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NORTHWEST ENERGY NEWS

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Northwest Power Planning Council

CONTENTS

This issue's cover illustration is a computer manipulation by Stephen Sasser of a photograph by John A. Harrison.

from the CHAIR

As of October, we have two important salmon recovery plans in the region: the draft Snake River Salmon Recovery Plan, developed by the team appointed by the National Marine Fisheries Service; and the Council's all-species, basinwide Strategy for Salmon. A major challenge for the Northwest will be linking the two plans so we can provide the most benefit for all our salmon — whether they are currently endangered or not.

Over the past few months, I've been talking with Rollie Schmitten, the director of the National Marine Fisheries Service, about ways for his agency to rely on our salmon strategy in his consideration of future Endangered Species Act petitions on Columbia River Basin salmon. Under the Endangered Species Act, federal agencies have the option to use a recovery plan developed by a state or region rather than listing a species and developing a federal plan.

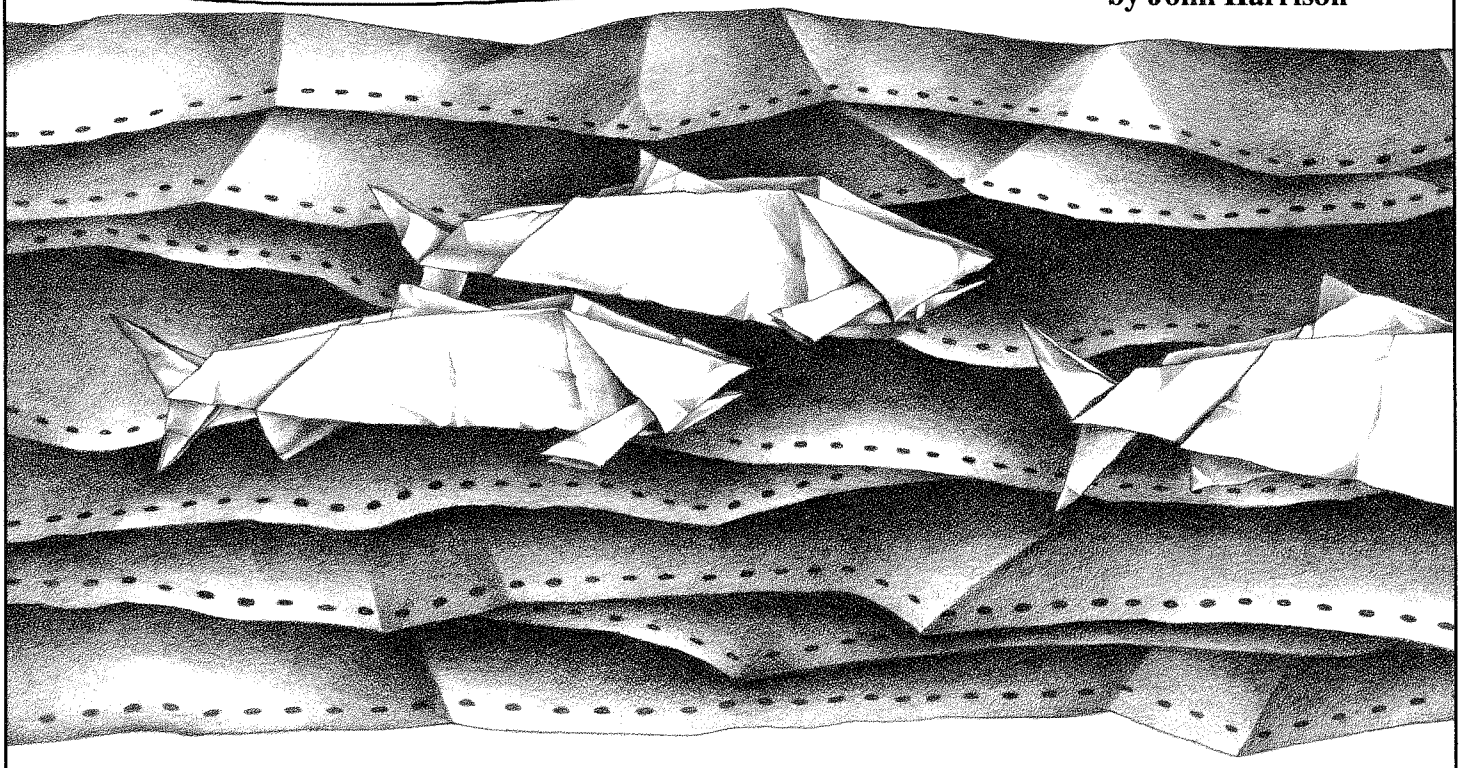
But the regional plan has to be *implemented*. The bottom line is, we can prevent future listing of our fish by acting to protect them now. This is especially critical given that it could be years before the salmon recovery team's draft plan is finalized and implementation of it begun.

