

N O R T H W E S T ENERGY NEWS

Volume 3, No. 4

Northwest Power Planning Council

July/August 1984



Idaho

Northwest Power Planning Council
Statehouse Mall
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council members:

W. Larry Mills
Robert Saxvik

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:

Keith Colbo, chairman
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
State of Oregon
Portland, Oregon 97201

Telephone: 503-229-5171

Council members:

Roy Hemmingway
Donald Godard

Washington

Washington State Energy Office
400 East Union
Olympia, Washington 98504

Telephone: 206-754-0701

Council Members:

Charles Collins
Kai Lee

Central

Northwest Power Planning Council
700 S.W. Taylor, Suite 200
Portland, Oregon 97205

Telephone: 503-222-5161

Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director:

Edward Sheets

NORTHWEST ENERGY NEWS

is published bi-monthly by Northwest Power Planning Council,
700 S.W. Taylor, Suite 200, Portland, Oregon 97205

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 Administration, emphasizing cost-effective conservation and renewable resources.

Editor: Dulcy Mahar

Graphic Design: Linda Sawaya

EDITOR'S NOTES

Frequently we get requests for permission to reprint something from *Energy News*. We have no objection to reprints of articles so long as the source is credited. Illustrations are a different thing. In some cases the artist, not the Council, holds the republication rights. So, for your own legal protection, check with us first before using an illustration.

Well, certainly someone is reading *Energy News* . . . and all the way to the back section. That's where we ran a list of information sources for the region in the last issue. Since then, several people have written in to tell us about a resource we'd overlooked.

Therefore, we've run "chapter two" of the informational resource listing in this issue and are fully prepared to run

chapter three, etc., if indeed we've missed someone else.

Also, in the last issue we used two illustrations showing construction details in energy-efficient building. For those of you who expressed interest in more information on the subject, the drawings were based on illustrations from **Design Tools for Energy Efficient Homes** by Ken Eklund and David Baylon, 3rd edition, published by Ecotope, Inc. It is available for \$14.95 (plus \$1 postage) from Ecotope, 2182 E. Madison, Seattle, WA 98112. (Washington residents should add \$1.18 sales tax.) —DM

Cover illustration by Georgiana Nēhī

CALENDAR

July 16 — Public hearing on Northwest Power Planning Council's Fish and Wildlife Program amendments in Boise, Idaho.

July 18-19 — Northwest Power Planning Council meeting in Spokane, Washington.

July 19 — Public hearing on Northwest Power Planning Council's Fish and Wildlife Program amendments in Spokane, Washington.

July 24 — Public hearing on Northwest Power Planning Council's Fish and Wildlife Program amendments in Missoula, Montana.

July 24-25 — Northwest Public Power Association Rates Symposium in Missoula, Montana.

July 26 — Public hearing on Northwest Power Planning Council's Fish and Wildlife Program amendments in Portland, Oregon.

August 8-9 — Northwest Power Planning Council Meeting in Kalispell, Montana.

August 10 — Comment period on Fish and Wildlife Program amendments closes.

August 23-25 — Energy '84 in Honolulu, Hawaii. Sponsored by the American Society of Civil Engineers — Energy Division. Contact Dr. Pat Takahashi, Dept. of Civil Engineering, University of Hawaii, Honolulu, Hawaii 96822, (808) 948-7658.

August 26-28 — 1984 Geothermal Resources Council Annual Meeting. Reno, Nevada. Contact Geothermal Resources Council, P.O. Box 1350, Davis, California 95617.

August 29-30 — Northwest Power Planning Council Meeting in Portland, Oregon.

September 14-15 — 1984 Northwest Solar Conference in Portland, Oregon. Sponsored by the Solar Energy Association of Oregon.

September 19-20 — Northwest Power Planning Council Meeting in Boise, Idaho.

September 24-25 — Wild Trout III in Mammoth, Wyoming. Sponsored by the Federation of Fly Fishers, Trout Unlimited, U.S. Department of Agriculture and U.S. Department of Interior. Contact the Federation of Fly Fishers, P.O. Box 1088, West Yellowstone, Montana 59758.

October 26, 1984 — Conference on the Politics and Economics of Columbia River Water in Portland, Oregon. Contact Michael S. Spranger, Washington Sea Grant, 1919 N.E. 78th Street, Vancouver, Washington 98665, (206) 696-6018.

Compiled by Ruth Curtis

IN THE NEWS

Public input invited for F&W amendments

The "gone fishing" sign is figuratively — as well as literally — hung on a lot of doors this summer. But this time the parties are working hard to protect fish, not just catch them. Organizations as well as private individuals have been preparing testimony for proposed amendments to the Northwest Power Planning Council's Columbia River Fish and Wildlife Program. Deadline for written testimony is August 10, and hearings for oral testimony are being conducted in the four Northwest states this month.

The amendments process is a major opportunity for Northwest citizens to participate in one of the nation's most extensive efforts to save a natural resource. The fish and wildlife program, adopted in 1982 at the direction of Congress, is designed to protect and restore the fish and wildlife which have been damaged as a result of hydroelectric development and operations in the basin.

In all, 127 amendments from 28 parties are being considered. Of those, 55 have been proposed tentatively for adoption and 72 have been proposed for rejection. In addition, the Council staff has proposed 31 amendments. The numbers don't tally exactly with the 142 recommendations originally received because some amendments have been modified and combined as a result of consultation with the parties involved. This is particularly true where two very similar recommendations came from two different sources.

Tentative rejections have been based on a Council belief that the proposal did not reflect the best available scientific knowledge, duplicated other portions of the program,

did not meet the goals of the program, or was not the most cost effective way to meet those goals. The Council must also consider legal rights and the mesh of current activities of tribes and fish and wildlife agencies in making its decisions.

No final decision will be made on the amendments until all public testimony is considered. The final adoption will be at the Council's October 10-11 meeting in Yakima, Washington. Hearing dates appear in the **Calendar** of this issue. An order form is also included to send in for materials related to the amendments. For information about testimony, contact Ruth Curtis, information coordinator, at the Council's central office. Address and phone number are on the inside front cover.

A brief synopsis of the amendments appears on pages 20 and 21 of this issue.

Three changes proposed for NW power plan

The Northwest Power Planning Council is proposing three amendments to its Northwest Power Plan. The deadline for public comment on two of the amendments is 5 p.m., July 25.

The first of the two deals with the formula for determining eligibility for 100 percent financing through the Bonneville Power Administration's residential weatherization program. The formula can be found under Program Design Principle 1E of the two-year action plan. The proposed amendment is in response to concern over the equity and administrative effectiveness of the existing formula.

Compared to poverty guidelines set forth by the federal Office of Management and

Budget, the formula appears to unfairly restrict the number of low-income houses eligible for this financing. At its June 7 meeting, the Council voted to propose substituting use of the "regional population weighted median" for the "median city or county" currently in the calculation table.

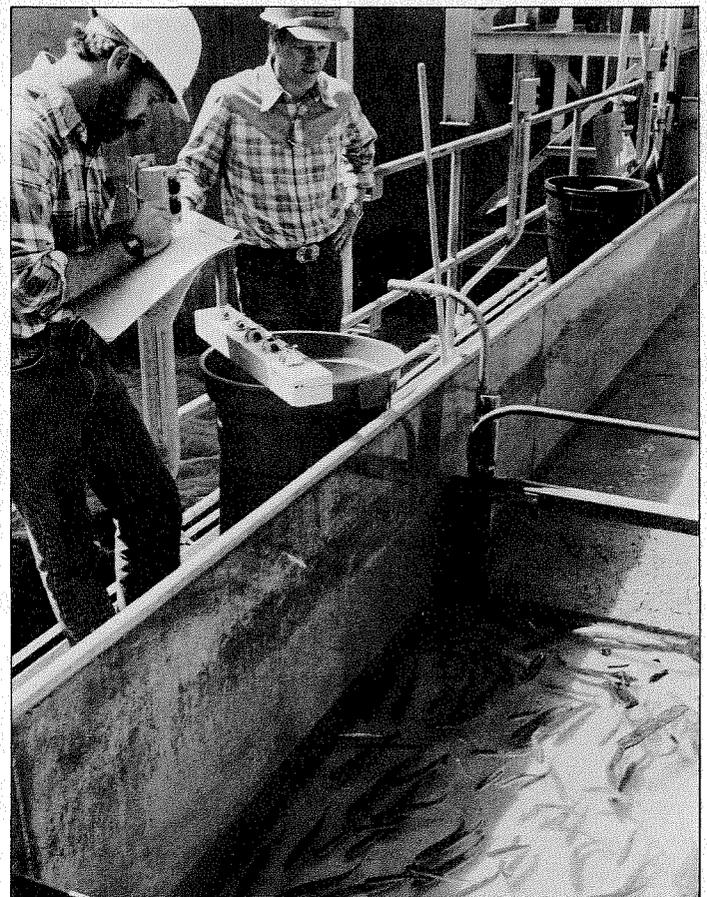
The second revision proposed at that meeting concerned hydropower options (Action Item 14.1) in the power plan. The current language calls on Bonneville to acquire options in six specific categories to test the feasibility of the options concept in the

context of the Federal Energy Commission's (FERC) licensing process.

However, since that language was adopted, it has become apparent that state laws and regulations may pose restraints as significant as those posed by FERC. The amendment would delete the list of specific projects and replace it with objectives for hydropower options. The Council believes this would provide more flexibility to select projects which are best suited for testing the options concept.

A third amendment to the power plan was proposed at

Spring migration brought increased activity for the many groups working to protect fish throughout the region. Here, Barry Keesee and Larry Basham count and check brands on smolts trapped at Rock Island Dam near Wenatchee, Washington. Keesee is a fish and wildlife specialist with Chelan Co. PUD, and Basham is field operations coordinator for the Water Budget Center. This is one of a number of activities that took place during the peak migration between April 15 and June 15.



Wes Tait/BPA photo

IN THE NEWS

continued

the Council's June 6 meeting and relates to the amendment schedule for the Columbia River Basin Fish and Wildlife Program. Deadline for public comment on this amendment is 5 p.m., August 10, which coincides with the deadline for comment on the fish and wildlife program amendments. In Chapter 11 of the power plan, the Council established a schedule for simultaneously amending both its power plan and its fish and wildlife program.

Largely because of its experience with the current fish and wildlife amendments (which involved some 142 recommendations from 28 parties), the Council now feels that a concurrent amendment schedule would not be wise because of the strain it would put on both the Council's staff and the region's interested parties.

Advance mailings as well as federal register notices have gone out on all three proposed amendments. For more information about any amendment or on how to submit testimony, contact the Council's Public Information and Involvement Division at its central office (see address inside front cover). A fuller explanation of the fish and wildlife amendments appears elsewhere in this issue.

Congress looks at regional planning

The Northwest's regional planning is being held up as a model for the rest of the country. Northwest Power Planning Council representatives appeared before the U.S. Congress in late June to describe how such planning works through the guidance of the Council.

The occasion was a hearing on HR 5766 before the House subcommittee on energy conservation and power chaired

by Richard Ottinger of New York. The bill would permit interstate compacts similar to the Council. Most specific powers and duties of these compacts would be left to the states participating in the compact. The major goal of the bill is to meet future energy demand at the least system cost while ensuring reliable energy delivery.

Council testimony stressed that that goal can best be met if the states are given the freedom to work out their energy dilemmas cooperatively across state lines.

WPPSS holds lessons according to authors

An article in the May/June issue of *Public Power* magazine based in Washington, D.C., lists five major lessons learned as a result of the Washington Public Power Supply System (WPPSS) default. Some of those lessons, such as using range rather than single-line forecasting, have already been incorporated into the region's Northwest Power Plan.

Authors Austin Koenen and John Gillespie, a director and associate respectively of a public power finance group, say "planners need to chart maximum and minimum load growth scenarios as well as the projected growth" so that they can consider in detail if the project is off target.

They also stress financial flexibility which they translate to mean a number of smaller projects with shorter construction periods rather than reliance on a single large generating unit.

Economic feasibility is also fundamental, according to the authors, and should be placed ahead of the project's "legal security or its attractiveness to utility managers." Ratepayer willingness, not just ability, to pay was also cited as an important planning factor. The authors cite ratepayer resis-

tance to proposed solutions as a major factor in the WPPSS stalemate.

