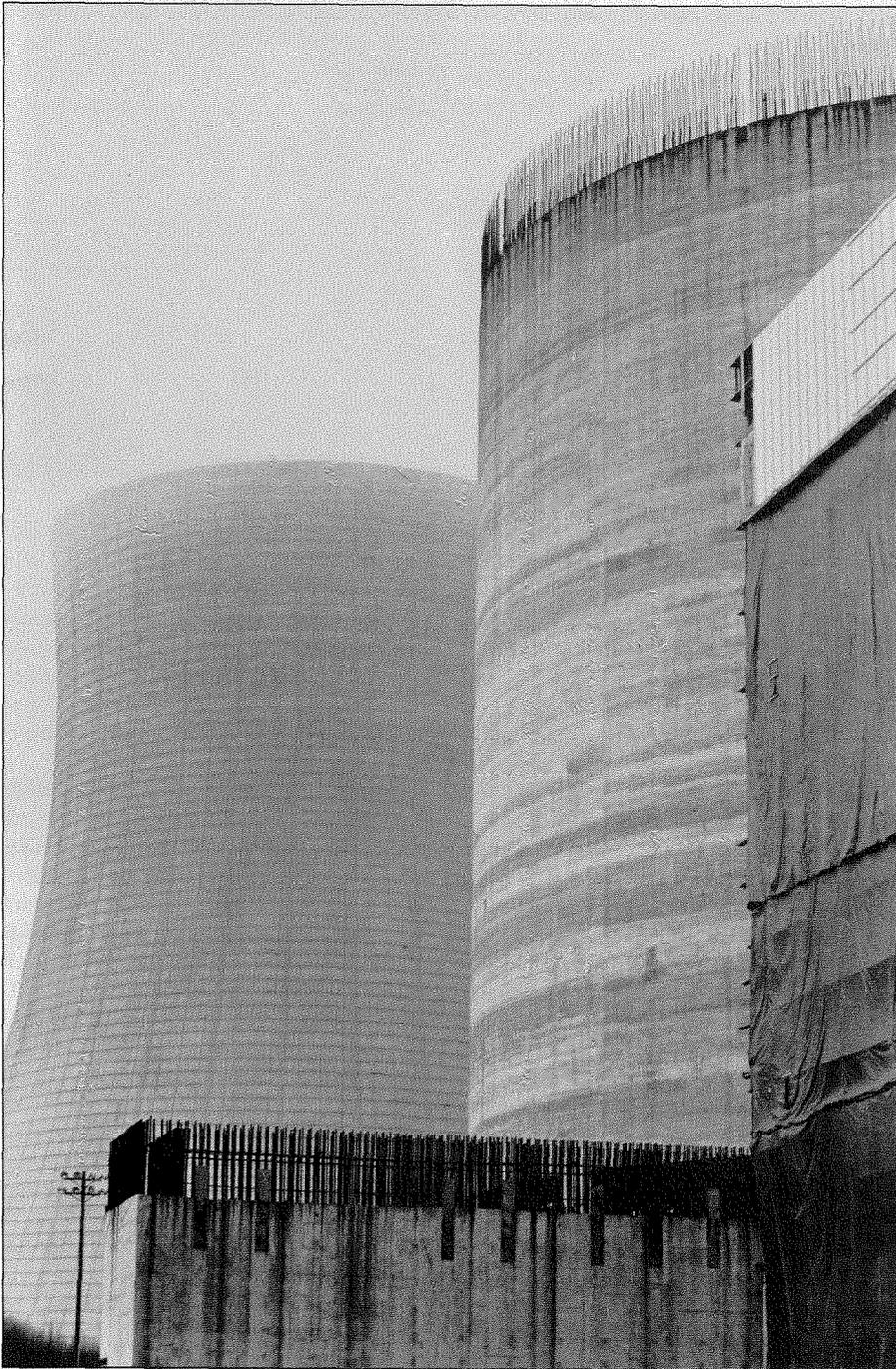
Oregon Council Member Roy Hemmingway expressed his appreciation for the city's pioneering spirit in being out front in a difficult experiment. "A lot of people," he said, "felt that this was too great a leap to take at one time, but the city of Tacoma has shown that it can be done and that it is practical." ■

Mayor Doug Sutherland, right, and Jacob Fey, below



Unfinished Business

Washington's
Mothballed
Nuclear
Plants 1 & 3



“P reservation is our main product these days,” says Art Kohler, program director at Washington Public Power Supply System Nuclear Project 3 (WNP-3). “Most of the creators and builders have moved on,” says Dewey Hulbert, WNP-3 engineering manager. “What we have now are the mother hens, the ones who enjoy providing vigilance and protection, who like to polish up and maintain systems.”

These people are protecting an investment of \$3.8 billion — the combined construction costs to date for WNP-1 and WNP-3, not including interest. Plant 1 is 63 percent complete and Plant 3 is 77 percent. Some viewpoints (not all) hold that finishing these plants could prove to be the region's cheapest investment in new sources of electricity — when new electricity is needed. Most people who feel that way estimate such a need might arrive in ten to 15 years. Completing the plants would take about five years and at least \$1.5 billion each. (But a number of factors could drive up the cost. See box, “Some Major Moths,” about Northwest Power Planning Council efforts to determine costs and problems associated with a long delay in construction.)

Meanwhile the plants sit. And wait. But more than 60 craftsmen and mechanics don't wait. They follow daily instructions from a computerized preventive maintenance program — 2,000 tasks each month. Dozens of quality control people evaluate this preservation program, inspect it and augment it. Some 200 engineers design, draw and document the complex pieces of these plants, in preparation for the day when construction may resume.

A 16-employee licensing staff works with regulatory bodies. Accountants close out procurement and construction contracts and keep up payroll and purchases. Information people talk to the media; security guards patrol the grounds. Other

Some major moths

staff provide materials storage and fire protection. Managers and administrators oversee all this. Clerical people support it.

In all, about 370 people work at each location to keep the plants ready — physically intact and with essential documents in order — if the call comes to finish building them.

During 1984 the two plants incurred costs of \$152 million — \$25 million for WNP-1 and \$127 million at WNP-3. More than a fourth of the money went to pay off and close out contracts. The 1985 total will drop to \$104 million — much of it to conclude contracts, according to Chuck Carlyle, assistant to the managing director of the Supply System.

Future budgets depend on final decisions about how long the delay will last, Carlyle explains. When all contracts are finally paid off, preservation-era annual budgets for each plant could range from \$12 million to \$36 million — depending on how much design and licensing work go on. Staffing levels would drop to 150 per project with a “minimum preservation” program involving maintenance only; they could rise to 400 per project for more extensive efforts.

A recent issue paper by Northwest Power Planning Council staff assesses efforts to preserve equipment and structures at Washington Public Power Supply System's Nuclear Plants 1 and 3. The paper also examines risks associated with construction delay to determine if the plants can be completed and operated when the region needs their output. The issue paper (“WNP-1 and WNP-3 Planning Assumptions”) finds some elements of mothballing work fine. Other areas hold uncertainty for the future of these plants, which represent a construction investment of \$3.8 billion.

The issue paper does not draw conclusions about cost effectiveness of the plants or compare them with other resources. It outlines information that the Council staff will use to make that analysis later this spring.

The most significant uncertainties concern the costs of meeting possible new regulatory requirements, questions about Plant 3 seismic design, deterioration of equipment and structures, and the availability and cost of financing. Other uncertainties include maintaining the plants' construction permits and their eligibility for operational licensing, preservation of equipment and structures, costs of completion, the possible impact of legal settlements, loss of engineering continuity, decommissioning costs, future availability of nuclear materials and equipment, and questions concerning plant capacity

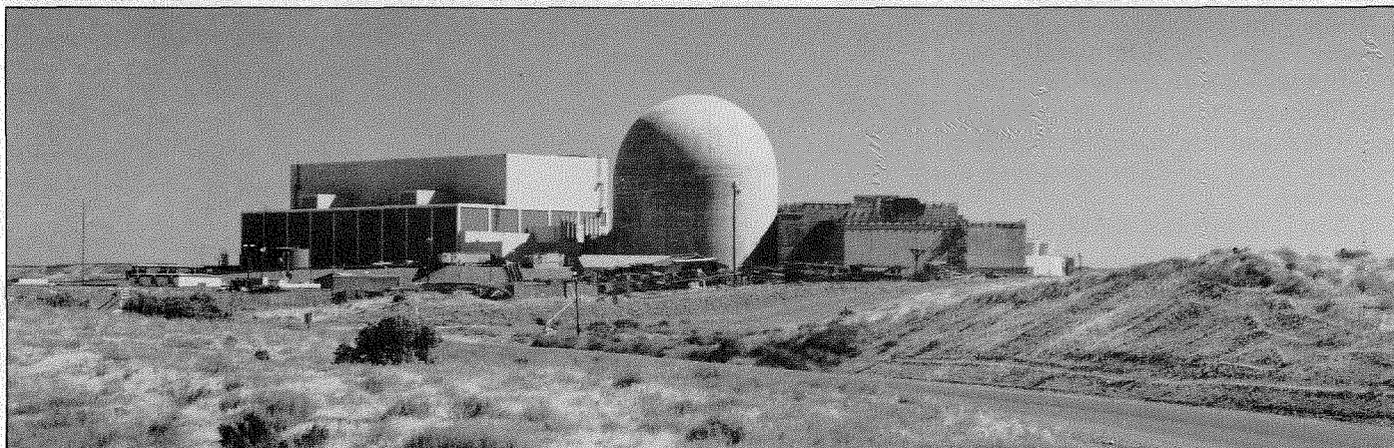
and expected operating life.

“Some of these issues are technical problems rather than real obstacles,” says Edward Sheets, executive director of the Council. “For example, decommissioning costs could range from \$100 million to \$300 million — but a sinking fund could be adjusted to take care of the higher figure without having a large impact on rates. Some events, like an inability to obtain the operating license, would kill the project. New regulations might add to the cost of the plant but not affect the license.”

Among the most uncertain areas, Sheets says, are the cost and rate impact of loan risk premiums, future modifications mandated by the Nuclear Regulatory Commission, and the potential expense of upgrading seismic design at Plant 3. “And, of course,” Sheets adds, “the value of the energy from these plants could drop during the delay if new technologies develop, or if conservation takes hold.”