If we stall now, or pick and choose which recovery measures we'll try to accomplish, more of our salmon will end up on endangered species lists. And the federal government will increase its control of the Northwest's most valuable river basin. Let's not let that happen. Let's get the job done now.

In October, members of the Northwest Power Planning Council elected R. Ted Bottiger of Washington to be chair of the Council. Bottiger has served on the Council since 1987. His appointment to the Council followed a 22-year career in the Washington State Senate.

PAPER FISH

by John Harrison



SETTING SALMON FISHING SEASONS COMES TO A JUDGMENT CALL.

Paper salmon swim in computers. Paper salmon inhabit analyses, charts, graphs and columns of numbers. They are spawned from data about real salmon, such as annual counts of jack salmon — 2-year-old fish that return early to spawn — and totals of adult salmon harvested by fishers or counted as they pass dams.

Paper salmon are estimates of future generations. They comprise the data behind decisions about how many real salmon can be harvested. And when Columbia River Basin paper salmon spill out of their electronic world, they can spawn their own progeny: controversies.

That's because in the Pacific Ocean and the Columbia River depleted wild runs of salmon mix with stronger runs. Decisions about how many of which fish can be caught, and when, become very difficult. For Oregon and Washington fisheries agencies, which set Columbia River salmon harvest seasons in consultation with certain Columbia River Basin Indian tribes, the dilemma boils down to this: Should harvest seasons protect the depleted runs or exploit the abundant runs?

The confusing answer, according to the paper fish, is yes — both of the above.

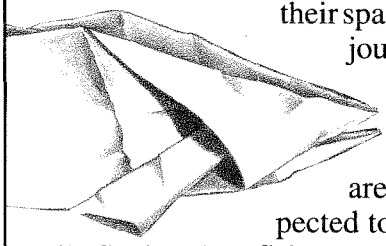
Save the fish, but kill them, too

Consider the controversy over 1993 harvest seasons for fall chinook salmon. Last spring, the Washington Department of Fisheries and the Oregon Department of Fish and Wildlife recommended to the National Marine Fisheries Service that more fall chinook salmon could be caught in the Columbia River this fall than were caught in 1992. This was an important recommendation because Snake River fall chinook salmon are on the federal government's threatened species list, and the Fisheries Service is preparing a recovery plan. Snake River fall chinook mix with healthier fall chinook runs in the so-called mixed-stock fishery. In

Illustration by Joan Barbour

May, the Fisheries Service released a biological opinion on harvest of fall chinook that recommended a Columbia River harvest rate that would allow between 28.4 percent and 42.2 percent of the Snake River run to be captured as they returned to spawn.

State and federal fishery officials estimate that 228,800 adult chinook salmon will enter the Columbia this fall to begin their spawning journey. Of these, 1,616 are expected to be wild Snake River fish.



Even at the lowest harvest rate proposed in the opinion — 28.4 percent — fewer fish would escape capture and be allowed to reproduce this year than escaped last year. And that's the source of the controversy.

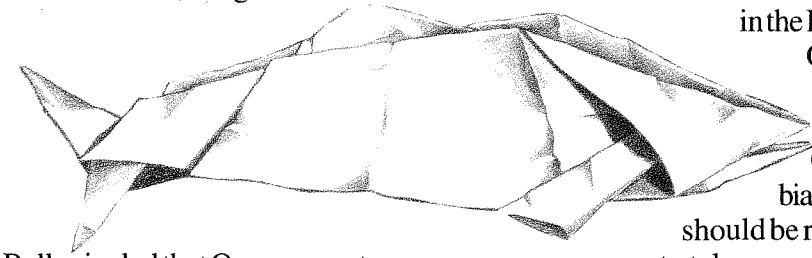
Critics attacked the harvest proposal, focusing on the run size prediction. Oregon Trout, a group that advocates on behalf of wild salmon, spoke out, and so did The Recreational Fishing Coalition, based in Olympia, Washington. The region's utilities and large industries that use vast amounts of hydroelectricity were concerned that the portion of their huge electricity bills that goes to pay for salmon restoration was being wasted by higher harvest rates.