Management was also considered a key, and "performance, not promises, will be the measure of the post-WPPSS marketplace," the article states. It goes on to say that the ability of executives to manage their utilities in everything from "load management

techniques to financial restructuring and strategic planning" will be tested as never before.

The ultimate lesson from WPPSS, the authors believe, is that the "human and financial costs of attempting to resolve problems of this complexity after they occur" may not be worth it in terms of the productivity they will absorb that could be used elsewhere.

NORTHWEST

Sports

Over 26 million young salmon and steelhead were released into the Columbia River and its tributaries this spring. The release was coordinated with water budget releases designed to create currents strong enough to help the fish downstream to the ocean. The water budget is a major component of the Columbia River Basin Fish and Wildlife Program. The water budget center is funded by the Bonneville Power Administration. The spring migration of fish was closely monitored to ensure that the fish traveled at a speed which closely matched their biologically-dictated timetable.

The Northwest Power Planning Council received a "Recognition of Achievement" award from the Washington State Chapter of the American Planning Association. The award was made for the Council's work in its "unique assignment" of coordinating both energy and fish and wildlife planning. Idaho Council member Robert Saxvik accepted the award on behalf of the Council.

Olympic athletes may get an extra spurt of energy thanks to improved air quality via the Northwest. The Bonneville Power Administration has made an offer of surplus firm power to California to help meet power demands during the games. The deal, which involves about 2000 average megawatts at 3.1 cents per kilowatt hour, would allow California utilities to shut down part of their gas and oil-fired generation this summer. This would eliminate some of the nitrous oxide which hovers in the Los Angeles air during the summer, particularly when automobile traffic is high due to tourism.

It may have been the biggest garage sale in the country. Components of the ill-fated Forked River nuclear plant went on sale in New Jersey. The auction included everything from pipe spools to giant steam generators. The plant was abandoned in 1980 by Jersey Central Power and Light Company, which had a 25 percent share. The company had spent \$400 million after completing only five percent of the project. The accident in nearby Three Mile Island is considered a factor in the plant's demise.

MANAGING THE SURPLUS

THE MOVES ARE ALL OVER THE BOARD



by
Susan Skog

Managing an energy surplus may seem like an embarrassment of riches, but it's proving almost as tricky as managing a deficit to the region's utilities. Not only is there some disagreement over what moves to make, there is also considerable disagreement over how much faith to put in that surplus.

Saddled with the cost of power plants whose output isn't currently needed to meet regional demand, Northwest utilities are sizing up their power surpluses and sending signals throughout the Northwest as well as outside the region that there's power for sale.

Portland-based Pacific Power and Light Company (PP&L) has already made a long-term system sale of 70 megawatts and is interested in selling its share of the Colstrip 4 coal-fired plant in Montana. Moreover, the utility could contribute 400

megawatts to an out-of-region sale, according to Rod Boucher, PP&L's director of special projects.

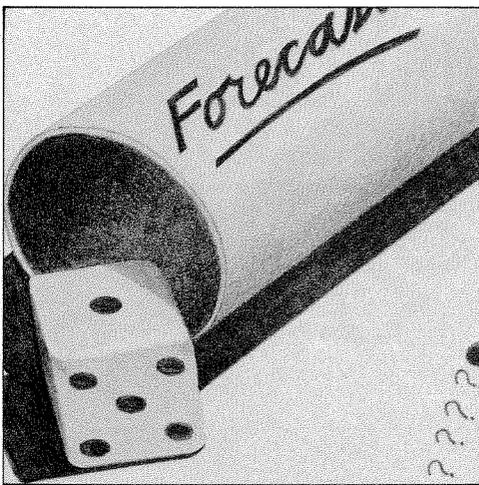
Portland General Electric (PGE) is offering a 200 megawatt package for sale outside the region which includes power from part of its share of the Trojan nuclear plant and Boardman coal-fired plant in Oregon and Colstrip 3 in Montana. Dick Dyer, PGE's power supply manager, says the company is also offering to sell about 30 percent of its ownership in the intertie* connecting the Northwest and California.

Montana Power Company could support a 200 megawatt sale for five-to-seven years or a 100 megawatt sale for up to 25 years if the terms were right, according to Ervin Hedegaard, power operations manager. The company assumes that the Colstrip 4 plant will be operating by April 1986.

To further deflate the surplus, utilities

are examining marketing programs to bolster electrical sales within the region. For example, PP&L soon hopes to introduce a program that would allow some of its customers to shut down wood-waste, gas and oil-fired generators by purchasing electricity to fuel them. Forest products companies such as Crown Zellerbach and Weyerhaeuser would be eligible for the program.

Though these and other utilities recognize that the Northwest's long-term energy needs are still an enigma, they are banking on the fact that disposing of power now will provide short-term economic benefits to ratepayers which far outweigh any risks involved. But not everyone agrees. Others cast doubt on the current marketing effort and fear that, in their zeal to market temporary surplus power to ease short-term financial pressure, utilities may be taking actions that



will come back and haunt the region later in the form of higher rates.

In their haste to dump power in a "fire sale environment," Washington Power Council member Charles Collins fears that as utilities sell resources outside the region, they may be committing them far beyond the duration of the surplus. If that happens, the utilities could be forced to build new resources which would drive up electricity rates, Collins says.

He points out that in the March 1984 Pacific Northwest Utilities Conference Committee (PNUCC) forecast, a firm surplus of about 200 to 300 megawatts is projected for 1988-91. But PNUCC assumes WPPSS nuclear plant 3 will begin producing power in 1988-89. "Talking about a surplus in that environment is almost a misnomer," Collins feels. If the construction schedule for WPPSS plant 3 slips 12 months, the amount of surplus could also drop dramatically. The Hanford, Washington plant is 75 percent complete, and WPPSS is currently unable to borrow funds for completion.

Puget Sound Power and Light Company's senior vice president of operations, David Knight, implores other utilities to approach surplus sales with caution. "We may very well be substituting that power with higher cost (power) later. Is that prudent for the region? It's highly questionable in my mind."

Knight sees only a five-year surplus in PNUCC's projections because a margin of 200-300 megawatts in the late 1980s can't be seen as a surplus in his view. "When you're talking about anything that small . . . losses alone could take care of that." Puget Power is the only private utility in the region which is not carrying a surplus.

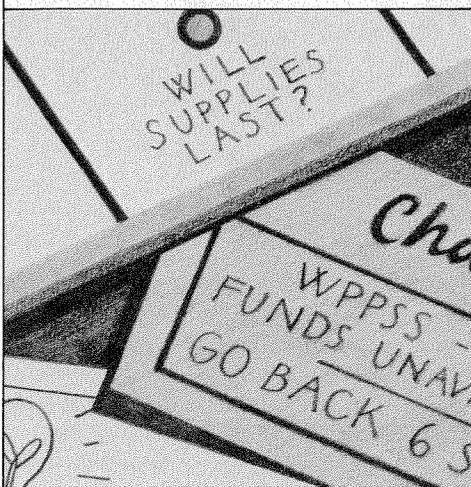
Marc Sullivan, executive director of the Northwest Conservation Act Coalition, also has doubts about how solid the surplus is. "Our suspicion is that WPPSS 1 and 3 will not be completed and that there-

fore throws a lot of assumptions about the surplus into question."

PNUCC Executive Director Randy Hardy says PNUCC's recent forecast shows only three to four years of a substantial surplus, which indicates that a long-term sale to the Southwest could be risky. But no "massive" sales outside the region are planned, and the 1,500 megawatt, 15-year sale once contemplated has taken a back seat to discussions on the viability of a "capacity sale."

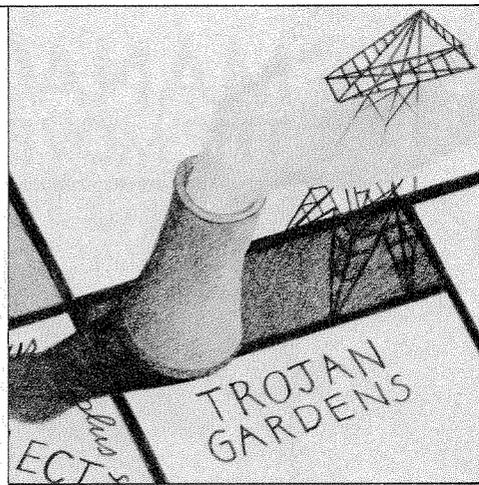
The region's utilities and the Bonneville Power Administration are now focusing on pooling their excess power in hopes of securing a 2000-megawatt capacity sale with California. Such a sale, which is regarded as a lower risk, would allow the Northwest to sell energy out of the region at peak hours or when electrical demand is highest.

This is when purchases are most valuable to the purchaser. The power would then be returned to the region in off-peak hours or when electrical demand is lower, as it would be at night. The sale could also be shaped to sell power out of the region in the summer and returned in the winter. The risk is substantially reduced because energy is returned to the region rather than sold permanently.



To avoid making some bad short-term economic decisions, we must dispel the myth that we have a "very large and unusual surplus," Collins says. "That's not correct . . . The problem is not the unusual amount of power. The problem is that it's expensive.

Normally, a power surplus is part of a healthy utility operating climate, he explains. But the problem with today's excess power is that it's largely concentrated in the hands of only a few utilities such as PP&L, PGE, Montana Power Company and the Pacific Northwest Generating Company.



PNUCC Load Forecasting Manager Gordon McDonald feels some utilities are accelerating their surplus sales efforts because they are "under enormous short-term financial and regulatory pressure. They have so little room to maneuver."

PGE's Dyer agrees that the company is selling its power to "improve the financial strength" of the company as well as to better manage the surplus in the region. Selling surplus power benefits ratepayers and stockholders and is a more productive use of the extra power, he believes. The company expects to have surplus power through the late 1990s.

Hardy acknowledges it's unfortunate that PGE is forced to sell its shares of its coal-fired units, but the company needs to be in a stronger financial position to better write off its share of WPPSS plant 3. He agreed that the financial stability of a utility must come first, even if it may have "detrimental, long-term consequences."

Surplus sales and marketing programs should be pursued now by PP&L because they'll reduce rates, Boucher explains. If the surplus disappears earlier than expected, "we can turn our marketing programs around to produce conservation programs."

The utility is also developing a "bank" of small, short lead-time resources — conservation, cogeneration and hydropower — that could be developed if loads rebound faster than expected. PP&L hopes to find potential small power developers, for example, who could be offered incentives to wait five to ten years to develop their project.

Boucher deflects criticism that the utility may be dumping power today only to turn around and have to build new resources to replace those sold. "We may be putting resources on earlier because of the sale, but it benefits ratepayers in the near term . . . Even if we have to install a large new generator to meet our total obligations, it

may have to be installed anyway in the future." Installing new generation earlier will be less expensive, he notes.

The concern that utilities may build expensive new plants to replace power sold to California is inconsistent with current utility thinking asserts PGE's Dyer. Citing utility reluctance to construct new power plants, he says "it's going to be a while before you see any commitment to major resources in the region." All other sources of power will be used first, he adds. Boucher agrees. "If we've learned nothing else from the last several years, it's that we have to be adaptable. Long lead-time projects expose ourselves to risks."

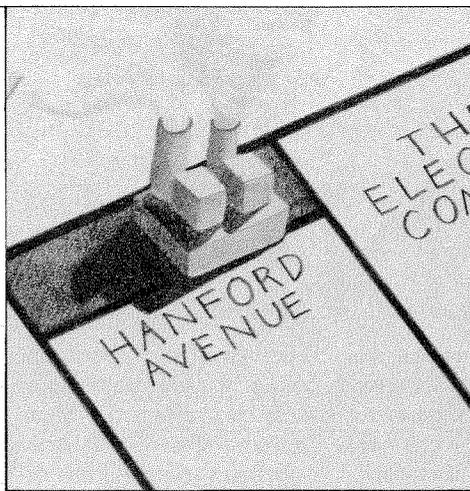
Montana Power's Hedegaard admits, "There's always some risk on any kind of long-term sale that towards the end of the commitment our own customers could have used the energy." But the company hopes to sidestep that risk by keeping its options open to develop new resources.