At a recent Council meeting in Seattle, Chairman Chuck Collins said, “I suspect there are some who consider the Council schizophrenic or worse because it is able to promote conservation aggressively on one hand and yet keep potential options open on a nuclear plant. I don't see this conflict. Conservation and nuclear plants both deserve our best assessment of the facts available and our best judgment of the risk.” —SE

Left: Unfinished WNP-3 turbine building in foreground, with terminated WNP-5 cooling tower and reactor shell. Below: Exterior of WNP-1 at Hanford.



In the event that Plants 1 & 3 are ever called on to breathe steam and generate electricity, great care has to be taken to protect their dormant parts.

"If we're told to stay in the preservation mode five or ten years," Hulbert says, "we'll probably need to do some capital intensive work early on to seal the plants up more thoroughly." A separate \$12.8 million proposal for Plant 3 would complete the concrete dome on the reactor building, close up holes left for construction purposes, upgrade fire protection, dehumidify the premises and install heating and ventilation.

In the event that Plants 1 and 3 are ever called on to breathe steam and generate electricity, great care has to be taken to protect their dormant parts.

At Hanford, in dry eastern Washington, consulting engineers say that Plant 1's materials show almost no rust. The dust finds few gaps to invade; electrical panels are all taped shut, and there's not much equipment on site. The builders of Plant 1 had almost a year's warning to close the openings and cover the valuables. But at Plant 3 in Satsop, in the words of Art Kohler, "It was almost a situation of drop the wrench and walk away." The decision came down with surprising suddenness, leaving walls and roofs unfinished, metal and rubber and equipment exposed.

But the Supply System has worked hard to control the preservation problem at Plant 3 — particularly because of everlasting mists and rains that bathe the Grays Harbor County site with 70 inches of serious dampness each year. Joe Burn, director of engineering for the Supply System, points to a study that gives even the most splashed-upon structural metal at the plant 16 years before it suffers unacceptable damage. "Corrosion coupons" — metal tags used to indicate corrosion rates — show almost no degradation in protected areas.

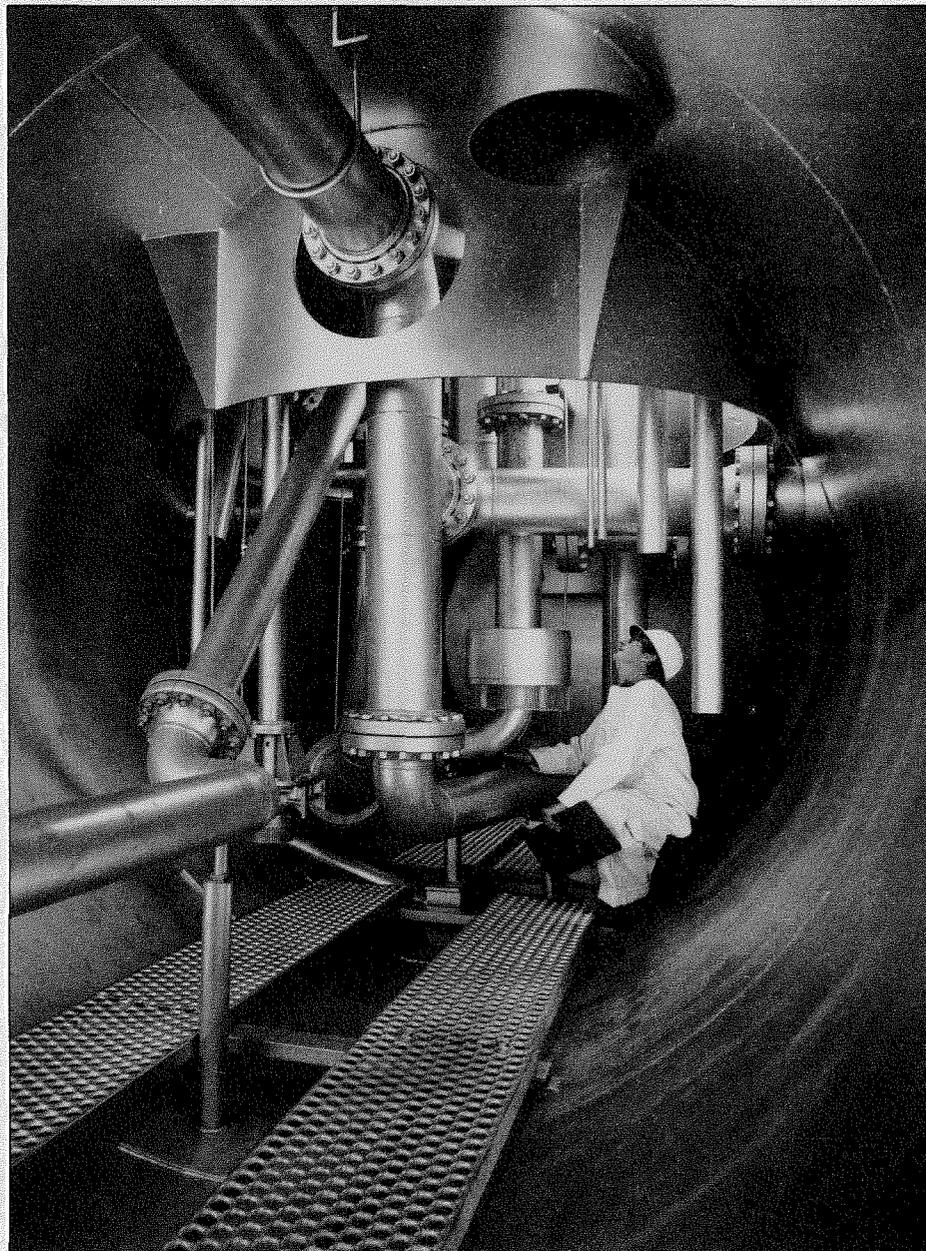
At Plant 3, a staff of 60 applies an extensive preservation program to keep the wetness from chewing away at \$400 million worth of equipment. Don Mazur, managing director of the Supply System, calls the maintenance program "a highly disciplined, rigorously developed effort." Plyboard and plastic sheeting plug gaps in

the outer walls. Pumps and motors and electronic parts reside under shrouds of plastic, sealed with duct tape. Thousands of light bulbs glow from beneath the plastic tents, acting as little heating and drying units. Critical elements are regularly turned and greased, misted with preser-

vatives or filled with inert gasses; they are calibrated and adjusted, inspected and tested, cleaned and repaired.

The same care is given to Plant 1, where the program was first developed — although fewer maintenance staff are required because there's less equipment.

Interior of a holding tank at WNP-1. Preservation efforts are designed to keep corrosion from affecting sensitive equipment in remote areas of the plant.



"Preservation of this kind is not a science, and it doesn't really have a history."

"What the Supply System is doing is well on the comfortable side of adequate," according to Jim Lewis of the Bonneville Power Administration. Lewis, assistant to the Administrator for Supply System programs, adds, "This is a subjective judgment, you understand. Preservation of this kind is not a science, and it doesn't really have a history." He believes, however, that "the process we're going through at Plants 1 and 3 will keep them clean and dry enough so that we shouldn't have any doubts about their condition for at least ten years."

Don Mazur stated at the Council's February meeting that "With the proper programs and diligence, there's no reason we can't maintain the physical structures and equipment of these plants indefinitely."

In order to preserve essential permits and licenses, the Supply System takes an active role in developing new Nuclear Regulatory Commission (NRC) policies concerning long-term preservation. "There's a void in the regulatory area," says Mazur. Not only does the NRC lack an explicit preservation policy — it hasn't established a procedure for approving anyone's plan. There are no hoops for a mothballed nuclear plant to jump through. NRC policy on maintaining licenses makes no special requirements for a long-term suspension of construction.

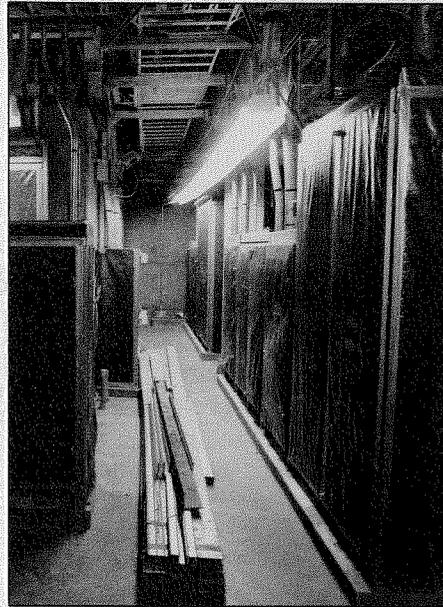
"We're participating with the NRC in the development of these policies," Mazur says. "We don't intend to hang back and wait for events to take their own course."

The Supply System and Bonneville, which owns most of the plants' output, are trying to negotiate an agreement with the NRC that would guarantee construction permits for up to ten years — and would maintain the ability to get operating licenses. The Supply System is seeking "readiness review" of existing structures and equipment to ensure that they conform to NRC licensing criteria.

Any agreement, however, would not exempt the projects from design and equipment changes mandated during preservation or renewed construction. At least 14 new NRC regulations are slated for

adoption in the near future. Only a few would require changes to Plants 1 or 3, and Supply System personnel say they have budgeted for the "known possible modifications" most likely to be required.

Electrical panels at WNP-1 wrapped in plastic.



There are, however, some crucial, and potentially costly, questions about the seismic design of Plant 3. The Juan de Fuca crustal plate meets the North American plate along the nearby coast; the adjacent surfaces of the two plates lie 18 miles below the plant. At the time Plant 3 was begun, the best evidence did not suggest much earthquake potential from these plates. Now some geologists maintain that plate interaction may create quakes exceeding those anticipated in the original plant design. Similar plate interaction elsewhere in the world — Japan, for example — produces frequent earthquakes, often of great magnitude. The Washington coast, however, has seen little earthquake activity historically. The Supply System is conducting a two-year, \$2 million geological study to find out what kinds of quakes to expect, how the ground will behave if one strikes, and how well the plant structures will hold up under those stresses. No one has yet determined the cost of reinforcing, redesigning or replacing parts

of the project, if necessary. Such work could have a significant impact on cost effectiveness.

Preservation is paired with preparation at Plants 1 and 3. In fact, the bulk of staffing at Plant 1 is devoted to completing the engineering, the detailed drawings and the documents that must precede construction. Bonneville strongly supports this engineering effort, according to Jim Lewis. "In any other industry, engineering is completed before construction begins," he says. "With nuclear plants, it seems, they design as they go. Only 50 to 60 percent of the engineering work has been done at Plant 1."