At the heart of the dispute are estimates of how many Snake River fall chinook salmon will escape death — either through fishing or from other causes — to reach their spawning grounds. Escapement is critical to rebuilding the species, so critics wondered how the states and the Fisheries Service could justify killing more of the fish they are trying to save. The states answered that harvest rates are based on trends in survival over several years, not on annual preseason estimates of run sizes. In recent years, the trend is toward increased survival, they said.

WHEN COLUMBIA RIVER BASIN PAPER SALMON SPILL OUT OF THEIR ELECTRONIC WORLD, THEY CAN SPAWN THEIR OWN PROGENY: CONTROVERSIES.

Reading the paper fish

Paper fish projections have their practical application in harvest decisions. Conservation is important, but so is harvest. Columbia River harvest decisions must conform to the rules established in a landmark federal court case, U.S. v. Oregon. In that 1969 case, Judge Robert Belloni ruled that Oregon must manage the Columbia River fishery in such a way that "a fair share" of the salmon reach Indian fishing grounds. In February 1974, another federal judge, George Boldt, ruled that Indian fishers in Washington were entitled to catch half the harvestable fish destined to pass usual and accustomed tribal fishing sites. Three months later Judge Belloni adopted Boldt's 50-50 rule for all Columbia River salmon fisheries.



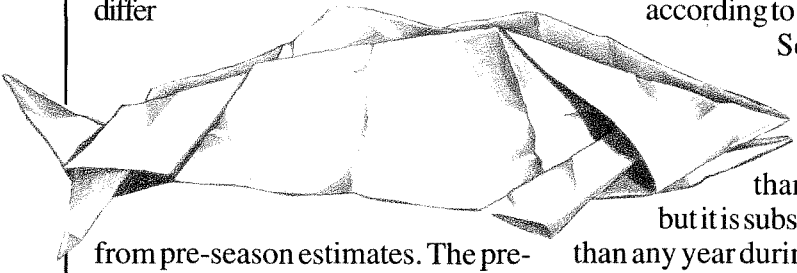
As a result, Washington and Oregon must manage the Columbia fishery in a way that guarantees a fair share for tribal fishers while also guaranteeing adequate escapement. But how many fish is that? When computer modeling predicts a bigger run this year than last, should harvest increase so that everyone gets more fish? Or should harvest be conservative to permit higher escapement of the depleted runs?

Obviously, there's no quick or easy answer. But there is guidance.

Harvest is one of the key points addressed in the Northwest Power Planning Council's Strategy for Salmon, a comprehensive program that aims to increase salmon survival at every stage of the salmon life cycle. The strategy spreads the salmon conservation burden among four broad areas of impact — habitat, harvest, hatcheries and hydropower. It calls for reducing — but not eliminating — harvest in fisheries that affect depleted runs like the Snake River fall chinook. The strategy says all harvests affecting Snake River fall chinook salmon — in the Pacific Ocean *and* in the Columbia — should be reduced to take no more than 55 percent of the run. In the past, harvests sometimes exceeded 70 percent.

Last May, in its biological opinion on harvest of Snake River fall chinook, the Fisheries Service analyzed Columbia River harvest rates for a base period of 1986-1990. During this period, the Service reported, the average harvest rate was 48.6 percent of the fall chinook destined for the Snake River. To protect these fish in 1993, the Fisheries Service proposed a Columbia River harvest rate of between 28.4 percent and 42.2 percent, and the states of Oregon and Washington adopted the minimum rate—28.4 percent—as their goal. This range is lower than the average harvest rate from 1986 to 1990, the Fisheries Service said, but higher than the 1992 harvest rate.

In 1992, the Snake River component of the fall chinook run was 1,359 fish, and the harvest rate was 16.5 percent. These numbers differ



from pre-season estimates. The pre-season run-size estimate was higher—2,141 fish—but the pre-season harvest rate estimate was lower—11.6 percent. The 1992 escapement of these threatened species turned out to be 533 fish.