Collins counters that there's a "finite limit" to the amount of conservation and renewable resources that can be developed to respond to future loads if the region erodes its cushion of surplus. Once those resources are used, he fears utilities will turn to thermal plants.

In fact, Montana Power has plans for another coal-fired plant to come on line in the mid 1900s. If needed, the company could move construction up.

The Northwest Power Planning Council's power plan illustrates that 75 percent of new conservation must come from the agricultural, commercial and industrial sectors. Collins point out that utilities are focusing little attention on how that cheap conservation might be tapped.

PP&L is "working in the direction of developing expertise" in those conservation arenas, but it would be hard-pressed to justify spending a lot of money on conservation right now, Boucher insists. The company is testing the waters to see



"what's out there" and will take advantage of the conservation available in these sectors, he maintains. "Thank goodness we have the opportunity to test these areas."

PGE is confident that if sales and marketing steps chip away at its surplus, conservation could be developed when needed "quicker than new plant construction," Dyer explains. "But no one needs to make that decision today."

Puget's Knight, however, cautions utilities to hedge their bets if they're planning on meeting future loads with new hydropower projects. Environmental constraints and the cost of new plants alone pose significant hurdles, he says. "When they say there's short-term hydro out there, I say 'wait and see.'"

If such uncertainty exists in the region, steps should be taken to increase the flexibility to respond to any foreseeable energy future, Council Executive Director Edward Sheets stresses.

"It's doubly important when you've got some uncertain resources on top of an uncertain forecast that the region avoid locking itself into an intractable position." Sheets also believes the Northwest should avoid such mistakes as failing to adopt the Council's model conservation standards; failing to develop more expertise in commercial, industrial and agricultural conservation; and selling energy resources out of the region for their entire life.

The model conservation standards are "so much in the interest of utilities and ratepayers," but a "single-minded" concern about the surplus has triggered utility opposition to them, Collins believes.

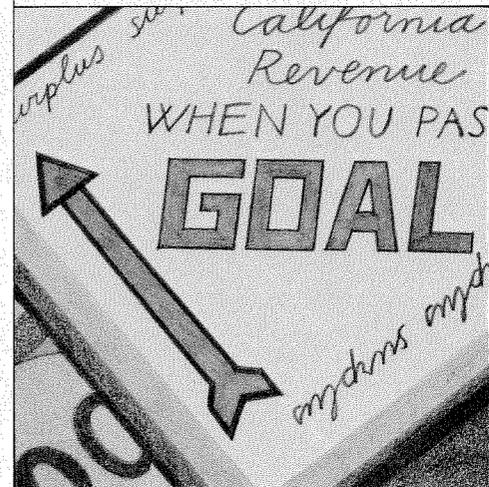
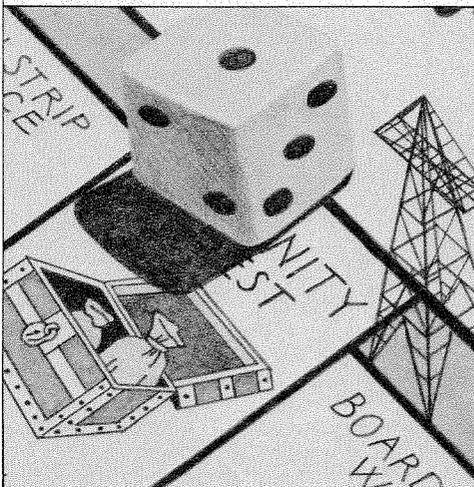
PNUCC's McDonald says that if conservation and renewable resources don't pan out to meet all future loads, the region's private utilities can turn to Bonneville to meet their needs under the long-term power sales contracts they entered into in 1981.

But Bonneville may not be the cup that overflows with power that the utilities expect it to be. The agency predicts that it will be surplus until around 1990, but Power Supply Manager Walt Pollack says "that's simply one view of the future." If there's any change in the region's demand for power, the performance of existing resources or the schedule and amount of power received from new resources, the surplus is altered, he explains. "We can't be too deterministic about the duration of the surplus."

Utilities agree that it's impossible to predict when the region will cross over from surplus power to an energy shortage. But they feel they are positioning themselves to respond to whatever unfolds. Yet there is always the nagging concern that today's surplus may be just a mirage behind which hides a robust economic recovery — and a surge in electrical power consumption.

PP&L has learned "not to claim a great deal about the future," Boucher says. If the utility's learned nothing else, it's learned that it must be adaptable, he added. Likewise, there's a concern that underlies PGE's planning that "our forecasts may be as conservatively wrong now as they were on the other side of the pendulum 10 years ago." Dyer adds. The region made a dramatic swing away from energy deficits within two to three years largely because of economic effects, he said. "You have to ask yourself — could it go the other way?" ■

* The inertia is a transmission system permitting the flow of power from the Northwest to the Southwest, particularly California.



Hazardous JOURNEY

by Carlotta Collette

In early May the author joined four Council members, members of the Council's fish and wildlife staff, Mark Maher and Chip McConaha from the Water Budget Center (See Northwest Energy News, vol. 3, #1, Jan/Feb, 1984), and Doug DeHart from National Marine Fisheries Service (NMFS) on a tour of the lower Columbia River dams to see the "water budget" in action.

The tour began at the Water Budget Center in Portland, Oregon. The Center was set up by the Council and funded by the Bonneville Power Administration to coordinate management of flows for the spring runoff. The staff represents the Columbia River Basin tribes and the fish and wildlife agencies in the Northwest, with a water budget manager from each.

From the Center the group rode up the Columbia Gorge to Bonneville Dam, the first of the big federal dams to be constructed on the mainstem of the Columbia.

IF the dams on the Columbia and Snake Rivers and all of their tributaries had never been built, some other evidence of civilization would probably have intruded on the lives of the migrating fish

in the Basin. Lumbering and agriculture were already taking their toll by altering or destroying fish habitat when the dams were still just a grand idea. The fisheries themselves, with their various sophistications, were causing the numbers of salmon and steelhead on the river to drop significantly. The fish were in trouble and, at the time, little attention was being paid to that fact.

The dams accelerated the decline to such a degree that now there is some question as to whether some runs, such as the spring chinook, will ever be restored. Several stocks of upriver salmon, separated from their spawning grounds by high dams like Grand Coulee, are already extinct.

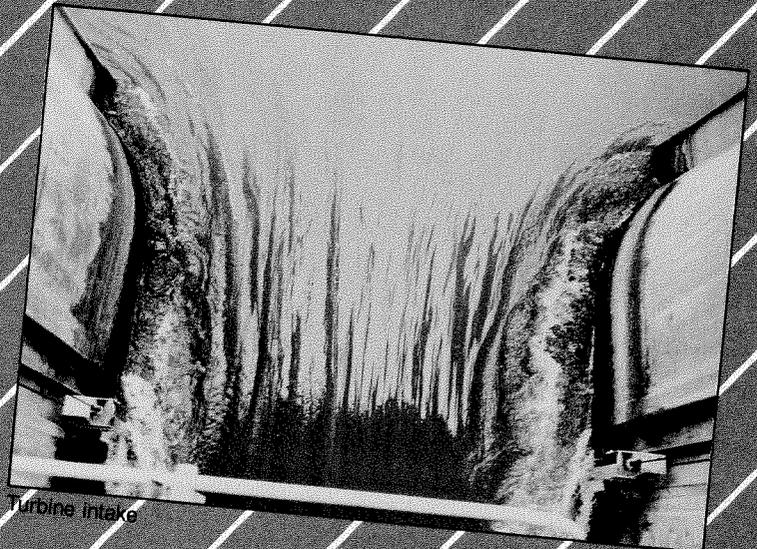
This year, upriver spring chinook salmon returns hit an all time low. The return last year was the previous record low. "While there are historically high and low cycles of returns of all the fish species," explained fisheries biologist Doug DeHart, "for the past 25 years it's been a straight downhill line." Unless action is taken now to protect the upriver spring chinook, from the time they hatch until they return from the sea to spawn, they will likely be our next extinct species.

The chinook crisis is one of the problems addressed by the Council's Columbia River Basin Fish and Wildlife Program.

The "water budget" might be called the flagship of that program. The water budget is a designated volume of water that is released upriver at Grand Coulee, Dworshak and Brownlee dams in the early spring during the peak weeks of the downstream migration of anadromous fish. Because the fish are smolting (going through the physiological transformation that prepares them to spend the next few years in saltwater), they are under severe time constraints. They must make it down the river within a 30 day time limit. The released water is passed through the dams to speed the fish run to the ocean.

Before the Council adopted the water budget, the spring runoff was held in the reservoirs until the water was needed to generate electricity later in the fall and winter. This slowed the natural spring migration, resulting in the deaths of many of the young fish.

Even with the water budget, the trip down the river is a hazardous journey for the young salmon and steelheads. The water budget provides increased flows in the spring, but flows still go through the turbines. Diversion facilities intended to guide the fish away from the turning blades are in some cases inadequate. More than 15 percent of the run are killed at each dam by going through the turbines instead of into the bypass system.



Turbine intake

following the spring runoff

With a run of, for example, a million fish, and eight dams to get through, only about 230,000 may make it to the ocean. And, that's with 15 percent losses; some dams have even higher mortalities. A few more will be lost within the bypass facilities, and still more will get picked off by predators who wait below the dams for the stunned survivors.

First, to Bonneville Dam

Bonneville Dam is 40 miles east of Portland in that part of the Columbia Gorge that is still mountainous and green. Further up the gorge the land smooths out to rolling grasslands, but here at Bonneville the Cascades tower up on all sides.

Bonneville Dam has two powerhouses. The first began generating electricity in 1938. The second was added recently and began turning out power in 1981. Both powerhouses have fish bypass facilities that are close to state of the art.

They have special screens that deflect the fish heading into the turbines. The force of the water propels them up to a chute, known as the gateway. From the gateway they pass through orifices that flush the fish into collection channels inside the dam. The collection channels vary at each of the dams. Some are old sluiceways that were designed to remove ice

and trash from the turbine intake. A few were bored in after the dams were operating.

The channels follow the length of the powerhouse and then lead rather circuitously to the downstream side of the dam, where the fish are poured back into the river. A sampling of the fish are sent first to handling stations where they are sedated, branded, measured and counted.

The guiding efficiency at each dam is that percent of the fish that are heading into the turbines but are "guided" instead into the gateway and out through the fish collection channel. Recent monitoring at Bonneville Dam's No. 1 powerhouse suggest that about 75 percent of the fish entering the turbine intake are guided instead into the bypass facilities.

The second powerhouse, however, showed startlingly poor guidance efficiency. The new powerhouse was equipped with some of the best passage facilities available at the time of its construction. Yet, only about 23 percent of the young fish drawn toward the turbines are diverted into gateways. The rest take their chances in the turbines where as many as one in five will be killed.