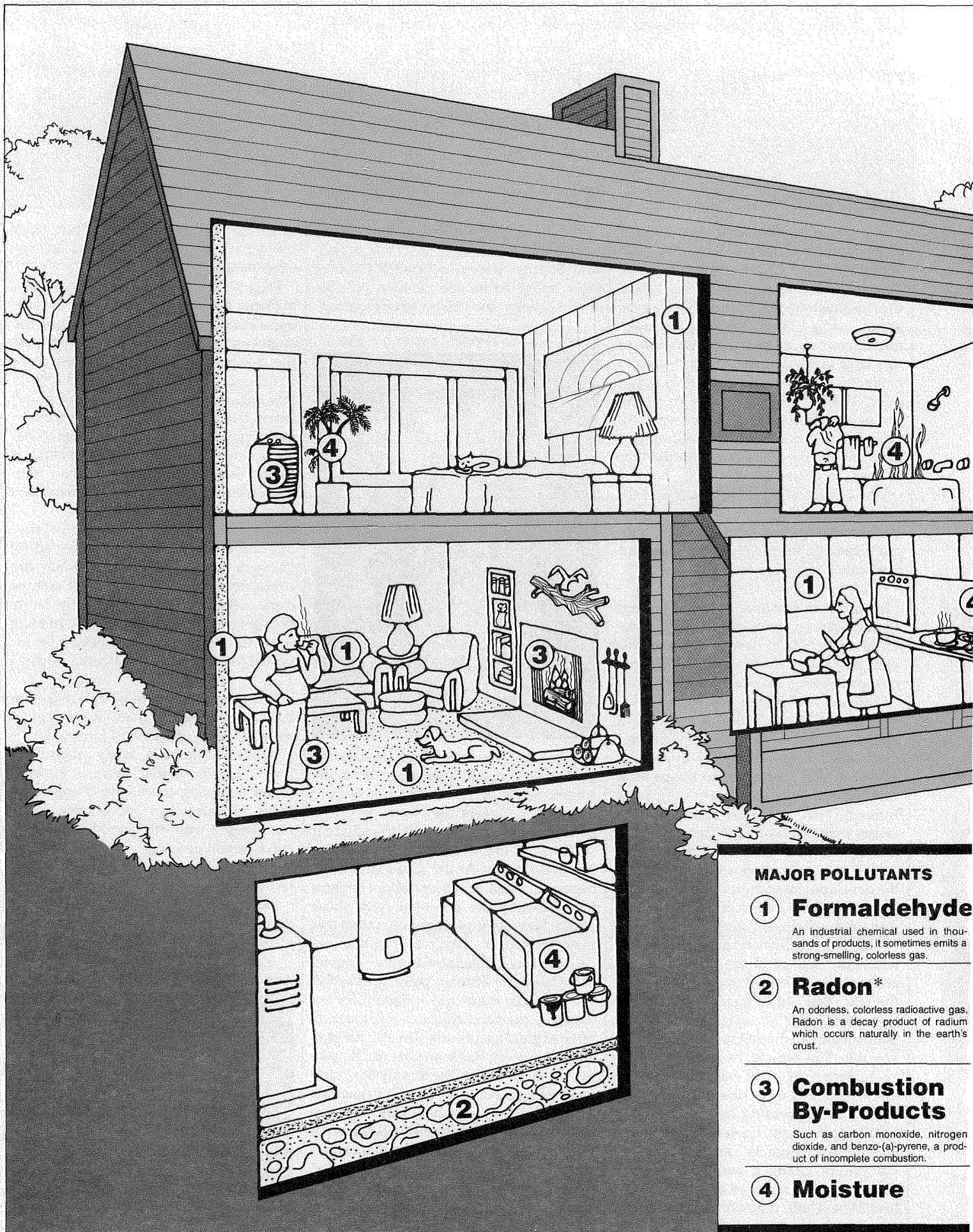
Lewis adds that "Bonneville believes the ratepayers can be best protected by having a capped cost contract, where the contractors give a fixed bid and assume some of the risk. But without the certainty they get from good, complete engineering work, the contractors can hardly be expected to leave out a contingency clause."

Don Mazur asserts that "This delay has been a good thing in many ways. It gives us more years of technical knowledge — about seismic matters, safety procedures, how these particular designs perform under operating conditions. Being down is an advantage, an opportunity. We're not pressed with the immediate need to make certain decisions — other plants can learn for us how to make changes, how to test those changes."

"What we want to do is make damn sure there's no big surprise when we get to start-up." ■

WNP-3 unfinished reactor building dome.





MAJOR POLLUTANTS

1 Formaldehyde

An industrial chemical used in thousands of products, it sometimes emits a strong-smelling, colorless gas.

2 Radon*

An odorless, colorless radioactive gas, Radon is a decay product of radium which occurs naturally in the earth's crust.

3 Combustion By-Products

Such as carbon monoxide, nitrogen dioxide, and benzo-(a)-pyrene, a product of incomplete combustion.

4 Moisture



TIGHT & ALL RIGHT

Indoor Air Quality in Energy-Efficient Homes

by Ruth Curtis

A major landmark in U.S. environmental history was the 1971 passage of the Clean Air Act. This Act focused national attention on the air people breathe; it helped regulate emissions from industries and cars; and it reduced smog in cities.

But it is becoming clear that air pollution is not just a problem of cars, smokestacks, and city skylines. It also affects the air in homes and offices. In fact, environmental experts are now saying pollutant concentrations can be higher indoors than outdoors. With Americans spending 80 to 90 percent of their lives within buildings, the composition of indoor air can be a serious problem.



SOURCES

Urea-formaldehyde foam insulation, particle board, plywood, furniture, carpets, upholstery, etc.

EFFECTS

Nose, throat, and eye irritation, possibly nasal cancer.

TO REDUCE EXPOSURE

Testing for formaldehyde gas is a fairly simple procedure. The source should be removed when possible and replaced with materials low in formaldehyde such as low-formaldehyde particle board. Seal with a latex coating and/or increase the ventilation.

Soil and rock beneath the home. It eventually disintegrates in the atmosphere, but if trapped in a building, its concentration can build to the point where it is a health hazard.

Lung cancer. (Radon is believed to cause 5-20% of all lung cancer deaths).

Radon measuring devices are commercially available. If present, keep it out by sealing cracks and other openings in floor, improve the ventilation (especially in the crawl space). If necessary, depressurize the area under a slab foundation.

Unvented gas and kerosene heaters and stoves, tobacco smoke, and wood smoke.

Allergic inflammation of nasal membranes, eye and nose irritation, lung cancer, emphysema, heart disease. Some by-products are fatal in very high concentrations.

Monitors are available for some by-products. Avoid smoking inside house or smoke near an open window, vent gas and kerosene appliances outdoors, block leaks in wood stove pipe.

Steam and humidity from cooking, bathing, plants, unvented dryers, etc.

Foggy windows, growth of mold and mildew.

Ventilate at the source with bathroom and kitchen fans.

"The major problem with radon is knowing where it is a problem. It comes from soil and bedrock but its concentration varies from location to location. While it is easy to test for, there has been no survey to pinpoint the areas where the residents should be concerned. This is changing in the Northwest. The Bonneville Power Administration, as part of its expanded weatherization program offered to the public through local utilities, is offering optional radon monitoring for every home weatherized. Phil Thor, who is involved with the program, expects that most home owners will request it. "The monitoring will be used to get a clearer picture of where radon problems are in the region. This information will be provided to the public periodically."

Linda Sullivan illustration

According to Dr. Ken Saxton, director of California's Indoor Air Quality Program, the quality of the air indoors may be deteriorating due to the lower ventilation rates in houses meeting current codes (they are built tighter now), and the greater use of combustion appliances, such as wood stoves.

The Northwest Power Planning Council recognized indoor air quality concerns when it developed its model conservation standards — building standards designed to produce even tighter, energy efficient homes. The standards specify a minimum ventilation rate the home must meet. Because this rate is produced by mechanical means, rather than hit-or-miss factors such as wind, and leaks around windows, these homes are assured of better ventilation than many conventional homes built to current code.

The amount of pollution within a building depends on three factors: the strength of the source, the ventilation rate of the building and the rate the pollutant is removed from the air by settling or chemical reaction. The most important of these factors is the source of the pollutant. If there is no source in the home to start with, there is no need to be concerned with getting rid of it.

Pollutants can enter a home from a variety of sources. These include the materials used to build the home, the appliances and furnishings within it, the cigarettes the owner smokes, and the showers the family takes every morning. Energy efficient homes and conventional homes do not differ significantly in their sources of pollutants (the occupants of both homes may smoke or have furniture emitting formaldehyde gas).

All homes have leaks through which air escapes or enters. Leaks provide much of the ventilation in a conventional home. Unfortunately, they also let the home's heat escape and so waste energy. In an energy efficient house, these leaks are

dramatically reduced, thus saving a substantial amount of energy. But this does not necessarily mean the ventilation rate will also be reduced. Mechanical systems can and should be installed which will ventilate the house, without wasting its heat. Some earlier energy efficient homes which did not have these systems had problems with indoor air pollution. These problems stem from improper design and can be avoided.

A home built to the standards does not depend upon random, uncontrolled air leakage to provide ventilation.

To meet the Council's model conservation standards, a home must have a minimum ventilation rate of 0.6 air changes per hour. (One air change per hour means that once every hour all of the air in the house will be exchanged for outside air.) The 0.6 standard is equal to the average rate of homes built since 1977 using conventional methods. But, while 0.6 is the average rate, conventionally built homes have rates ranging from near zero to two air changes per hour. Although there is no national standard for ventilation in a home, Dr. Harvey Sachs, one of the nation's experts on indoor air pollution, considers 0.3 air changes per hour the absolute minimum acceptable rate.

And within a conventional home, dramatic fluctuations in the rate occur frequently because ventilation depends both on atmospheric conditions and the be-

havior of the occupants. On still days with warm temperatures, or if doors and windows stay tightly closed, the ventilation rate may approach zero and pollutants present will tend to concentrate.