Using the lowest proposed 1993 harvest rate—28.4 percent of the pre-season estimate of 1,616 wild Snake River chinook—the Fisheries Service calculated that 457 of these fish would escape to spawn this fall—76 fewer than in 1992. At the higher harvest rate—42.2 percent—escapement would be 369 fish. That's what spawned the current controversy.

"Although the expected escapement is less than in 1992, it exceeds the escapement observed from 1986 to 1991," said Rollie Schmitten, Pacific Northwest director of the Fisheries Service. Escapement during the six-year base period averaged 293 fish per year, according to the Fisheries Service. "The expected harvest rate in 1993 may be higher than it was in 1992, but it is substantially lower than any year during the base period," Schmitten wrote.

AT THE HEART OF THE DISPUTE ARE ESTIMATES OF HOW MANY SNAKE RIVER FALL CHINOOK SALMON WILL ESCAPE DEATH.

In August and September, as the annual fall chinook runs began, it became apparent that there were more fish returning to spawning areas or hatcheries above Bonneville Dam than below the dam. As a result, Indian commercial fishers—they fish between Bonneville and McNary Dams—fished for 19 days in August and early September. Non-Indian commercial fishers below Bonneville weren't allowed to begin fishing until September 23, and initially they had only two days to fish.

Critics speak out

All of this sounded fishy to Bill Bakke, conservation director at Oregon Trout.

"The 1993 harvest proposal is unacceptable because it doesn't increase the number of spawners from a larger run of fall chinook," Bakke wrote to Schmitten in July. As the number of spawning fish drops, Bakke wrote, the genetic and life-history diversity of the run is further imperiled.

Schmitten replied with a letter of his own, which said in part: "The status of the listed Snake River salmon is not a problem that can be solved simply by reducing harvest to meet annually increasing escapement goals."

That didn't settle the issue. Bakke's letter and Schmitten's reply were only two in a flurry of letters between state and federal fish agencies, on one side, and interest groups on the other. Positions were attacked and defended as the debate grew ever more complex through the summer.

The unlikely coalition of pro-fishing groups and hydropower users, who more often are at odds over salmon issues, spoke out in a July 28 letter to Randy Fisher, director of the Oregon Department of Fish and Wildlife. Copies were sent to the Northwest congressional delegation.

"It makes no sense to allow the continued harvest of wild stocks that are the subject of extensive regional efforts to help them avoid extinction," the letter said. "In the short term, an important goal for runs protected by the Endangered Species Act should be a year-by-year increase in the number of adult [salmon] reaching the spawning grounds. Harvest management must recognize this goal."

The letter was signed by William Drummond, manager of the Public

Power Council, Al Wright, director of the Pacific Northwest Utilities Conference Committee, John Carr, director of Direct Service Industries, Inc., Jim Lone, president of The Recreational Fishing Coalition, Olympia, Washington, and Jerry Pavletich, West Coast representative of Trout Unlimited.

Fisher and Robert Turner, director of the Washington Department of Fisheries, fired back — again, via the mail. In essence, they questioned the sincerity of hydropower users who attack fish harvest when the dams kill huge numbers of fish. Dam operations can be changed to increase fish survival, but these changes also reduce hydropower production, the managers noted.

"We are doing our part to rebuild these runs," Fisher wrote in his August 10 reply. "I understand the importance of harvest to the recovery of these fish. I also understand the basis for your perspective because of who you represent. We all have needs, including the fish, and I do not believe that continually blaming harvest is productive in meeting their needs."

Turner expressed similar sentiments in a letter of his own.

"To accept the premise of your letter is to ... hold recreational, tribal and non-Indian commercial harvesters accountable for the massive mortalities induced in any given year to both juvenile and adult salmon by hydropower-related operations rather than encouraging greater benefits that can be provided by modification of those river operations," Turner wrote.

Criticism of the Fisheries Service's harvest proposal also caught the attention of Ted Strong, director of the Columbia River Inter-Tribal Fish Commission. Strong replied, in part:

THE UNLIKELY COALITION OF PRO-FISHING GROUPS AND HYDROPOWER USERS, WHO MORE OFTEN ARE AT ODDS OVER SALMON ISSUES, SPOKE OUT.