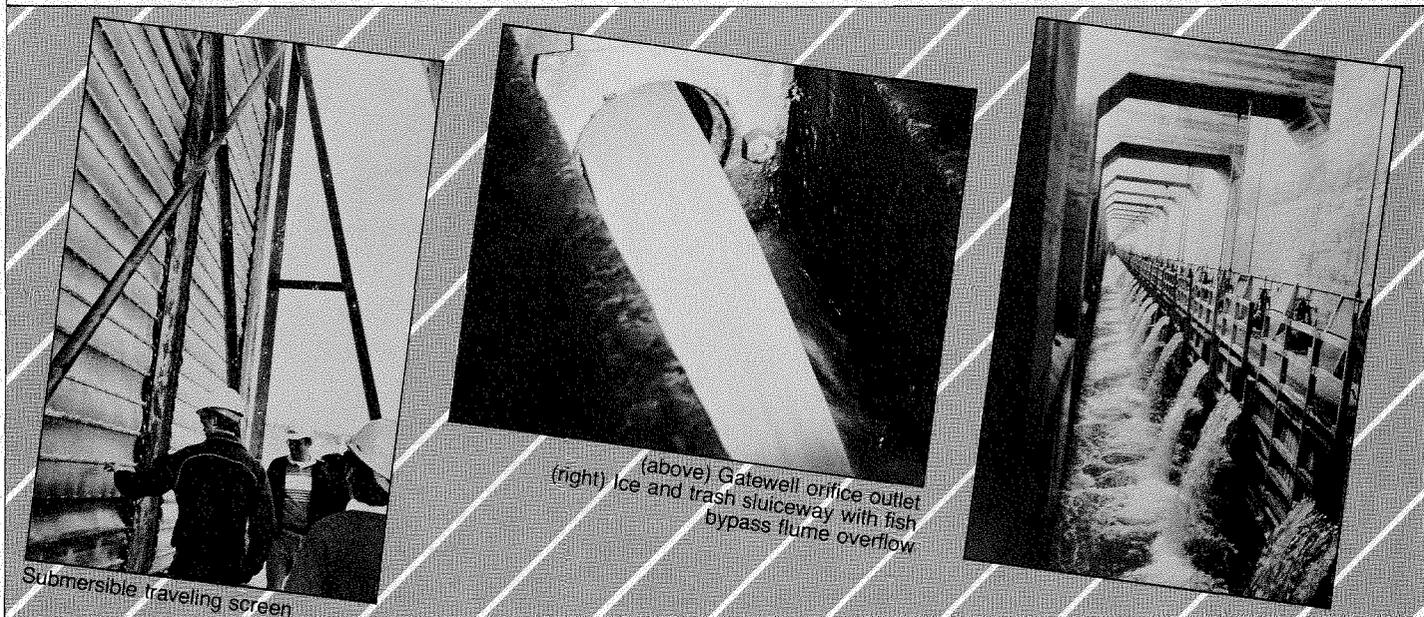
What makes diversion screens at the turbine intakes in each dam work at all is the usual rising of fish into the top 15 feet

of water that flows toward the turbine. Good screens glean this top layer of fish, drawing them into the bypass channels without injuring them.

The problem at Bonneville's No. 2 powerhouse turned out to be a sand berm less than a mile upriver that alters the river's flow pattern and affects this fish stratification. At Bonneville, only about 50 percent of the smolts were found in those upper 15 feet of water. The rest were heading straight for the turbines.

Engineers figure it will cost between \$16 and \$30 million to dredge out that berm to get the \$600 million powerhouse operating efficiently from a fish passage standpoint. Bonneville's No. 2 powerhouse is admittedly a unique situation, (although a similar berm exists at McNary Dam where a second powerhouse is being considered). The lesson, nevertheless, is still a valuable one: the fish and the river are not easily engineered.

Upriver at The Dalles Dam there is an old ice and trash sluiceway that runs the entire half mile length of the powerhouse. When the downstream fish migration is on, the sluiceway gates are opened and the fish are skimmed from the forebay (that part of the reservoir closest to the dam itself) and transferred through the ice and trash channel.



following the spring runoff

From there they can be released downstream of the dam. Unfortunately, only about 40 percent of the fish approaching the dam make it into the sluiceway; the rest are drawn into the turbines, because there are no screens at The Dalles Dam to divert them.

Still further up the river where the desert-like arid landscape dominates, is the John Day Dam. Like The Dalles facility, John Day has no screening for the huge turbines. Until bypass mechanisms are completed (construction began this spring), spring migrating juvenile fish will make their way through the spillgates or through the turbines.

The water budget managers have ordered spills at John Day that begin just at sunset when the smolt quicken their journey, and the upstream adult fish slow theirs. Otherwise, the rush of water from the spillgates would confuse the fish trying to find the upstream passage entrance.

At McNary Dam, some 250 miles upriver from Portland, the whole picture becomes more complicated. McNary Dam has some of the most intricate fish collection and bypass fixtures of any of the river's dams. It is generally considered state of the art, and is the model for much of the improvement planned at other dams.

There are arrays of plastic and alumi-

num tubes and channels that resemble a plumber's nightmare. Salmon and steelhead are separated out at this dam. The salmon are conducted past the dam and back to the river. The steelheads are fed into a 12 inch tube that drops them into waiting barges or trucks for transporting downriver in the Army Corps of Engineers' "Operation Fish Run." When the fish are speeding through one pipe after another, crashing into corners and tumbling over each other on the separation table, the danger in handling the fish is apparent.

Fish handling: a digression

Probably the most difficult thing to observe in any tour of the dams, is the fish handling. Fish handling involves collecting a sampling of the fish, drugging them with a sedative to lessen the shock of the procedures, branding with liquid nitrogen, measuring and counting, and finally injecting a tiny metal stud in their snouts.

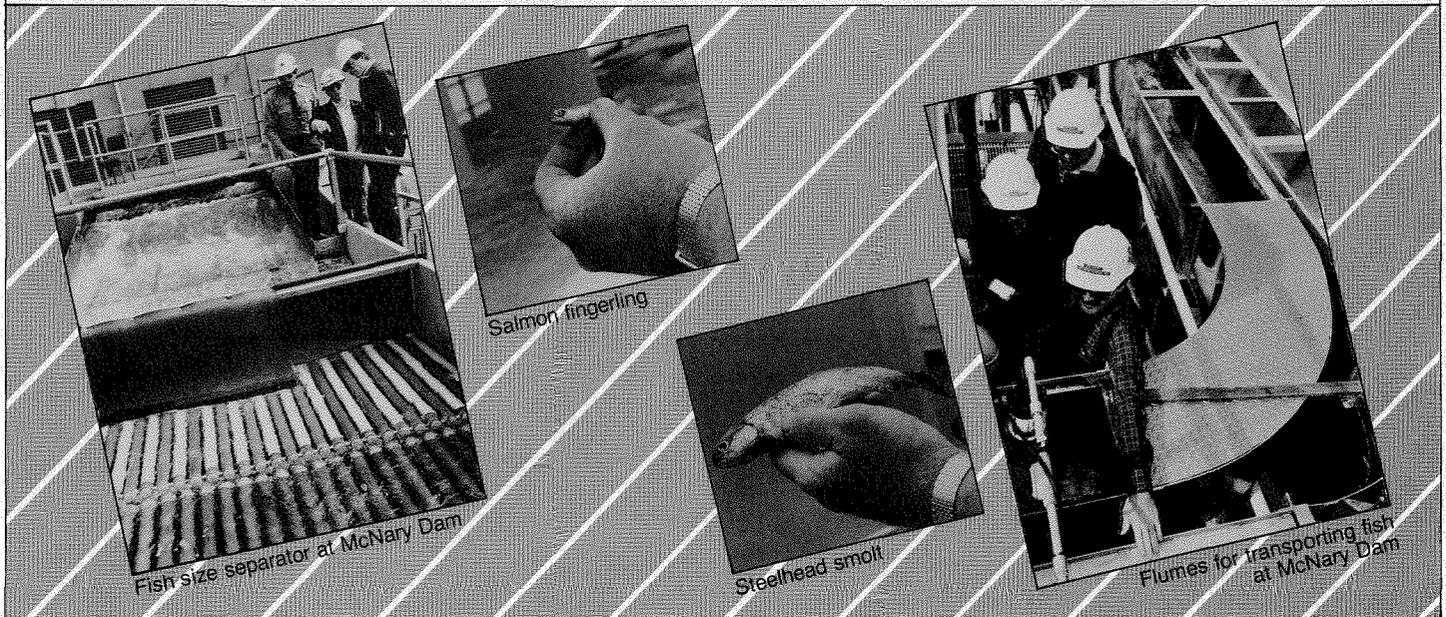
Even before they are handled, they are forced through conduits at incredible speeds. The Corps of Engineers once shot smolts out of a water cannon into a concrete wall to test their resilience. As it turned out, surprisingly few injuries were sustained as long as the smolts were sur-

rounded by water.

At another time, smolts were collected and beheaded for analysis. "In the past," explained biologist Chip McConnaha, "fish were taken at the dams, marked, counted, and then hauled back upriver so they could be dropped and monitored going back through the dam."

McConnaha admitted that handling the fish is still a problem, but improvements are being made in the process. "In designing our monitoring program we've essentially tied our own hands. It's a real sacrifice on the part of researchers, but we have two cornerstones in our work. We try to avoid nabbing the fish at the dams because they're actively smolting and are much more vulnerable then. Instead, we mark them at the hatcheries before they begin to smolt. The second thing we've done is adjust the number of fish we handle, even at the hatcheries. We need a good selection for our study, but we take less than we have in the past."

The Corps agrees that the less you handle the fish, the better. Jim Athearn, chief of the Walla Walla District's fish and wildlife operations, argued, "There's no doubt that if we had good spill and flow conditions every year, the water budget would be our best bet for getting fish safely down the river. It's inherently better because there's less handling."



Operation Fish Run

What Athearn is referring to, what spills and flows with bypass equipment is "inherently better" than, is the Corps' "Operation Fish Run." This is an alternative to the problems at the dams and the water budget that flows through them. Operation Fish Run collects the smolts at dams on both the upper Columbia and the Snake Rivers, transfers them to specially designed trucks and barges, and moves them around the dams, releasing them below Bonneville. Our party rode one of those barges, along with an estimated 27,456 smolts, from Lower Granite Dam on the Snake River, down to Little Goose Dam.

We met the barge at Lower Granite Dam and were shown the handling facilities there. Much like at McNary, the fish are collected and transferred through a complex maze of pipes and channels.

Because the salmon seem to suffer significant losses when transported (20 salmon mortalities to each steelhead death), and show almost no returns to their original spawning grounds later, they are, as much as possible, separated out from the steelheads. The easiest way to do this seems to be by releasing salmon and steelhead from the hatcheries at different

times, so each of the runs is homogeneous. But, at the end of the season many of the stragglers of either species are collected together and transported.

That was the case on our barge. The sorter at Lower Granite was used only to cull out the rubbish and the few kelts (Steelhead who have already spawned and are returning to the sea are called kelts. Unlike salmon, steelhead don't always die after spawning. Some make the journey as many as five times.). We took on about 4,000 pounds of mixed species, of a possible carrying capacity of 50,000.

The barge took just under four hours to make it from Lower Granite, where the fish had been collected, branded, pegged with a tiny metal stud in their snouts and put onboard, to Little Goose Dam 37 river miles downstream.

Little Goose is not the pride and joy of the Corps' operations. Athearn explained, "What you see at Little Goose is not what we'd like to have. We're working at improving our operations there to bring them closer to what we have at Lower Granite." The bypass channel and collection systems have been improved considerably over the past few years, but collection and passage efficiencies are still low.

The picture overall seems somewhat bleak, but much less bleak than even four

or five years ago. With the water budget and the past two years of good water conditions, the fish have stood a better chance of survival than in the past 20 or more years. The year 1983 was good for passing fish downstream. There's no reason to think 1984 will be any less so.

Still, it's much too early to say with any certainty that the runs are indeed improving, and if they are, the complexity of the Columbia River basin ecosystem makes it difficult to determine just what is causing the improvement. In good water years there's no question but that the water budget's artificial freshet moves the fish down the river faster and better than they have moved since the dams obstructed them. Providing adequate bypass equipment at each dam can bring survival to much higher levels than in the past.

But, in extremely low water years, when there will be argument as to whether there is water to spare for anything short of firm power requirements, "Operation Fish Run" will supplement the water budget flows.