A home built to the standards does not depend upon random, uncontrolled air leakage to provide adequate ventilation. Instead, it uses a mechanical ventilation system to provide the house's occupants with fresh air. The most common of these systems is an air-to-air heat exchanger which works by exchanging stale indoor air for fresh outdoor air and by moving air through rooms in a house. It is energy efficient because it preheats the cold, incoming air stream by using the heat from the house air being exhausted.

Greater ventilation rates can be directed to those rooms, such as kitchens and bathrooms, that particularly need it. Heat exchangers have been used extensively in homes in Canada, Sweden, and France, and in commercial buildings throughout the world. They are a relatively new technology in houses in the United States.

Another system, used frequently in Sweden, recovers heat from exhaust air by using fans to pull warm indoor air past heat pump coils to preheat water. A third system, also used in Sweden, exhausts stale air via simple exhaust fans, while fresh air is introduced through wall vents located in each room.

Because these systems ensure a minimum, constant level of ventilation while controlling the home's loss of heat, the indoor air quality is no worse than that caused by current building practices. And, in most cases a home built to the model conservation standards may actually have better indoor air quality than homes built using conventional construction practices.

For more information on indoor air quality, see chapter 5 of the Model Conservation Standards Reference Manual (available from the Council's central office). ■

A DILEMMA *in* COMMON

This past January, a routine sampling of tissue from upriver bright fall chinook that had been spawned at the Bonneville Hatchery on the lower Columbia, showed evidence of infectious hematopoietic necrosis (IHN) virus. IHN is one of the more severe diseases in steelhead trout in the Columbia River Basin, but never before had it been detected in up-

river bright fall chinook. To limit the spread of the virus, 1.7 million eggs from three days' worth of spawnings were chlorinated and buried. Not having sampled tissue from all of the spawning fish, hatchery officials were only able to guess that the disease was restricted to the few fish that tested positive. Rich Holt, who oversees operations at the Bonneville

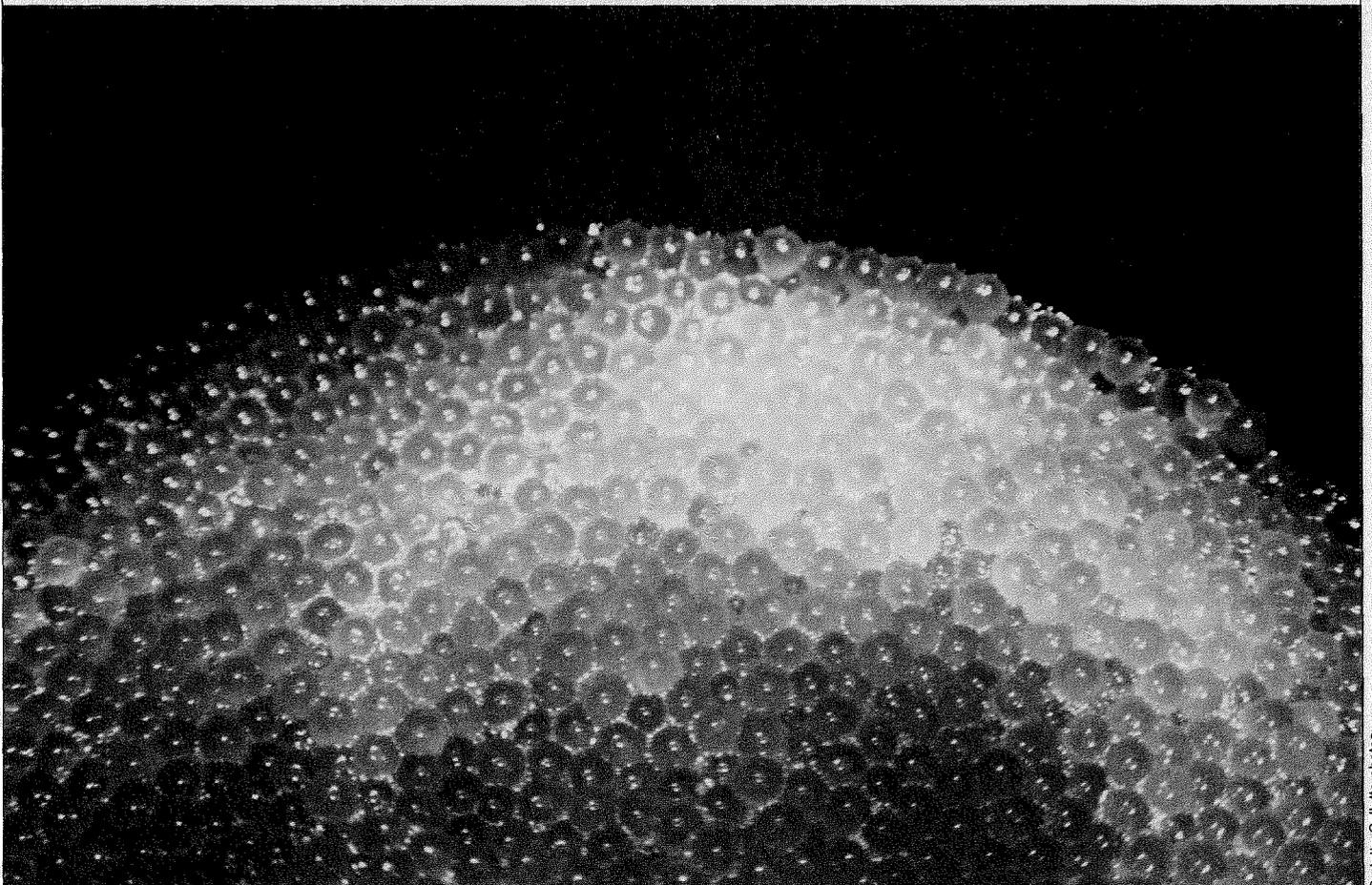
Hatchery for the Oregon Department of Fish and Wildlife, is crossing his fingers. "We just hope that the remaining 12 million eggs in the hatchery are OK," he said.

"The problem at the Bonneville Hatchery is just the most recent one to hit the press," asserts Jim Warren, executive secretary of the Pacific Northwest Fish Health Protection Committee (see related story).

Fish Disease in the Columbia Basin

Eggs (approximately 5,000) from one female steelhead trout.

by Carlotta Collette



Carlotta Collette photos

Most fish disease specialists agree that the water, like the fish themselves, can carry the bacteria and viruses that trigger diseases.

"A lot of hatcheries have problems. The Dworshak National Hatchery up on the Clearwater in Idaho has had major outbreaks for the past several years. They're conducting some of the most advanced research on it, too."

The Dworshak Hatchery is set on a peninsula that juts out into the Clearwater River where it is joined by its North Fork. From the air, the sprawling hatchery seems to hunker down practically in the shadow of the largest and highest straight-axis dam in the United States, the 717-foot tall Dworshak.

Because the Dworshak Dam blocked all migration of steelhead trout on the North Fork of the Clearwater, the Army Corps of Engineers, the U.S. Fish and Wildlife Service and the State of Idaho agreed a hatchery was needed below the dam as compensation.

Dworshak Hatchery is now the largest steelhead producer in the world. Each year, some 2,000 steelhead "couples" produce an estimated 8 million eggs. In an average year, 2.5 million smolts are released back into the river. Of the remaining 5.5 million, some are outplanted to

adjacent streams and rivers and others are transported to a hatchery further up the mainstem of the Clearwater. But, in recent years, the majority of the fish have been lost to diseases, mostly IHN.

Joe Lientz, Fish and Wildlife Service pathologist at Dworshak, counts up the losses. "In 1983 we were almost completely wiped out. We lost 98 percent of our steelhead eggs and fry. Last year we lost between 65 and 70 percent. We figure our average losses now are around 30 percent." As a rule, he explained, the hatchery produces enough eggs to accommodate such losses.

The odds of detecting the virus and confining its spread have gone up at Dworshak since they began culling out pairs of fish. In most hatcheries the eggs of one female (between 5,000 and 6,000 per fish) are fertilized by several males. This practice encourages a broader genetic distribution in the offspring. It also encourages contamination of larger numbers of eggs.

By culling pairs and keeping them separated until tissue samples can be cultured for the disease, eggs from fish that carry

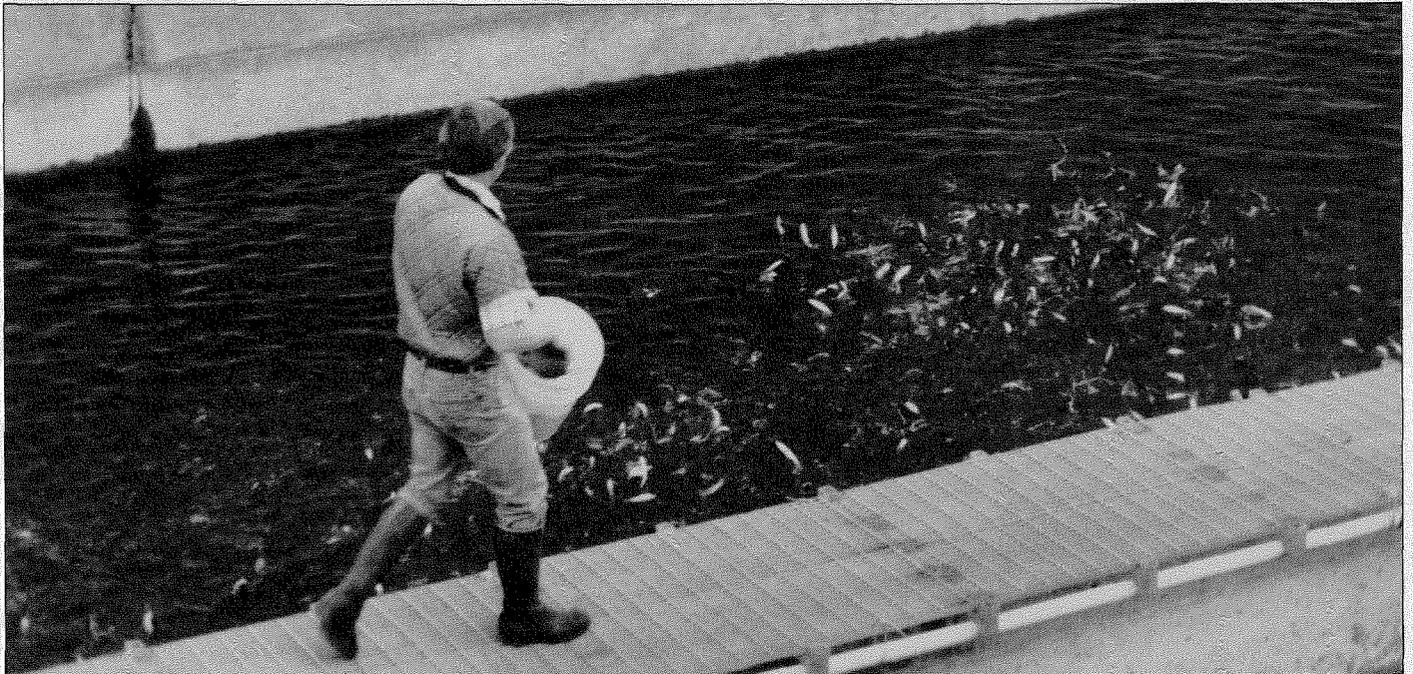
the virus can easily be destroyed, and non-infected eggs can go on to develop into healthy smolts.

Dworshak Hatchery also raises chinook salmon, with a goal of releasing 1.8 million each year. To get that many survivors the hatchery starts with 2.3 million. "We have a different problem with the chinook," Lientz explains. "Our losses with them are usually due to bacterial kidney disease (BKD)."

"BKD infected fish die in hatcheries, die during migration to seawater, die during their life in the ocean, or die as adults in their home waters where they're spawning," says Warren. "This disease needs a fully integrated plan that attacks it on all fronts throughout the spawning and rearing cycle of hatchery fish. I don't believe it would be inappropriate to say you could double hatchery reared spring chinook if you could satisfactorily control BKD."

BKD and IHN are the two diseases that top a list of 22 that were identified by the Fish Health Protection Committee as the most serious health problems confronting anadromous fish in the Basin. Usually, IHN affects steelhead and BKD is most

Feeding time for young chinook salmon in hatchery raceway.



"Hatcheries in the Columbia Basin are like huge feed lots; parasites tend to bloom there."

serious in spring chinook stocks. When there is a crossover, like the one that occurred at Bonneville, anxieties among hatchery personnel soar.

A big part of the problem is the water itself. It is usually routed from the various rivers in the Basin, through the fish stocks and back again into the rivers. While no one is absolutely certain, most fish disease specialists agree that the water, like the fish themselves, can carry the bacteria and the viruses that trigger the diseases.

Another factor that seems to fuel the prairie fire of infectious disease is the proximity of hatchery fish to each other. Millions of tiny fish spend their first and sometimes second years crowded into concrete raceways. Fish population density causes stress. The stress renders the fish more vulnerable to pathogens. "Hatcheries in the Columbia Basin are like huge feedlots," Warren maintains. "Parasites tend to bloom there."

Once they are ready to be released, many of the migrating fish are outplanted to other subbasins or barged downriver by the Army Corps of Engineers. Any contaminants are readily disseminated throughout the entire reach of the Columbia and even into the ocean. The seriousness of the situation is clear to Lientz, who feels that "every hatchery in the drainage has been exposed to some fish diseases." Warren concurs. "It's almost impossible to calculate what fish diseases are costing

us," he adds, "but I'd guess that about 30 percent of all fish hatchery budgets go towards fish health."

While it certainly appears true that fish diseases are endemic to the entire Columbia River Basin, discussions of the problem often settle into a steady assault on the Hagerman Valley, far up the Snake River in southern Idaho. Often called the valley of 1,000 springs, the Hagerman is an ideal place for raising rainbow trout.

"Rainbow trout have been raised in the Hagerman Valley since before most of the other hatcheries existed; before we knew how to prevent, control or manage fish diseases," asserts Dr. Robert A. Busch, whose Clear Springs Trout Company is one of the many hatcheries that take advantage of the constant flows and near-perfect water temperatures of the springs that cover the walls of the canyon cut by the Snake. "We produce more pounds of fish here than in the entire remaining Columbia River Basin combined." Such intensive production can mean more diseases.

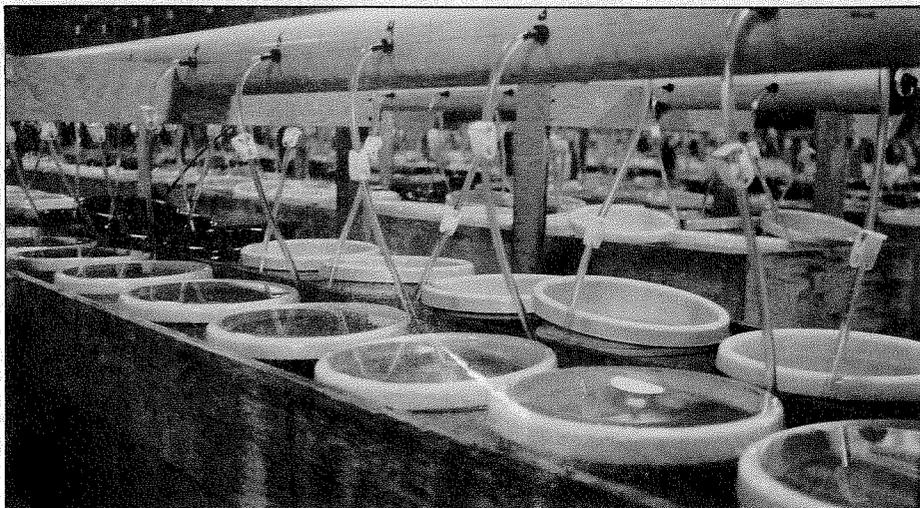
Dave Ransom raises salmon commercially in Oregon, and he's upset because the state of Idaho has fewer guidelines for limiting fish diseases than Oregon has. He thinks Idaho, at the headwaters of the Snake River, should be at least as rigorous as the other states, since its discharged water flows through a large part of the rest of the Basin.

"Oregon has very strict fishery regulations, and we all benefit from them," he notes. "Idaho doesn't have any. Unless everyone plays by the same rules it'll be ludicrous."

Ransom tells horror stories of disease outbreaks in both the public and private hatcheries in the valley. And Warren, attempting to mediate the conflicts, admits that fish diseases can be a problem in southern Idaho. "But, don't call it the Idaho trout problem," he urges. "Commercial trout hatcheries have very different objectives from those of the fisheries resource agencies. They have their problems too, they're just different problems."

Monty Richards is chief of fisheries for the State of Idaho, and if anyone is caught in the middle on this issue he's that person. "The State of Idaho wants to see fish health protection like everyone else. If everyone had the same type of policy, of course it would have an impact on us. Anytime you get into an arena where everybody is watching everybody else, there's bound to be improvement for everyone."

Idaho has just released its first draft fish health policy which specifically exempts the private hatcheries from everything except acquiring permits before they release any fish into the state's rivers and streams. Since the food-fish producers rarely return their product to the rivers — it goes to markets as dressed fish instead — the major influence on them, if changes are needed in their operations, will be the Fish Health Protection Committee. ■



Makeshift "incubators" at Dworshak Hatchery test steelhead culling procedure. Eggs from one female fertilized by one or two males are isolated from other eggs. Each incubator has its own water supply line.

The Pacific Northwest Fish Health Protection Committee

Sir Izaak Walton, in his much-loved tome on fishing and other sacred pastimes, argued that health should be valued second only to "a clear conscience." If Walton toured the Columbia River Basin today he would find neither blessing in plentiful supply in the fisheries community. Almost no one involved in fish production or fisheries resource management in the Basin claims innocence when it comes to some mishandling of fish and their various and ubiquitous illnesses. That is one reason these same producers and managers have joined forces to tackle the diseases that are often a byproduct of their everyday operations.

The Pacific Northwest Fish Health Protection Committee (PNFHPC) is not the first organization created to develop a systemwide approach to improving fish health in a given watershed; it is simply the biggest and the most comprehensive. Thirteen entities are represented, including the fish agencies from each of the states of Idaho, Montana, Oregon and Washington; two tribal commissions; the federal Fish and Wildlife Service and National Marine Fisheries Service; and private fish producers from each state. Each entity has two representatives on the Committee; one fishery administrator and one pathologist.

"The combination of a pathologist and an administrator is essential," says Jim Warren, executive secretary of the Committee. "Often the pathologists will detect a serious problem, but their message fails to reach or convince administrators who plan fish production and distribution programs. Administrators on the Committee get a crash course in today's fish diseases, and pathologists learn the world of political realities."

Similar committees have formed in the Great Lakes Basin, in Colorado and on the Eastern seaboard, but seldom have private interests been represented. Dr. Robert A. Busch, the Committee's technical representative from the Idaho Trout Growers Association, feels that the PNFHPC "has the potential for being the most workable and the finest" of the fish health protec-

"Health is the second blessing that we mortals are capable of; a blessing that money can't buy."

— Izaak Walton, The Compleat Angler (1653)

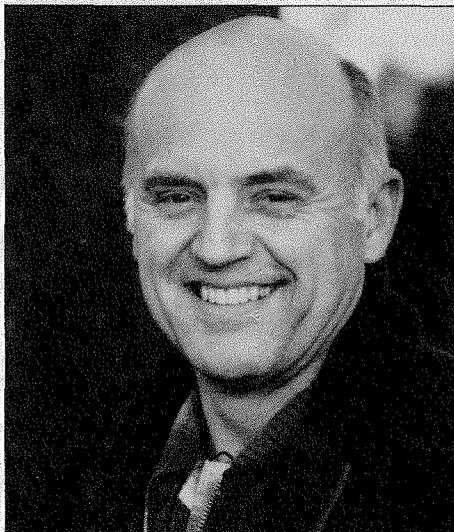
tion committees because of this balance of concerns. "Where the private sector has been left out," he argues, "comprehensive fish health plans have been less successful."

Jim Warren agrees with him. Warren directed the Great Lakes Fish Disease Control Committee in the development of its plan for the basin that encompasses Lakes Erie, Huron, Michigan, Ontario and Superior. The Atlantic states based their plan on the one developed in the Great Lakes. And, when Warren had finished his work in Wisconsin, he was lured to the Northwest to attempt the same coordination here.

Now, Warren is somewhat of a zealot when it comes to pulling people together to work on the issues surrounding fish health. "I tried to get a national fish health plan going with federal legislation back in 1969, but it never made it. So, I decided to regroup and go at it basin-by-basin."