At the beginning of our water budget tour, Doug DeHart pointed out that there are now more chinook in the Sacramento River than in the Columbia. That should goad us on to bring back the runs that once were unsurpassed. ■



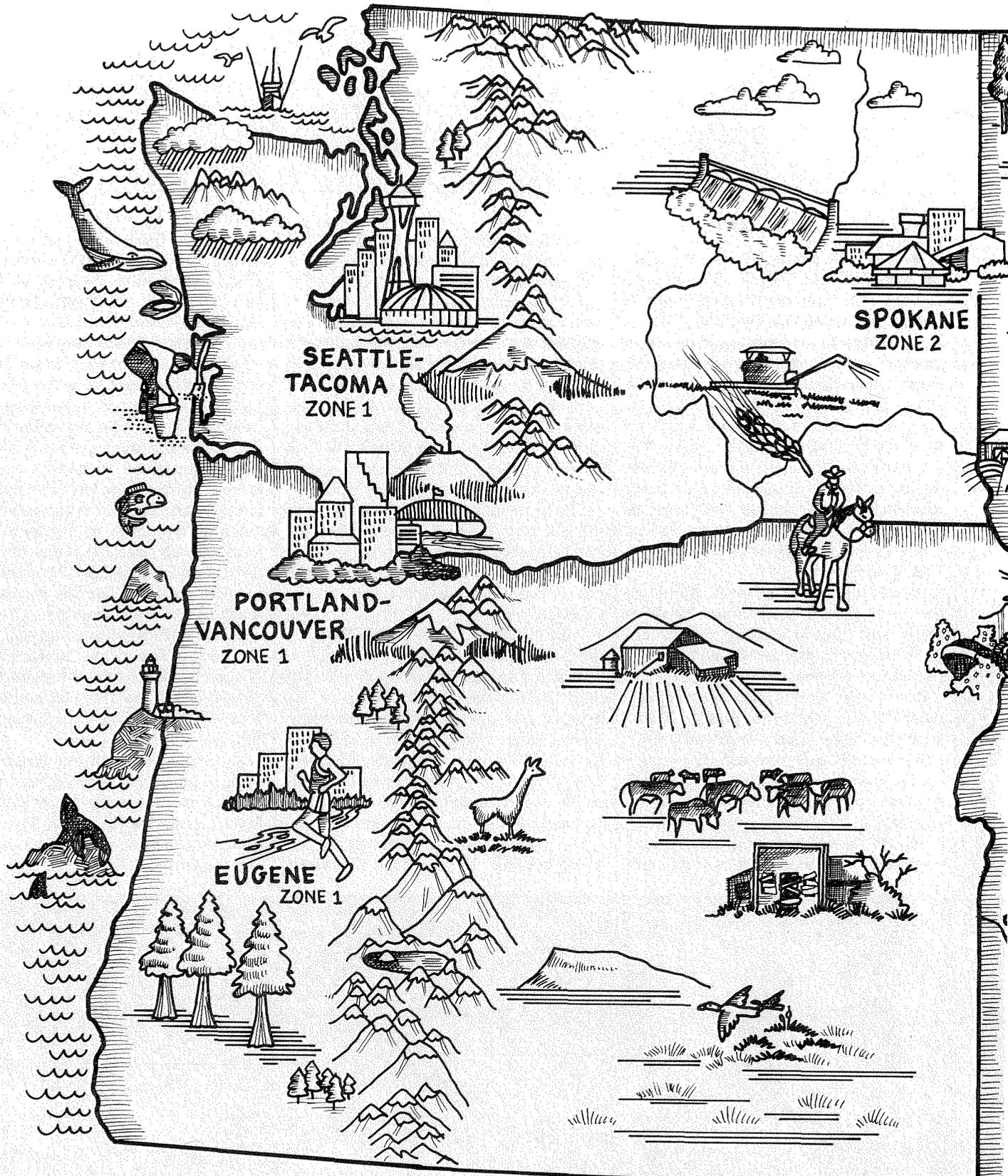
Sluiceway and bypass outlet



Fish transportation barge

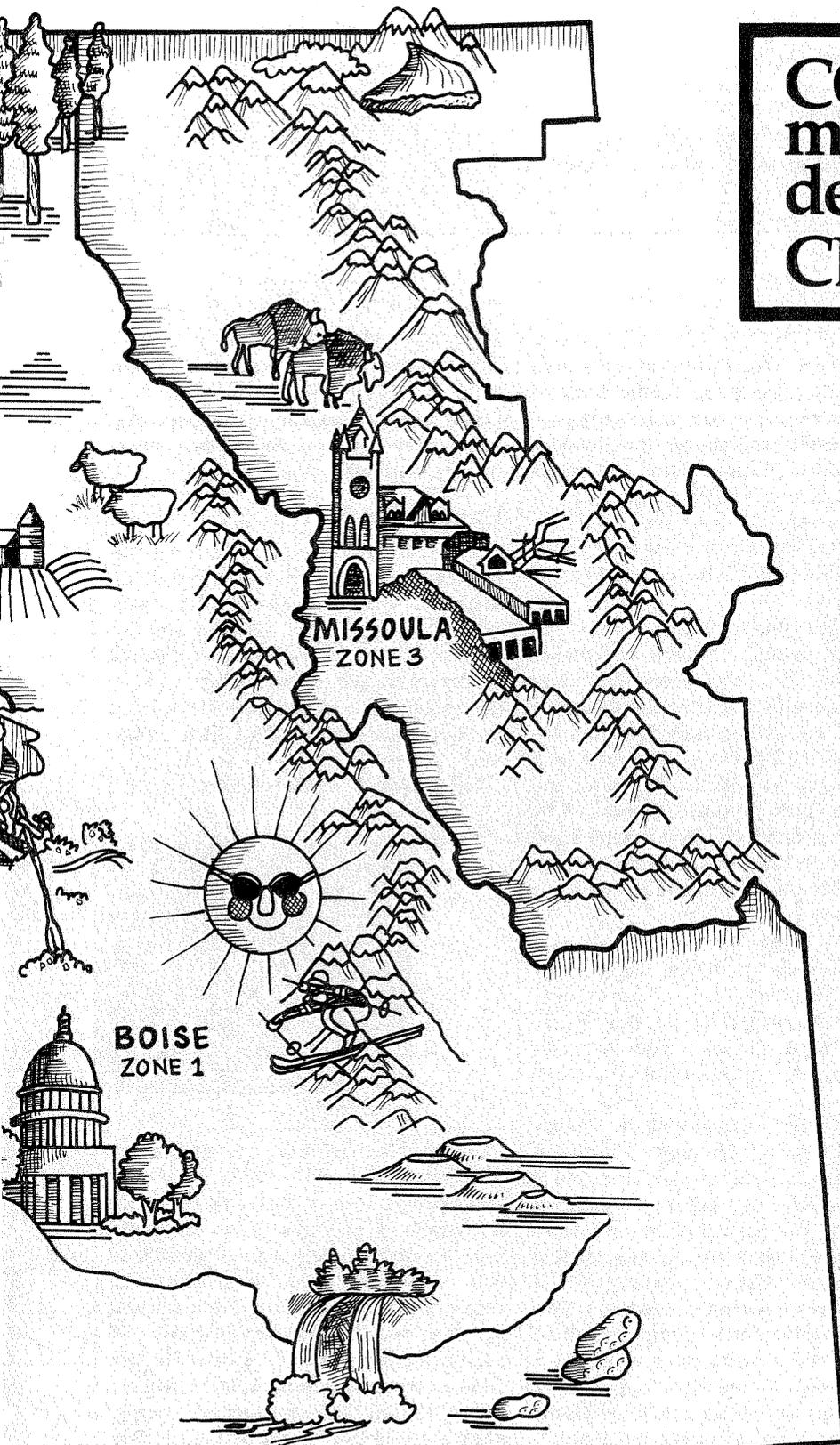


Predators hovering at downstream side of dam



FINDING YOU

CONSERVATION measures depend on CLIMATE



One of the basic questions asked about the Council's model conservation standards is "What zone am I in?" The standards, which set energy budgets for new single and multi-family housing, are designed to provide maximum cost-effective energy savings.

To do this, the standards take both climate and geographic conditions into account. For example, in **zone 1**, the energy budget is 2.0 kilowatt hours per square foot per year for single family units and 1.2 for multi-family units. This zone encompasses most of the mild marine climate west of the Cascades and includes the coastal and lowland areas of Washington, Oregon and southern Idaho.

In **zone 2**, the energy budgets are 2.6 and 2.3 for single and multi-family units, and in zone 3 they are 3.2 and 2.8 respectively. Zone 2 is the more extreme climate east of the Cascades such as the high plateau areas of eastern Washington and Oregon and much of Idaho. **Zone 3** includes the mountainous areas of Idaho and western Montana.

The zones are based on heating degree days as determined by the U.S. weather service. Heating degree days (HDD) are the average degrees per year it takes to bring the daily temperature to an "ideal interior temperature" of 65 degrees. The zone 1 range is 4000-6000 HDD; zone 2 is 6000-8000 HDD; and zone 3 is 8000 or more HDD.

The map indicates the zone for the region's major population centers. Most smaller communities will be in the same zone as their nearest metropolitan neighbor. If, however, you do not know which zone you are in, please feel free to contact the Council's Public Information and Involvement Division (see central office address/phone inside front cover). ■

JR ZONE

When Congress authorized construction of Grand Coulee Dam on the Columbia River, its goal was to harness an existing resource for the benefit of the Northwest. On June 1 of this year, a major step was taken toward an energy resource of similar potential. On that date, the City of Tacoma enacted new energy efficient building codes based on the Northwest Power Planning Council's model conservation standards (MCS).

While Tacoma's early adoption of building codes which reflect the standards is a less dramatic gesture, the codes may indeed turn out to be the Grand Coulee of the future.

This analogy was coined by Council member Kai Lee (Washington), when he said, "What Tacoma's early adoption of the code signals is the Grand Coulee Dam of the future. Tacoma will have a housing stock in the 1990s that will serve as a reservoir of power that can be drawn on for years to come." Homes built to model conservation standards are projected to save 60 percent of the energy required to heat a comparable home built to today's standards. These energy standards will continue through the 50-to-60 year life of the homes.

Tacoma is the first city in the region to adopt the Council's standards and in doing so has shown what many consider remarkable foresight. "As we looked at our power needs over time, says Mayor Doug Sutherland, "we saw the need to adopt the MCS in order to keep our rates as low as possible."

Benefits of Tacoma

What makes Tacoma's adoption remarkable is that the city has among the lowest rates in the region — and probably in the country. On the surface, Tacoma might seem to be an unlikely candidate to adopt stringent conservation measures. But as Council member Lee points out, "Tacoma is locking in the benefits of low-cost power that have been the foundation of economic growth in the region."

This will be important to electricity-intensive industries such as Tacoma's two pulp and paper mills, a copper smelter, a petroleum refinery, and two chlor-alkali plants. These industries, along with the direct service industries such as the aluminum companies, form the economic base of Tacoma and the area. Their survival depends upon the availability of competitively priced power.

Ratepayers in the Tacoma area will benefit from adoption of the standards in two distinct ways. Tacoma currently purchases about half its power from the Bonneville Power Administration (which includes costs from WPPSS plants 1, 2, and 3) and generates the rest itself. Power purchased from Bonneville costs Tacoma almost four times that which the city generates itself.

By adopting the standards, Tacoma will reduce its overall future requirements from Bonneville, a protection from future rate increases. By adopting the standards now, Tacoma also ensures the continuation of low-cost power — and for a long time. Ratepayers will also be spared the surcharge (10 to 50 percent) that can be tagged on to Bonneville power sales starting January 1, 1986, for jurisdictions which have not adopted the model standards or similar measures.

Tacoma's efforts will benefit the region as well. Not only will the region gain in the long run from savings in rates due to lower load demand on Bonneville, but the region will be able to learn from Tacoma's experience in implementing the standards.

To help Tacoma deal with the "overwhelming details" of implementation and enforcement, Bonneville has prepared a support package of approximately \$2.5 to \$3 million. The agency points out Tacoma's unique position because it is the first in the region. Other jurisdictions will likely receive a lower level of support. "We feel that Tacoma has taken upon itself all the risks and uncertainties of being a pioneer," says Bonneville's Sydney Berwager, "and we feel the lessons we learn here will be of great value to the region."

Another benefit of the Tacoma experience is the fact that the standards were adopted in both the city (effective June 1) and for all parts of Pierce County that receive electricity from Tacoma City Light (effective October 1). "This experience with both approaches could prove valu-

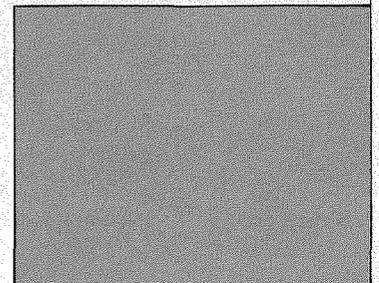
able to others in the region," says Berwager.

The support package itself has four main components — compliance, information, marketing, and incentives.

Compliance

A separate compliance unit will be created within the city building code division to deal exclusively with code-related enforcement. "We'll train five people to start," says Jacob Fey, energy conservation coordinator for Tacoma's city energy office, "and add more as the need develops. We want to do a high quality job."

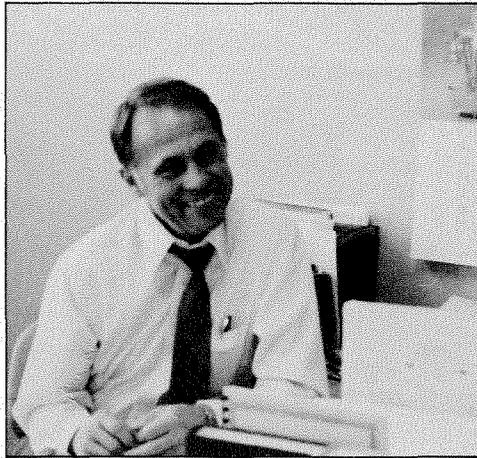
He adds that "At the moment we don't



know the exact work load — how many building permits will be taken out and for what kinds of things. Based on construction starts in previous years, we could have about 1,000 single family and 300 to 400 multifamily units. We'll also have conversion standards to work with and last year we had between 200 and 300 conversions to electricity." Under the new code, homeowners must, at their own expense, retrofit their structures to comply with a conversion standard before they can convert to electricity.

Information

An information unit will provide assistance and training to the shelter industry regarding the requirements of the model standards. This unit will have a computer



Tacoma Mayor Doug Sutherland

by Mickey Riley

TACOMA

Pioneer in conservation



system that will keep all records on such details as the characteristics of the buildings and, eventually, their energy consumption. Fey adds, "We'll also have a compact computer so we can take the program to people and save them a trip to City Hall."

Marketing

A special marketing program will be provided for consumers and builders "to give that marketing boost we think these homes require in the interest of regional conservation and the efficient use of electricity," states Berwager.

Incentives

Approximately \$1.8 million will be available as incentives for builders. The details of this are still being negotiated, but Fey expects that the incentives will start at somewhere close to \$2 per square foot plus the cost of the air-to-air heat exchangers. "We will probably start at that figure with a drop every three months, depending on the number of starts," he says. "Of course, the early builders will get more, but we feel it's worth more to the region in terms of gaining experience."

Each component of Bonneville's support package will provide the region practical field experience with the mechanics of implementing the model standards. Described as the cornerstone of the Council's power plan, the standards project energy savings of approximately 1,400 average megawatts by the year 2002 under the Council's high growth forecast.

Tacoma's early adoption begins the realization of those energy savings and of the Council's one-year-old plan. "The force of the Council's plan won't come out of the law," says Council member Lee, "it will come out of recognition that cooperation among the players is in everyone's best interests. Tacoma is the first hint of that cooperation." ■

new

THE AMERICAN DREAM

Once the American dream of owning a home prompted visions of a white picket fence, priscilla curtains at every window and a spacious back yard in which the kids could frolic. Today, with ever rising heating costs, energy efficient features are beginning to edge out these romantic notions of what a new home should have.

This month, Dan and Janet Drew of Twin Falls, Idaho, will play out a modern-day version of the American Dream when they move into their new "cottage style," three-bedroom, two-bath home, which also happens to be the first energy-efficient home completed in the region under the Residential Standards Demonstration Program (RSDP). The home is one of a wave of new homes being constructed to the Northwest Power Planning Council's model conservation standards in Idaho, Montana, Oregon and Washington, illustrating the benefits of energy-efficient homes.

The energy efficiency of their new home came as a surprise to the Drews, but it helped tip the balance in their decision to purchase the home, according to Dan Drew. "This winter, we're looking forward to seeing how well it performs."

The maiden demonstration home, or "Energy Wise" home as it's called in Idaho, should reap dramatic energy savings for the Drews. If constructed to today's standards, the 1,288 square-foot home would cost about \$400 a year to heat. The Drews can expect to pay about \$155 a year for electrical space heating, according to Steve Payne, energy program specialist for the Idaho Department of Water Resources, which administers Idaho's RSDP effort.

The home features extra thick insulation and a continuous vapor barrier to block heat loss in the winter. Twin Falls builder Lyle Frazier of Raintree Enterprises, Inc., installed R38 insulation in the ceiling, R27 in the walls and R27 in the floor above grade and R19 below grade. (The R factor represents the resistance to heat loss.) The



Builder Lyle Frazier in front of new home.

home also has triple-pane windows and a heat exchanger.

Frazier hadn't expected to blaze any trails in completing his home, but was pleased he was the first builder to make it

*Idaho completes
the first
demonstration
home
in the region.*

by Susan Skog

to the finish line. The last nails were pounded and final rolls of carpet were laid in early May. After appearing in the local "Parade of Homes," the house was sold within five days.

With such a whirlwind schedule, it would be understandable if Frazier took a break. Instead, he hopes to continue his participation in the demonstration program by building what's known as a "matched pair," which includes a home built to the Council's model standards and a similar home with the same orientation to the sun built to current practices to compare the energy costs.

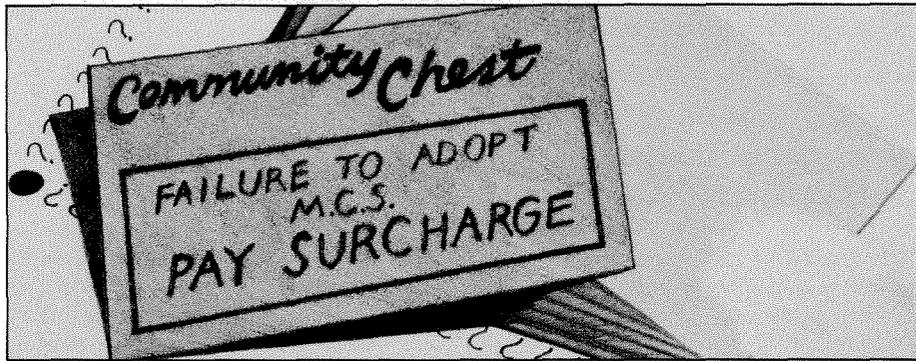
Frazier jumped head first into the Energy Wise program in Idaho because he said he "likes to be involved from the inside," and he wanted to know what could be done to construct a better insulated home. Builders participating in the demonstration program are reimbursed for the additional construction costs incurred in building energy-efficient homes. Funding is provided by the Bonneville Power Administration.

Frazier equates the benefits anticipated from the demonstration program to the positive "spinoffs" that have come from the nation's space program.

One spinoff which he hopes will take place is better access to smaller heating devices, such as furnaces and heat pumps, needed in the energy-efficient homes. Frazier hopes the heating industry will respond with smaller units. He installed a five kilowatt furnace at the Drews' home, which normally would have required a 15 kilowatt furnace, and could have used a smaller one had he been able to find a supplier.

Ironing out these equipment wrinkles will help to lower the cost of future demonstration homes, Frazier feels. While the Drews' home cost more to build, these costs could be greatly reduced in subsequent Energy Wise homes as more experience is gained with the construction techniques, according to Water Resources' Payne. ■

MESSAGE CLEAR ON SURCHARGE



by Jim Nybo

In the year since the Northwest Power Planning Council adopted the regional energy plan, few topics have generated the interest, confusion and controversy that surcharges have. At its May 16 meeting in Helena, Montana, the Northwest Power Planning Council made clear its position on surcharges. For those areas which fail to adopt model conservation standards by January 1, 1986, the Council clearly recommends surcharges.

The Northwest Power Act states that a recommendation to impose surcharges requires a majority vote by members of the Council. In Helena, the Council publicly stated that this action had been taken when the Council adopted the plan and that no additional action by the Council is necessary for the Bonneville Power Administration to impose surcharges. Further, any purchase of power from Bonneville by an electrical utility is potentially subject to surcharge, including purchases of firm power and exchange power.

The Act provides that the Council may recommend to the Bonneville Administrator, and the Administrator may then impose, a surcharge on Bonneville's power sales. Surcharges are to be imposed on that share of a utility's load where a state, political subdivision, or utility has not adopted the Council's standards or comparable energy-saving measures. It sets the level of surcharge at 10 to 50 percent of the power sales rates. Under the regional plan, failure to adopt the model

conservation standards for new electrically-heated residential and commercial buildings, or for switching from some other fuel to electric heat in existing residential and commercial buildings by January 1, 1986, would subject a utility to surcharges.

The purpose of the surcharge is to recover additional costs incurred as a result of not achieving the projected energy savings from the conservation standards. In the Act, Congress told the Council to develop a methodology for determining the surcharge rate. It can be found in Appendix D of Volume I of the Council's power plan.

Members of the Council also emphasized that surcharges are recommended in the Plan even during a period of electricity surplus. The model standards are a long-term resource, extending well beyond the expected surplus period, and must be adopted now to avoid a major lost opportunity, according to the Council. Washington Council member Kai Lee said there has been a tendency for actors to engage in "a convenient misunderstanding" about the effect of failure to adopt the standards on utility rates. Lee said that some utilities seem to resent local governments getting into their bailiwick. Acknowledging that the standards have the potential for major economic impact, Lee pointed out that the standards have a sound basis and are the "economically rational thing to do."

Montana Council member Gerald Muel-

ler noted that there is a good rationale for adopting the standards now, even with the surplus, because the surplus could end very rapidly, and in any event, no one expects it to last the 50 to 100 year life of buildings built today. In expressing his firm support for the standards and the surcharge recommendation, Mueller said, "I won't change my mind unless someone can bring new factual information that the standards are not the good deal I think they are."

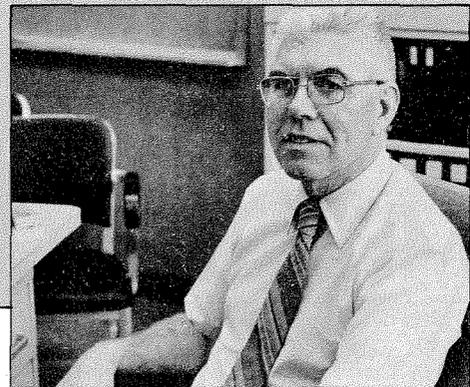
The Act and the Plan do not address the matter of how the surcharges are to be passed on — whether to all utility ratepayers, only those ratepayers in the non-adopting areas, or to utility shareholders. For example, a utility buying all its power from Bonneville and serving a large area where one small jurisdiction failed to adopt the standards might have only a small share of its load surcharged.

On the other hand, another utility purchasing only a small share of its power from Bonneville, might have all of its service area fail to adopt the standards. Who ultimately pays the surcharge would presumably be a matter for the utility or a regulatory body to decide.

The general contract provisions of the power sales and power exchange contracts between Bonneville and the utilities give Bonneville the authority to impose a surcharge under the Act and express Bonneville's intent to adopt a rule for imposing surcharges. The next major step is Bonneville's development of a conservation surcharge policy, which, according to the agency, was initiated in February and will culminate in May 1985.

In sum, then, the regional Council has sent a message that it is serious about surcharges. Surcharges have been recommended by the Council; the methodology for calculating surcharges has been developed; surcharges apply to the Council's model conservation standards; surcharges can be applied not only to firm power purchasers, but also to exchange power; and Bonneville has initiated a process to adopt a rule for imposing them. ■

BPA's Larry Dean Conversation with an energy salesman



How has Bonneville changed since you've been with the agency?

In the first ten years you could see Bonneville becoming more regimented, more of a government agency. When I first came here, when you saw something that needed to be done, you went and did it. That's changed.

The public image of Bonneville was excellent then. It was for many years. Bonneville was looked on as someone who brought good things to the region. Low cost power and industry. With the increase in our rates, we're perceived that way less and less. It used to be wonderful to be able to introduce yourself as a Bonneville employee. Now, it may or may not be good.

I think the change is all due to our rates. We had such advantageous rates for sale to utilities that resold our power, and to industries. Now, the various factors that you and everybody else know about have caused that to change. Our rates have increased very rapidly, which is very bad from a public perceptions standpoint. Even though they're still lowest in the nation, the people who buy the power know how much the rates have changed. Some of them know how that compares to the rest of the country. Some don't.

Don't you think that the transition from a hydropower system to a thermal system affected people's view of Bonneville?

That never really happened. In our short and medium range objectives in this division we kept saying that we had to prepare to operate a mixed hydro and thermal system, but Bonneville's generating system is still almost completely hydro.