Few basinwide situations he's

Jim Warren



worked on are more confounding than the fish diseases in the Columbia River. "The problems in the Northwest," he's observed, "are far more complex than those in the Great Lakes. There are more diseases and far more serious diseases." The Northwest Power Planning Council signaled its agreement by urging the Committee to "develop a coordinated, comprehensive fish health protection policy and supporting program" in conjunction with the Columbia River Basin Fish and Wildlife Program.

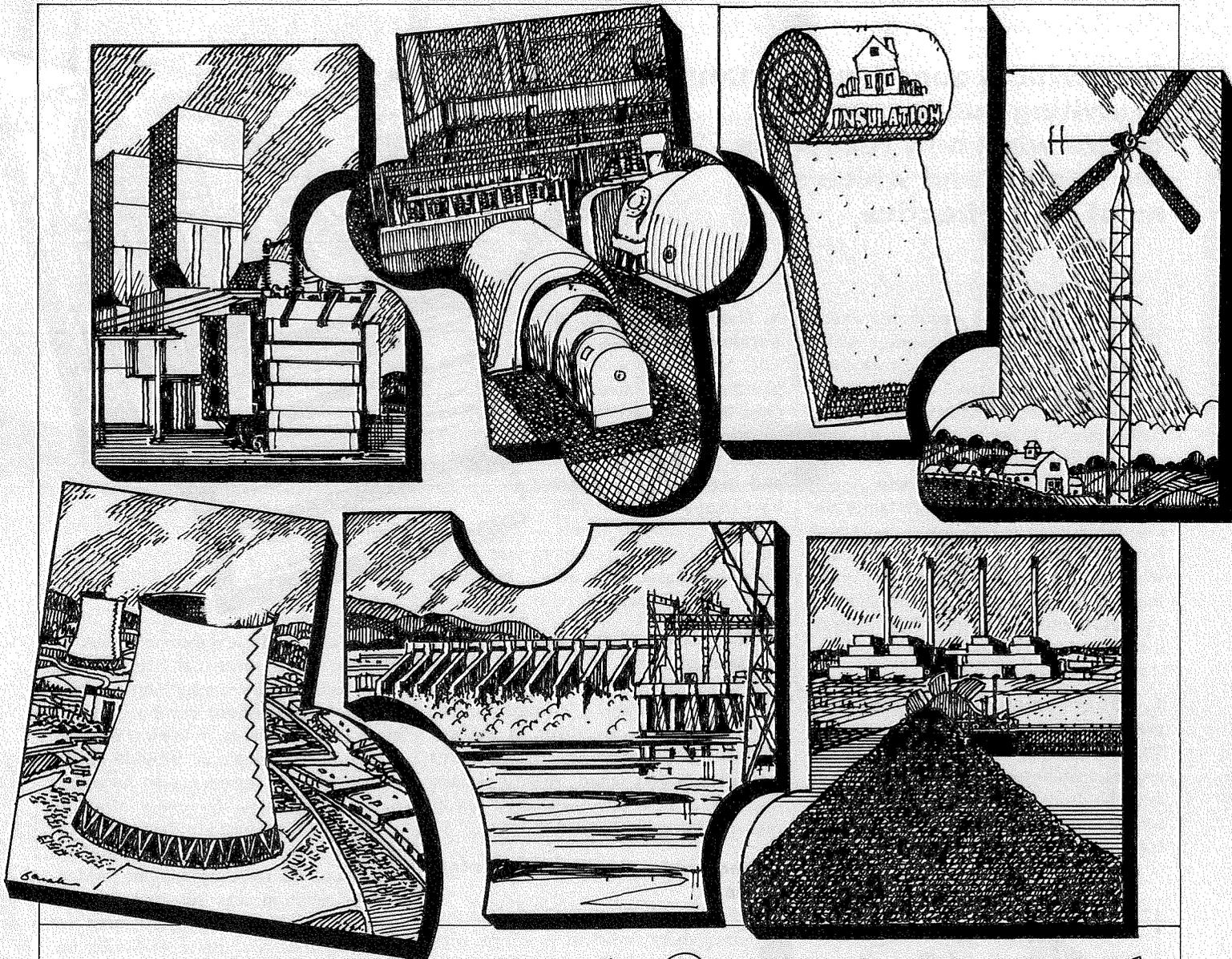
Mark Schneider, fisheries biologist for the Council, was pleased to see the Committee form. "That Committee will provide the major piece of work that was missing from the Basin. Until now we've been trying to put out diseases like brush fires; the Committee will take a much longer and broader view. That's how we *should* approach these disease problems."

"The Committee will help in a lot of ways — we're all in agreement on that one," stressed Busch. "We'll be able to identify stocks and diseases and develop transfer guidelines in response to that. We'll also be prioritizing research needs to develop better methods of treatment and control. Probably most importantly, we'll be communicating."

That communication is what's giving Committee members a shared enthusiasm that their recommendations will effectively limit the spread of fish diseases in the Columbia River watershed.

Doug Dompier, representing the Columbia River Inter-Tribal Fish Commission, gives voice to this optimism when he says: "Everyone is kicking out sick fish, so, it's everyone's problem, and I think we'll lick it. We're all working on it together." ■

by Carlotta Collette



MAKING *the* PIECES *fit*

A RESOURCE STRATEGY TO MEET UNCERTAINTY

by Dulcy Mahar

One of the advantages of the single-line energy forecast system is that it's relatively easy to plan resources to meet that anticipated demand. One of the many disadvantages is that ratepayers are out of luck if the planners don't guess exactly right. And in this case, out of luck can mean millions of dollars in unnecessary and expensive resources on one side of the line and a shortfall of resources that could cost the region much needed economic development on the other side of the line.

Preventing those two extremes is the major reason the Northwest Power Planning Council uses a range of electrical demand forecasts from high to low and plans a resource portfolio to meet any eventuality within that range. Currently, the Council is preparing a range of four draft forecasts based on its own analysis and on public comment on the Council's preliminary forecast. The next step is preparing a resource portfolio to meet the projected electrical energy demand indicated by those forecasts. Two critical questions the Council is inviting public comment on are

what new resources, if any, are needed and what resources will be most cost effective to the region.

Financial planners use diversity in an investment portfolio to protect the investment from sharp fluctuations in the market. Just so, energy planners diversify their portfolio of available and reliable energy resources to meet fluctuations in electrical power demand. In both cases, the driving force is the same — risk management. The risk is a result of the ubiquitous uncertainty energy planners face. For example, without any other factors chang-

Two critical questions the Council is inviting public comment on are what new resources are needed and which are most cost effective.

ing, weather can have a profound effect. The difference between average water conditions and critical (historic low) water conditions is more than 3,000 megawatts — the equivalent output of three large power plants. The biggest factor affecting electrical demand is regional economic growth, and that too is uncertain.

In addition to all the uncertainty the Council faced in its first power plan about how much energy would be needed and what resources would be available to meet that need, the Council's power planning staff has identified four new key issues as it develops its 1985 plan. These four include the following:

1. Out-of-region power sales and purchases

The possibility and extent of such sales are major question marks. Is electrical power available from British Columbia or other sources at competitive prices? What is this region's potential to sell its current surplus of electricity to the Southwest?

2. The future of the direct service industries

The Northwest's aluminum plants originally came to the region because of competitive electrical prices. Now lower world prices for aluminum and higher electrical rates have triggered a crisis. Will the aluminum companies — which use enough power to fuel three cities the size of Seattle — be around in the next 20 years?

3. The future of two uncompleted nuclear plants

Washington Public Power Supply System nuclear plants 1 and 3, currently mothballed, represent resources of approximately 1,600 megawatts. Will they be needed and, if so, when? There is also the question of how effectively they can be preserved in a mothballed status.

4. The model conservation standards

If these standards, designed to produce energy efficient buildings, were to be adopted regionwide, they could significantly reduce the region's reliance on generating resources. In the Council's high forecast, the energy savings from new buildings built to the standards represents approximately 1,500 megawatts. The extent to which building codes or alternatives, such as utility incentive programs, will be implemented is not clear.

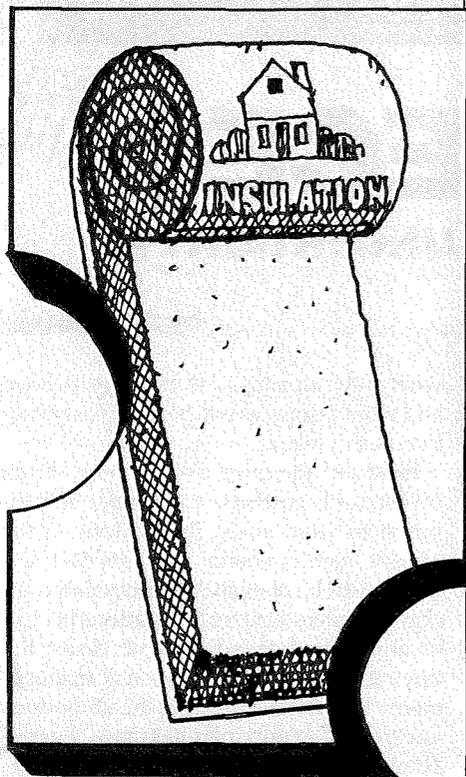
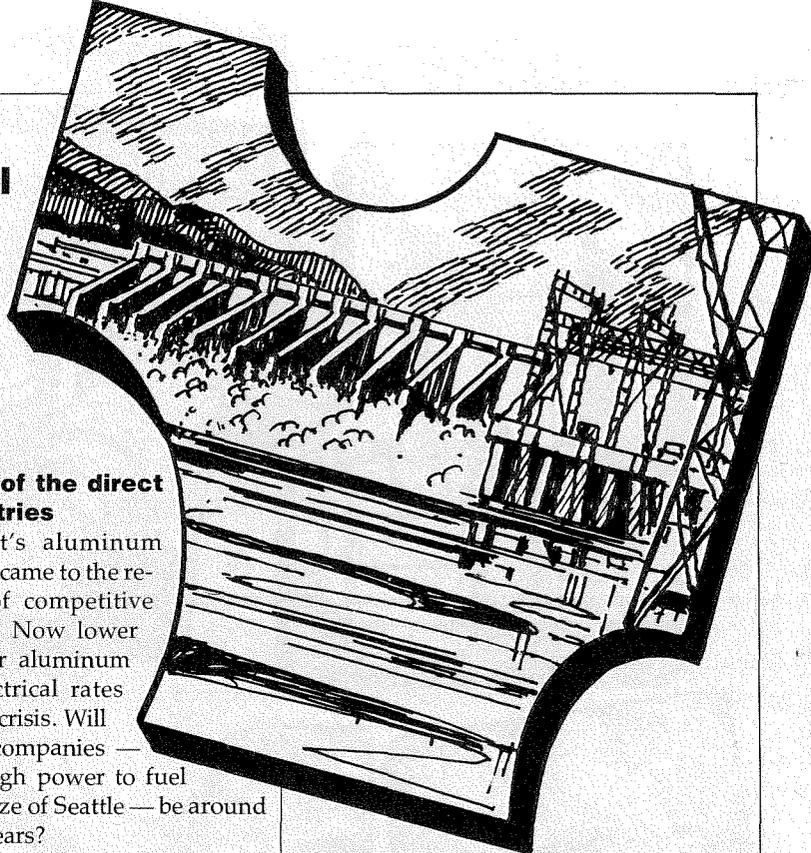
Planning resources to meet a range of possibilities requires a key element: flexibility. In its first power plan, the Council introduced flexibility in a variety of ways. For example, it has built its resource portfolio around those smaller resources which have a short lead time. Such resources allow the region to move quickly if the region's electrical demand should suddenly dip or soar.