That's curious because the public perceives Bonneville as responsible for bringing nuclear power to the Northwest . . .

Of course, I'm speaking from my own viewpoint where we're trying to operate the existing resource. WPPSS plant 2 generated for the first time last month. That was a very big milestone, but it hasn't yet changed the balance of hydro and thermal generation in our system.

We're marketing the Hanford generating project and WPPSS 2, plus 8 percent of Centralia, 30 percent of Trojan and 10 percent of Boardman. That's how much thermal is coming into our system. Excluding WPPSS 2 which is not yet commercial, that amounts to only 1370 megawatts of thermal generation capability out of 23,368 total megawatts. It's not a large part of our operating regime.

Can you provide a nutshell overview of how the power system operates?

In simplest terms, it's a matter of matching generation to load, either in one-second intervals, which is what the computer system in the dispatch center does — it takes a reading every second and changes the generation a little bit so it matches the load — or in longer intervals — like a minute, an hour, a day, a year. In general, our job is to make sure generation is matched to load over all those time intervals. In our organization we're responsible for planning up to the length of the critical period in the future, which is almost four years.

Is that projected load and projected generation?

Right. There are 30 federal hydro projects and the pieces of those thermal projects I mentioned. Those are the resources marketed by Bonneville. We keep the sum of those generating resources matched to the net power we're selling at all times.

Do you end up generating more than you'll need so you'll have some flexibility?

No. Electricity is an interesting commodity. The amount we're producing has to exactly match the amount being consumed at all times.

So what do you do in time of a surplus, like now?

Power is still being consumed instantaneously. Some of it's being transmitted over power lines to other regions and other utilities.

How does the proposed long-term firm power sale to California fit into the picture?

The region has a surplus of generating capacity that is projected to last at least 20 years, and a surplus of firm energy projected to last about seven years. As long as those surpluses remain unsold, they will have an adverse impact on power rates in

by Carlotta Collette

At the Bonneville Power Administration, Larry Dean is the man who directs the people who coordinate the Columbia River System. They buy and sell power to meet loads. They link federal generating plants, capable of generating 23,000 megawatts of power, with non-federal plants in the region's electricity operation.

"It's a really interesting job," Dean mused on the Friday afternoon of this interview. "It involves all the utilities and all of the water operating entities in the region."

Twenty-eight years with Bonneville have afforded Dean the view of an institution in transition.

the region. The proposed sale to California is an attempt to sell those surpluses and thereby to help hold power rates down.

A year ago, the region's utilities were looking at a long-term sale of firm energy. However, it appeared that the region might have to add new resources to support such a sale.

The present thinking is an arrangement whereby Bonneville is acting as an agent for the Northwest sellers. This is to emphasize the sale of the region's long-term surplus of generating capacity and its declining surplus of firm energy. Since the region already has a surplus of these commodities, it will not need to add new resources to support such a sale. After the energy surplus runs out, we would sell only the generating capacity, but we would not be obligated to deliver energy to California.

The arrangement now is that they get to take power during the daytime, the Monday through Friday daytime, when their loads are heavy. Then at night and on the weekends, they return the energy that was delivered. We've been delivering power like that to California ever since the Intertie was constructed in 1968. It's a commodity of real value.

You're saying that we have the equipment to generate the power, but we don't have the water to operate the equipment?

Right. We don't have the water to run the generators all the hours to meet the Northwest energy load. That still leaves the generators available, but without any water or any energy to go with them. The ability to use those generators is a valuable commodity.

Almost every region in the United States is adding generating facilities just to supply capacity. That includes California.

Essentially what this present concept of the California sale amounts to is another level of coordination between the Northwest's hydro-based energy system and California's thermal based capacity system. California's utilities are expanding their generating system based on capacity needs, and we're expanding ours based on energy needs. That leaves us some capacity to spare.

We also have a short-term firm energy surplus, and we'd like to sell some of that to California to help keep Bonneville's rates from going up.

How does the water budget figure into this? Does it diminish our capacity or just reduce the amount of energy we have?

The water budget dedicates some of the firm energy from the hydropower system to help get the anadromous fish down the river in the months of April, May and June. The loss of firm energy was originally estimated at about 550 megawatts. By moving some of the WPPSS 2 plant maintenance into those spring months, we're able to use some of the "fish-flow-energy" to meet firm loads. That has cut the loss of firm energy from the dams due to the water budget to about 385 megawatts.

How has the Council's Power Plan and Fish and Wildlife Program affected your work?

They have had a lot of effect on the kind of things that we do. Certainly the parts of the Fish and Wildlife Program that have anything to do with river operations, water supply, or reservoir levels have an effect on what we do. Their planning for

firm power resources certainly affects the work we do because we're arranging to sell power under contracts that reflect the resources that are provided in the Plan. That Plan will have even more of an effect on our work as time goes on.

How does that feel?

Well, if it wasn't the Council making these kinds of decisions, someone else would be making them. If not Bonneville, then maybe PNUCC. Someone had to do it.

What Council decision had the greatest impact on your activities?

One decision that we at BPA had to struggle with for years, was how to handle the spring fish migration. That decision was much bigger in scope than either I or Bonneville had the capability of dealing with.

There was no reasonable resolution to that problem that was all the way in the direction of one interest or another. It had to be a compromise. I do not believe that BPA was in a position to make that compromise. We didn't know how far to go, and no matter how far we'd go it wouldn't have been far enough to suit some interests.

When the Council came up with all of its public input process and made a decision and issued its Fish and Wildlife Program, that settled that issue for us. Now all we have to do is follow the Fish and Wildlife Program. From that standpoint the Council provided guidance that was sorely needed, you might even say, appreciated.

On the electric power planning side, if the Council had not played that role, someone else would have, but that was not true on the fish side. There was no one able to do this. Absent the Act, who knows what would be happening now. ■

The following provides a brief synopsis of the amendments proposed for addition to the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. For a copy of the actual draft amendment document, which includes the complete amendment language for amendments proposed for addition and deletion, use the order form in this issue.

With one exception, the amendment briefs are presented in the order they would appear in the program – from section 100 on. The exception is the five-year action plan which would, if accepted in the final adoption, become a new section to the program.

FIVE-YEAR ACTION PLAN

The most substantial change to the Fish and Wildlife Program being proposed is the addition of a five-year action plan. Currently the program contains more than 220 actions to be implemented by various agencies in the Northwest, and an additional 100 may be added through this amendment process. As it now stands, the program provides little guidance on the sequence in which these actions should be completed. This guidance is needed as some actions are more urgently needed than others or depend on others being completed first. The proposed action plan would provide this guidance.

This action plan also provides the Program with two priority interim goals. The first is to increase the production of salmon and steelhead in the Columbia River Basin by improving fish passage facilities at the major dams on the Columbia, and concentrating on the water budget flows model hatchery facilities, the Yakima Basin enhancement project and selected hatchery improvements. The second goal is to protect the ratepayers' investment in the program. This will be accomplished through evaluations of projects, funding limitations, and establishing long-term program goals.

SECTION 100: INTRODUCTION

The introduction to the program describes the purpose of the program, how the program was developed, and the Council's role. It also addresses the rights which must be honored (such as Indian treaties) as well as program costs and funding sources.

Summary of changes. The only changes proposed in this section correct technical inaccuracies and do not alter substance.

SECTION 200: PROGRAM GOALS

This section of the program establishes an anadromous fish study to identify losses due to hydroelectric development and to set goals for restoration of specific stocks at specific sites.

Summary of proposed changes. One proposed change is a technical alteration to update the program to reflect a delay in the goals study. Out of date deadlines were removed. Another change would set standards for the Council to review new resident fish projects in lieu of a resident fish goals study. A third change reflects a Council proposal to evaluate its use of the Fish Propagation Panel, an advisory committee to the Council.

SECTION 300: ANADROMOUS FISH: DOWNSTREAM MIGRATION/WATER BUDGET

This section of the program establishes a water budget to help fish during the critical spring migration period between April 15 and June 15. A water budget is a block of water that can be "shaped" to increase spring flows, thus creating an artificial freshet. This section sets up a water budget center and water budget managers.

Summary of proposed changes. One change is a minor date change. The other calls for Bonneville to fund water budget policy meetings to coordinate tribal activities.

SECTION 400: ANADROMOUS FISH: DOWNSTREAM MIGRATION/PASSAGE

This section of the program calls for interim spills and improved collection and bypass systems using conventional screens to prevent death and injury to fish caused by turbine blades and pressure changes. It also calls for research on predation and mortality.

Summary of proposed changes. One amendment transfers funding responsibility from Bonneville to the Corps for facilities at John Day Dam. Other amendments update the program to reflect that evaluations by the Corps called for in the original program have been completed at The Dalles, Lower Monumental, and Ice Harbor dams. New actions are called for. Other amendments focus on studies.

SECTION 500: ANADROMOUS FISH/OCEAN SURVIVAL

This section of the program addresses the problem of overfishing and indiscriminate harvest of stocks in the ocean. Measures call for consultation and coordination among groups with jurisdiction over coastal waters and with fish and wildlife agencies and Indian tribes. In certain instances, funding of facilities is tied to the imposition of adequate harvest controls.

Summary of proposed changes. Several proposals deal with escapement, the ability of fish to elude capture and return to spawn. Amendments call for escapement goals consistent with the goals to be established under Section 200, regulation of tributary fisheries to protect rearing and migrating juvenile fish, and annual reports on how escapement objectives are met. One amendment calls for a state-of-the-art technique to monitor fish stocks called electrophoresis. It would allow greater protection of weaker stocks. Other proposals remove restrictions tied to harvest controls for a Yakima Indian Nation hatchery and acclimation ponds at John Day. These are addressed more fully in Section 700.

SECTION 600: ANADROMOUS FISH/UPSTREAM MIGRATION

This section of the program provides measures to improve water levels, flows, and fishways to help adult fish migrating upstream to spawn. Measures call for determining optimum flows, spill guidelines, and improved fishways. Studies of passage problems, improved data collection, and assessment of spawning and rearing areas are part of this section.

Summary of proposed changes. Changes in this section were minor. One transfers funding responsibility from Bonneville to the Corps, and another updates the program by deleting a reference which calls for feasibility studies which have already been conducted.

SECTION 700: WILD, NATURAL AND HATCHERY PRODUCTION

This section of the program emphasizes the restoration of wild and natural fish stocks which are genetically stronger than hatchery fish. Measures call for improved flows at spawning and rearing grounds, water temperature controls, and habitat and passage improvements. Measures also call for a survey of sites for hatcheries and fish releases. The program gives priority to improving existing facilities over building new ones.

Summary of proposed changes. More recommendations were received for this section than any other. Proposed changes emphasize the importance of gene conservation and include new offsite enhancement projects. They also would set a spending level for Bonneville funding of habitat and passage improvements. An existing measure for water temperature controls at Dworshak Dam is proposed for deletion, while a new measure would call for evaluation of the area below the dam for fish production. More specific language is proposed to clarify measures on hatchery effectiveness, genetic stock assessment, and disease and smolt quality. The language would give more specific directions to Bonneville. Other proposed amendments would remove restrictions to building a Yakima Indian Nation hatchery and John Day acclimation ponds. The Yakima hatchery, which has been designated a "model hatchery," may not produce fish that are subject to inadequate fishery controls. Approval of permanent ponds at John Day

Action plan highlights F&W amendments

will be conditional on the effectiveness of the temporary ponds. Other suggested changes reflect a Council proposal to evaluate the role of the Fish Propagation Panel, an advisory committee to the Council.

SECTION 800: RESIDENT FISH

Like anadromous fish, resident fish also have been threatened by hydroelectric development which has created changes in water flows, levels, and temperatures. Natural habitats have been altered reducing access to food and increasing vulnerability to predators. This section of the program sets flow requirements, temperature controls, and limits drawdown at specific reservoirs. Measures also call for streambed protection and other restoration work as well as studies and research.

Summary of proposed changes. Key changes in this section call for more indepth research on the white sturgeon and Bonneville funding of a hatchery on the Colville Indian Reservation. More minor changes transfer the source of funding, clarify the reason there are no anadromous fish in Montana, and simplify language relating to research in the lower Clark Fork drainage. Other measures call for Bonneville to fund research and studies, rearing pools, and enhancement activities. A final amendment calls for specific parties to consult over irrigation water releases.