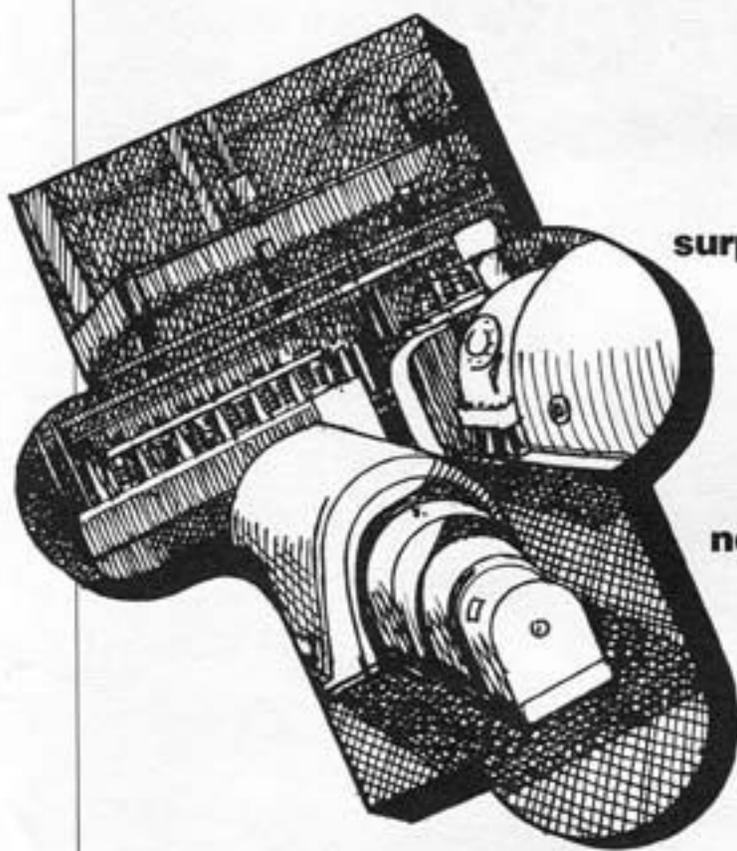
The Council's 1983 resource portfolio has a specific sequence for adding new,

reliable and available resources as needed. In order of the most cost effective first, these resources are conservation, hydropower, cogeneration, combustion turbines and coal plants. In the low forecast, conservation alone may provide all the new energy the region needs. As energy demand increases, however, other resources are introduced in the sequence of their cost effectiveness, so that by the high forecast all the resources may be needed.

Conservation was selected first because, in addition to being the most cost effective, it is also the most flexible resource. It has a relatively short lead time to "construct." Most programs can be put in place within three years. Also, if power demand does not materialize, conservation programs can be stopped with no loss of investment. Another advantage is that the energy savings occur at the same time as the investment. This allows a closer match of resources and needs.

Hydropower is the next most cost-effective resource. Because the hydro system is so variable (depending on the weather), the primary planning issue with this resource is choosing the appropriate water condition against which to plan resources. The region has traditionally used the critical water standard, but this too will be reviewed and subject to public comment in the new power plan. Other renewable resources were considered either too expensive or unreliable at the time the 1983 plan was drafted. However, the Council did include research and monitoring of renewable technologies in its first plan.





**Today,
with a
temporary
surplus of power,
flexibility is
equally im-
portant to
prevent
overbuilding
of expensive
new resources.**

Eventually, the region will run out of its potential for conservation and low cost renewable resources. Cogeneration is the recovery of "waste" energy created by industrial or commercial processes or the simultaneous production of electricity from another fuel source. It has the advantage that cogenerators can be shut down or started as demand dictates.

Combustion turbines, scheduled to come on line in the medium high and high forecast ranges of the Council's original power plan, are another example of flexibility. They have a relatively low cost to build, but a high cost to operate. That means they can be built for use only if power is needed, but left idle when it is not needed. This low capital versus high operating cost characteristic was a major reason the Council included combustion turbines in its resource sequence.

It was the relatively short lead time of coal plants compared to nuclear plants that led the Council to choose coal as the preferred thermal resource in the 1983 plan.

The Council also introduced the options concept in its original plan as another way of ensuring flexibility in planning. Resource options are similar to options on a

piece of land where money is put down now for the right to develop the land sometime in the future. If it turns out the region doesn't need the power the potential resource would have supplied, the region has only paid for a small portion of the cost — not for a whole power plant.

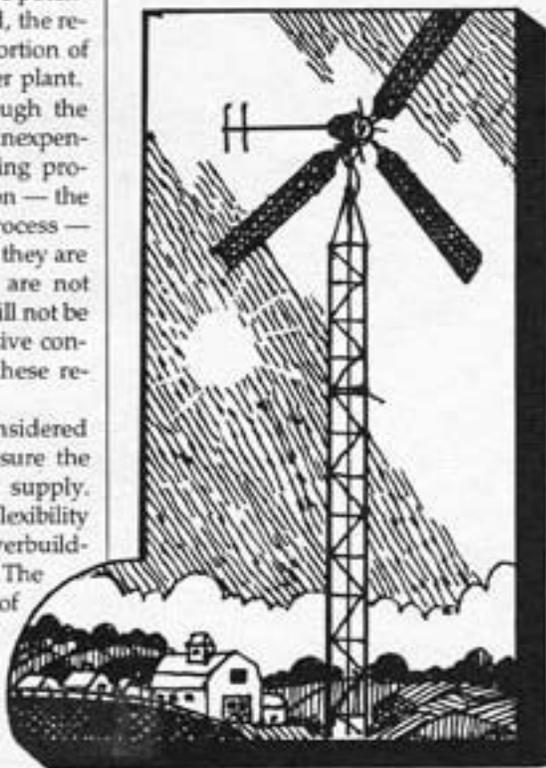
Options take a resource through the time consuming, but relatively inexpensive planning, siting and licensing processes. Then, prior to construction — the more expensive portion of the process — they may be held in reserve until they are needed, or terminated if they are not needed at all. Thus, ratepayers will not be stuck for the vastly more expensive construction phase if it turns out these resources are unnecessary.

Originally, flexibility was considered important to planners to make sure the region had an adequate energy supply. Today, with a surplus of power, flexibility is equally important to prevent overbuilding of expensive new resources. The Council is working with the rest of the region to deal with the surplus by investigating selling more power — both inside and outside the region — on an interruptible basis. For example,

earlier this year the Council forwarded the idea of making a larger portion of the power Bonneville sells to direct service industries (such as aluminum plants) interruptible in return for lower rates. Not only would these industries receive a rate break, but the region could avoid building expensive new resources to serve a firm load.

The sale of power outside the region offers a great potential for the Northwest — and also potential danger. While few disagree that power should be sold, there is much controversy over how it should be sold and for how long. The danger lies in committing resources long term outside the region so that they cannot be called back if the region needs them. In that event, the region could be faced with developing resources for its own use which cost more than resources being sold outside the region.

All of these resources and options are being scrutinized closely as the Council prepares its new 20-year power plan for the four Northwest states. A draft of the plan will be released in July, and the final plan adopted in December. In the meantime, the Council is actively soliciting public comment on resource development as well as other major issues. For more information about participating in this planning process, call or write to the Council's Public Involvement Division (see address and toll free phone numbers on the inside front cover.) ■



THE LEARNING CURVE

BUILDERS REPORT ON REGIONWIDE TRAINING PROGRAM

How are walls built so they can hold more insulation than some old attics? How can attics be constructed so ten or 15 inches of insulation can fit in them? How can air leaks be reduced to a minimum? What are the least expensive ways to do all this?

These are a few of the questions a regionwide Residential Standards Demonstration Program (RSDP) sponsored by the Bonneville Power Administration was designed to answer. The training program was set up to give homebuilders in the Northwest an opportunity to learn advanced building techniques for constructing homes that meet the Northwest Power Planning Council's model conservation standards for new electrically heated homes.

Builders in the program had the opportunity to build very energy efficient homes with training, marketing assistance, cash incentives and ongoing energy use monitoring to back them up. The program gave participating builders a distinct advantage over nonparticipants. Most of them found that after their first house was completed the second and subsequent houses were not only easier to build, but they tended to cost less than the first house. Below are some comments from builders in each of the four states. —CC

IDAHO

Dave Ross



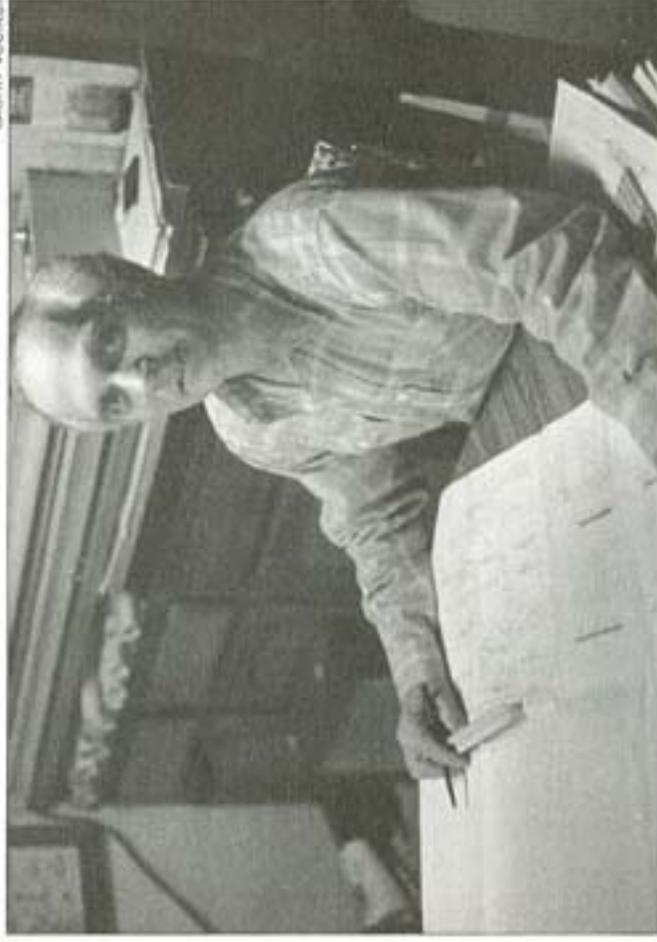
There may be controversy surrounding the model conservation standards developed by the Northwest Power Planning Council, but it's largely bypassed Mountain Home, Idaho, where homebuilder Dave Ross is blazing new trails in energy efficient construction. The owner of T-D Construction, Inc., Ross has built the most homes — 11 single family — under the Residential Standards Demonstration Program (RSDP), administered in Idaho by the Department of Water Resources.

To him, that's no great feat; it's simply good business. Ross says he chose to participate in the program because his experience with Mountain Home consumers is that they're becoming more energy conscious. He's found that if the energy costs of a home are lower, homebuyers realize they can afford a more expensive home with the features they desire.

He also joined the program because he wanted to gain additional experience in energy efficient construction to keep a step ahead of his competitors.

Though Ross says his experience with

Glenn Voelkel



Glenn Voelkel has built several hundred houses in his construction career. When he first began building in 1956, the state-of-the-art in insulation was balsam wool, a tar-paper material coated with 1½ inches of finely shredded cellulose and glue. One layer of balsam wool would be stapled to the two-by-four wall studs, and a double layer would go into the ceiling.

"I would hate to guess what the R-value of balsam wool was," Voelkel said. "We really didn't even know what R-values were back then. What we found out was that mice loved balsam wool, and it didn't take long for them to reduce it to nesting material."

Over the years, "common sense" has led Voelkel to try a number of ways to "help offset the cost of heating in Montana." By the mid-1970s, his construction firm was regularly using two-by-six walls and trusses that accommodate added insulation. He began to offer a variety of energy options to his customers, using a typical HUD house as a standard for comparison. Voelkel found that, after discussing the various options with prospective homebuyers, they almost always asked him to incorporate energy conserving features in their homes and were willing to pay the extra costs.

"I stress resale heavily when discussing energy efficient building," Voelkel says. "That two-by-four house with leaky windows and doors — even if it's in a good neighborhood and looks nice — what's it going to be worth in four or five years? This is a major fear in owning a house that's poorly built."

Voelkel said the program was "worth its weight in gold. It forced us to do things we kind of knew about, but weren't sure if it was worth the risk to try," he said. Although many of his subcontractors were not able to attend the training, they all have a very positive attitude, according to Voelkel. They feel that, "If we get a jump on this, at least we'll be able to hold our own and stay in this very competitive business."

Glenn Voelkel constructed three homes under the program and is continuing to incorporate what he learned into the 30 to 50 houses he builds annually. ■

the program has been positive, he did encounter a few snags with reliance on some energy efficient features, such as the air-to-air heat exchanger used to provide proper ventilation in an efficient home.

In his experience, the heat exchanger was too expensive and too inefficient. So, to meet the model standards, which allow alternate paths, and avoid using the heat exchanger, Ross experimented with a small ventilating fan that also achieves the proper ventilation required by the standards.

By working closely with his architect, Ross found his company quickly learned the special techniques for building energy efficient homes. The first several homes required additional planning and attention to details, but the cost of building to the standards "dropped considerably with subsequent homes because most of the learning was over.

"We are now achieving the standard without a great extra cost," he reports. In fact, his company is now able to build a home to the model standards for only about \$1,000 more than conventional con-

struction costs.

The response from consumers has been "quite good," he adds. Most of his homes were pre-sold before construction was started, partly because Ross added another sweetener which attracted buyers. He's persuaded a Mountain Home lending institution to relax its qualification guidelines by adjusting the debt-to-income ratio for loan applicants, based on the lower energy costs found in more efficient homes.

Overall, T-D Construction has found that building homes to the model standards has given the company "a keen edge over our competition," Ross says. "We've sold homes to people who otherwise may not have bought a house in this area."

Other builders have tried to capture the market on energy efficient construction in his area, he says. "But no one has yet been able to back up their energy efficiency with facts and figures courtesy of the Water Resources Department and the Power Council. . . . People seem to pay more attention when there's some credibility." ■

by Susan Skog

WASHINGTON

by Mickey Riley

Unless somebody absolutely insists they don't want it," Dave Cathey says, "we'll continue to build houses to this level — even without the program." Cathey, a general contractor for South Whidbey Island, Washington, is building two homes for the Thermabilt program, Washington's Residential Standards Demonstration Program.

"What we've been doing when people come to us for custom jobs is explaining the benefits of building to these levels. We tell them that if they don't want it, it's their money, but I think they're damn fools — in so many words." Cathey's directness hasn't cost him customers. "We have five homes we have bids on, one of them we're starting right now, and all of them are direct spin-offs from Thermabilt program information."

On his second Thermabilt home, Cathey says, he's cut some time and materials

costs in half. "On the vapor barrier, we've gone from eight days to four days. That includes all the caulking around the boxes. We used half as much caulking material in the second home and that's a savings of \$100 right there."

Cathey's subcontractors "had a little trouble at first, just like we did," learning how to do the work. "But so far as their mental attitude goes, it's extremely good. All of my people are behind it and think it's what we should be doing. They're trying to find better, more innovative ways to do it, at less cost."

Does he think that building it right the first time is a good way to achieve energy savings?

"You can't accomplish these things in an existing house," he says. "And it depends on energy costs. The higher the energy costs go, the better it's going to look. Ten years ago it wouldn't have been as good a deal. Right now, it's perfect!" ■

Dave Cathey



OREGON

by Judi Hertz

Paul Wulf



Paul Wulf has been building homes in the Salem, Oregon area for eight years. When he first heard about the Oregon Home program, Oregon's version of the Residential Standards Demonstration Program, he wanted to be a part of it. "I wanted first-hand experience to find out how much it would cost to build homes to the new specifications and how difficult it would be to do that," he said. "I have an identical house heated with gas on the same street as my two Oregon Homes. I'm curious to see how it compares in heating costs to the Oregon Homes. The gas-heated house is built to current Oregon standards."

Wulf said there were no surprises when he got to the actual construction of his Oregon Home because of the complete instructions covered in the Oregon Department of Energy builders training seminars. He feels the most positive experience he gained from participating in the program is the knowledge about the components of building such energy efficient homes. "If somebody wants to talk to me about — 'say, I'd like to build a house but I'm really concerned about energy. What alternatives do I have and what do you think would have the fastest and most rapid payback? I feel I've got a better handle on what is going on."

His most negative experience is "not being able to sell the house, yet." Wulf has sold one of his two Oregon Homes and the second is on the market.

Wulf feels the model conservation standards should make it easier to finance homes because the utility bills of an electrically heated home built to the standards would be so much less than one which is not. "But lenders in our market area don't take those things into consideration when they are trying to figure out qualifications for a buyer."

He feels it is important to bring lenders up to speed on the advantages of granting

mortgages on energy efficient homes, even if the homes cost a bit more. But, he said it might be difficult. "Lenders work like giant dinosaurs. They are real slow to change."

Wulf said the most attractive energy conservation features of the Oregon Home are thermal pane windows with a thermal break, foam in the openings around windows, beefed up insulation and the metal front doors. Lower heating costs and comfort inside the house are the most attractive selling features.

He added that where there is a problem in building an Oregon Home, it is because the subcontractors are being asked to do something different from their usual methods. One of these problem areas is the continuous air-tight wrap on an Oregon Home. "I don't like to be the first person doing something like that. There aren't many subcontractors here in town familiar with that procedure. When I made my choice, it was not to go with the continuous wrap because of my concerns about the air quality."

All in all, Wulf's experience with the Oregon Home was a positive one — if he could only sell the house he has for sale, he would feel even better! ■

Interview:

Bill Wilkerson

by Carlotta Collette

When the Northwest Power Bill was delayed by the House Commerce Committee because Michigan's Congressman John Dingell wanted to see fish and wildlife protection in the legislation, the Public Power Council hired Washington state attorney William R. Wilkerson to help hammer out terms that would rescue the bill. Once the bill became law, Wilkerson, then deputy director of the Washington Department of Fisheries, worked closely with fish and wildlife agencies and four of the Indian tribes in the Basin to come up with recommendations for the Columbia River Basin Fish and Wildlife Program.

In April of 1983, Wilkerson was appointed director of the department he had seconded, and his participation in major fisheries issues in the Northwest expanded. Timothy Wapato, director of the Columbia River Basin Inter-Tribal Fish Commission, notes, "Bill has always been extremely helpful in getting people to achieve consensus, particularly in the area of fisheries protection."

Participants in the United States/Canada Treaty negotiations also found that Wilkerson's role in their discussions was critical. With that treaty's recent ratification (see news story on page 5), Bill Wilkerson is ready to get back to strategies for saving the salmon along the North coast, in Puget Sound and, most especially, in the Columbia River Basin.



Carlotta Collette photo

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- Two-year and Seven-year Action Plans — Bonneville Power Administration

OTHER PUBLICATIONS

- Model Conservation Standards Equivalent Code (The standards in uniform building code language and format.)
- Staff Report on Economic, Demographic, and Fuel Price Draft Assumptions for the 1985 Power Plan
- Draft Resource Portfolio for the 1985 Power Plan
- Section 201 Workplan (Anadromous fish losses, goals, and objectives)
- Transcript of Tacoma city officials' report to the Council on their experiences with the model conservation standards, January 30, 1985.

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