SECTION 900: YAKIMA RIVER BASIN ENHANCEMENT

Competing demands for water have taxed the water supply in the Yakima Basin while outdated or nonexistent passage facilities have blocked migrating fish. The Yakima Basin projects are high priority projects because, while the problems are extreme, the potential for solving them is high. The program calls for water conservation and storage, correction of passage problems, and establishment of minimum flows.

Summary of proposed changes. The original program language is very specific in its requirements for improving fish passage problems. The amendments provide more general language to allow greater flexibility in design with appropriate oversight by the agencies and tribes. Other amendments make technical corrections without altering substance.

SECTION 1000: WILDLIFE

The lakes created by the dams inundated natural shoreline habitats, and development stripped other habitats of vegetation and increased harrassment and predation. The program requires that wildlife interests are represented in planning and stipulates mitigation status reports. It also calls for studies of the effects of power transmission corridors on wildlife and directs the acquisition of compensation lands where necessary.

Summary of proposed changes. The proposed amendments rewrite measures in the original program to clarify the transition from planning to implementation of wildlife activities. The amendments call for more consultations, studies, and Bonneville funding. Others set criteria for land acquisition; add four new projects at Dworshak Reservoir; direct a study of deer losses due to Grand Coulee Dam; and establish an onsite survey within the Gorge to identify wildlife, habitat, and enhancement opportunities.

SECTION 1100: ESTABLISHMENT OF A FISH AND WILDLIFE COMMITTEE

This committee was established to oversee implementation and develop research objectives for the program.

Summary of proposed changes. There were no amendments proposed for this section.

SECTION 1200: FUTURE HYDROELECTRIC DEVELOPMENT

In order to protect fish and wildlife in the future, the Council set conditions for future development and required that permits for new development be reviewed for potential impacts on fish and wildlife. The program also establishes a river assessment study to determine the impact potential development sites would have on fish and wildlife and to designate those areas which should be protected from development.

Summary of proposed changes. The single change is a technical correction which does not alter substance.

SECTION 1300: COORDINATION OF RIVER OPERATIONS

This section requires that the program be considered at all steps of power planning. It also directs that extensive consultation and coordination take place. It calls for federal project operators to consider the use of Canadian storage water and to develop maintenance plans. Bonneville funding also is addressed.

Summary of proposed changes. An amendment calling for Bonneville to fund water budget meetings was renumbered and inserted in Section 300.

SECTION 1400: AMENDMENTS

An amendment process was built into the program to allow flexibility to accommodate new research and technology as well as to correct any errors. Amendments are allowed on motion of the Council at any time and by outside parties through an official public process described under "Amendments Process" in this draft.

Summary of proposed changes. Two technical changes were included. One alters the amendment schedule so that it complies with the Council's power plan, and the other removes the required two-month "threshold review" of amendment applications.

NEW SECTION 1500: FIVE-YEAR ACTION PLAN

Summary of proposed changes. Currently the Program provides little direction about the order in which its measures should be carried out. This new section is a five-year action plan to provide guidance on scheduling the implementation of the Program.

SECTION 1600: DISCLAIMERS AND SECTION 1700: GLOSSARY

No changes are proposed except to renumber the sections to accommodate the new Section 1500 action plan. ■

compiled by Ruth Curtis

COURT TO FERC: PROTECT FISH

The Federal Energy Regulatory Commission (FERC) got word last month from the Ninth Circuit Court of Appeals that the Northwest Power Act "imposes substantive as well as procedural obligations on FERC."

The "substantive" obligation placed on FERC in this case requires "equitable treatment for fish and wildlife" in any hydroelectric dam licensing in the Columbia River Basin. The Court decision was in response to FERC's reissue of a 40-year license to the Rock Island Dam without first requiring improvements in the Dam's fish passage facilities.

Back in 1930, when the Rock Island Dam became the first hydroelectric project to span the Columbia River, there was little concern about providing passage for fish migrating up or down that wild rush of water to the sea. When the Federal Power Commission (now the Federal Energy Regulatory Commission — FERC) first licensed it, there was one powerhouse with no facilities for downstream fish migration.

When the second powerhouse was licensed in 1974, the fish passage situation had been only slightly improved. Going against the recommendations of the National Marine Fisheries Service (NMFS) and the Washington State Department of Fisheries and Game that passage facilities for juvenile fish be incorporated into the new powerhouse, FERC issued the second license with the caveat that the Chelan Public Utility District, which owns and operates the dam, conduct studies on the effects of the dam on the fish. FERC also reserved the right to re-open licensing to modify the dam for fish considerations.

In 1976, the State of Washington petitioned FERC to amend the existing licenses on five mid-Columbia dams, one of which was Rock Island. The goal of the proposed amendment was to require the dams to improve their fish passage facilities. The five dam petitions were combined into what was called the "Mid-Columbia Proceeding."

The proceeding was divided into two parts. In the first part, FERC ordered a quick hearing to consider measures to improve conditions for the 1979 spring smolt run. In phase two of the proceedings, FERC began procedures to determine long-term solutions. An interim settlement provided minimum spills and flows during peak runs until 1984. Even with these minimum flow and spill re-

quirements, juvenile fish bypass facilities at Rock Island Dam are considered very inadequate by fishery experts.

In the meantime, Chelan's 50-year operating license for Rock Island expired in 1980. FERC issued temporary one-year licenses for 1980 and 1981 and gave public notice that a long-term license was under consideration. Washington and NMFS petitioned to intervene in the proceeding stating that fish protection measures should be incorporated into the new license.

In May 1981, Rock Island was granted a new 40-year license to operate. No hearings were held. NMFS and the State of Washington were not told of the pending decision. Nor was an Environmental Impact Statement prepared. FERC spokespersons indicated that the agency felt that the Mid-Columbia Proceeding had covered the issues of fish safety and that no further action in that area was necessary until the entire Mid-Columbia Proceeding was settled.

NMFS, joined by the Yakima Indian Nation and the State of Washington, appealed the action. The National Wildlife Federation also filed an appeal. They all claimed that the license order failed to comply with The Federal Power Act, the Fish and Wildlife Coordination Act, the Pacific Northwest Power Planning and Conservation Act, the National Environmental Protection Act and the Commission's own regulations. They argued that FERC had neglected to consider fishery protection measures before ordering the license extension.

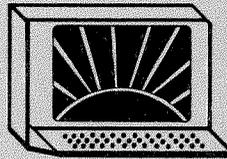
The Ninth Circuit Court of Appeals ruled that "The law is well defined: Prior to issuance of a new license, FERC must study the effect of a project on the fishery resource and consider possible mitigative measures. It is undisputed that in this proceeding FERC did not undertake this obligation prior to issuing the license . . . It also unreasonably failed to prepare an environmental impact statement prior to licensing."

The oldest dam on the Columbia has by this decision been essentially "delicensed." The case has been remanded back to FERC, and there could be additional hearings over FERC appeals and the expected counter-appeals. There is also the possibility that Chelan PUD might opt to put its money into improving fish passage facilities rather than lengthy court battles. ■

by Carlotta Collette



Checking brands at Rock Island Dam.



more REGIONAL RESOURCES

PUBLIC INTEREST GROUPS

A number of citizens' organizations in the Northwest have concentrated their efforts on energy policy and have developed considerable expertise. The public can call on them for information and for opportunities to influence regional energy policy. Among these groups are:

Alternative Energy Resources

Organization

324 Fuller, C-4
Helena, MT 59601
(406) 443-7272

Idaho Fair Share

P.O. Box 1793
Coeur D'Alene, ID 83814
(208) 664-5518

Natural Resources Defense Council

25 Kearny St.
San Francisco, CA 94108
(415) 421-6561

Northern Plains Resources Council

P.O. Box 508
Helena, MT 59624
(406) 443-4965

Northwest Conservation Act Coalition

P.O. Box 20458
Seattle, WA 98122
(206) 784-4379

A number of other groups are actively involved in the politics of energy policy. If you want to get involved, look at the list below for a group in your area.

Audubon Society (Seattle, WA)

Clark Co. PUD Owners Assoc.
(Vancouver, WA)

Environmental Information Center
(Helena, MT)

Eugene Future Power Committee
(Eugene, OR)

Fair Electric Rates Now (Olympia, WA)

Fair Use of Snohomish Energy
(Everett, WA)

Friends of the Earth (Seattle, WA)

Human Resources Council
(Missoula, MT)

Idaho Conservation League (Boise, ID)

Idaho Consumer Affairs (Boise, ID)

Idaho Wildlife Federation (Boise, ID)

In the May/June issue of **Energy News** the editor opened something of a Pandora's box. But instead of troubles pouring out, new information popped up. In that last issue, we ran a list of those places where members of the public could go for information on regional energy and fish and wildlife issues. The article ran under the headline "Region Rich in Resources."

It seems the region is even richer in information resources than we had ever imagined. Since that issue, we have gotten several letters from other groups offering their own lists. We are happy to see the

region is so "resourceful" and appreciate the opportunity to pass the information along.

Undoubtedly we still left someone out. If so, let us know and we will run your information in subsequent issues (this could become a regular department). To qualify for listing, the resource must deal with energy or fish and wildlife issues which relate to the Northwest region and must be available to the general public. Please provide phone number, address, and relevant details such as special hours open to the public. — Editor

ADDITIONAL RESOURCES

Bonneville Power Administration

Boise District Office
Owyee Plaza, Suite 245
1109 Main St.
Boise, ID 83707
(208) 334-9137

Cooperative Extension Service

Montana State University
Bozeman, Montana 59717
(406) 994-3451

Washington Sea Grant Program

Washington State University
1919 NE 78th St.
Vancouver, WA 98665
(206) 696-6018

League of Women Voters

(Boise, ID) (Missoula, MT)
(Portland, OR) (Seattle, WA)

Light Brigade/Washington Fair Share
(Seattle, WA)

Mountaineers (Seattle, WA)

Oregon Environmental Council
(Portland, OR)

Oregon Fair Share (Portland, OR)

Oregon State Public Interest Group
(Portland, OR)

Population Dynamics (Seattle, WA)

Service Employees International Union,
NW States Council (Seattle, WA)

Sierra Club (Seattle, WA)

Southwest Oregon Community Action
Council (North Bend, OR)

United Food & Commercial Workers,
#1001 (Seattle, WA)

Whatcom County Opportunity Council
(Bellingham, WA)

FISH & WILDLIFE RESOURCES

Columbia River Inter-Tribal Fish Commission

2705 E. Burnside Street, Suite 114
Portland, OR 97214
(503) 238-0667

Department of Natural Resources

Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendleton, OR 97801
(503) 276-8221

Fisheries Department

Nez Perce Tribe
P.O. Box 305
Lapwai, ID 83540
(208) 843-2253

Natural Resources Department

Confederated Tribes of the Warm
Springs Reservation of Oregon
P.O. Box "C"
Warm Springs, OR 97761
(503) 553-1161

Natural Resources Division

Confederated Tribes and Bands of the
Yakima Indian Nation
P.O. Box 151
Toppenish, WA 98948
(509) 865-5121

Water Budget Center

(Tribes and Fish & Wildlife Agencies)
2705 E. Burnside Street, Suite 213
Portland, OR 97214
(503) 230-4286

COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council.

- Draft (Fish & Wildlife) Amendment Document
- Columbia River Basin Fish and Wildlife Program (1982)
- Summary of amendment applications (F&W program)
- Complete text of all amendment applications (5 volumes) (F&W program)
- Specific amendment application: specify code number _____
- Proposed amendment for Program Design 1E (power plan)
- Proposed amendment for Action Item 14.1 (power plan)
- Draft of the Council's 1984 annual report

Name _____

Organization _____

Street _____

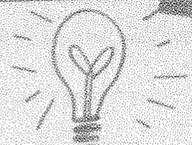
City/State/Zip _____

Northwest Power Planning Council
700 S.W. Taylor, Suite 200
Portland, Oregon 97205



71

COLLECT
California
Revenue
WHEN YOU PASS
GOAL


**THE
ELECTRIC
COMPANY**

If one "Utility" is own