"It appears that you have chosen the route of rhetoric rather than recovery, a strategy tribes have witnessed for over 50 years. ... The tribes are disappointed that your organizations would prefer to attack federally adjudicated treaty fishing rights instead of cooperating in recovery efforts."

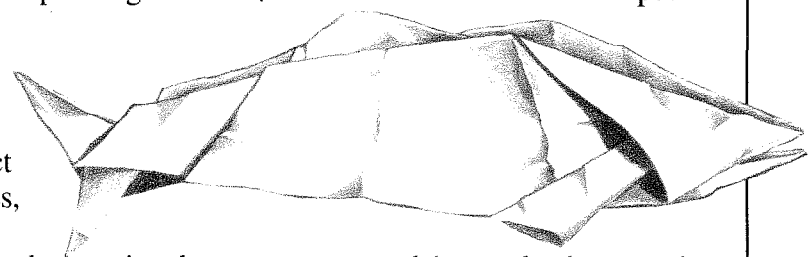
Nanci Tester, environmental manager at Direct Service Industries, Inc., said hydropower users and recreational fishing interests who signed the letter respect tribal fishing rights and met with the tribes to make that clear.

"We're challenging the federal management decisions under the Endangered Species Act, not the people who must adhere to those decisions," she said.

Where's the truth?

It seems incongruous to increase the harvest of threatened salmon at the same time a regionwide effort is under way to save them. But that's an oddity of using paper fish to estimate numbers of real fish, and the key is the unusual salmon life cycle. In any given year, adult salmon swimming up the Columbia to spawn are not all the same age. Each year a mass of juvenile salmon — the previous year's hatchlings, which fish managers call the "brood" — swim to the ocean. But they don't all return to spawn at the same time. Some return as immature 2-year-old fish called "jacks." Adult fish return as 3-year-olds, 4-year-olds and 5-year-olds.

Thus, the 1993 adult salmon run includes fish that went to the ocean as juveniles in 1990, 1989 and 1988. That's why the 1993 adult run doesn't directly predict the size of the 1994 adult run, Turner and Fisher said. To estimate the adult run in a future year, say 1994, fish managers study data about the number of jacks that returned from each brood year that could produce adult fish in 1994. These years would be 1989, 1990 and 1991. They include the number of adults that escaped



capture and the number harvested from the 1992 and 1993 broods. Allowances are made for other types of mortality.

From these calculations come the paper fish. This year, the paper fish runs are increasing. That's why the National Marine Fisheries Service and the states of Oregon and Washington decided to allow a greater Columbia River harvest in 1993 than in 1992. Under U.S. v. Oregon, the states are allowed to increase har-

vest as the size of the run increases.

Turner and Fisher explained the harvest decision to the Power Council in August, and the Council heard a similar presentation from a Fisheries Service representative in September. Turner said he is optimistic about future returns, based on returns in 1992 and 1993 and predictions for 1994.

But others worry that the states are being too optimistic. The Direct Service Industries' Tester said she believes the brood-year approach works better for managing a mix of strong runs than for managing a mix of runs that includes threatened species like Snake River fall chinook.

"It's a fine approach if you want to look back and use history to maintain the status quo," she said. "But I think recovery means improvement. Looking ahead means ensuring as large an adult population as possible to protect and enhance the genetic resource."

Oregon Trout's Bakke agrees. "You need to set an escapement goal for fall chinook in the Snake River that will maintain the genetic diversity of the run," Bakke said. He has no quarrel with using the generational model to make harvest decisions, but some adjustment should be made when one of the runs in the computer is a threatened species, he said. In other words, the goal should be higher escapement, not lower, he said.

Further complications

These decisions are further complicated by the fact that harvest is just one of many ways adult salmon die on their way to the spawning grounds. Some can't find fish ladders that lead over the dams. Some fall back into the turbines after climbing the ladders. Some stray up tributaries. Some die because water in the reservoirs between dams becomes too warm for the fish to survive. Some simply get lost and die. Disease, predators and natural causes also take a toll.

IT SEEMS INCONGRUOUS TO INCREASE THE HARVEST OF THREATENED SALMON AT THE SAME TIME A REGIONWIDE EFFORT IS UNDER WAY TO SAVE THEM.

Not all of these losses are directly related to the dams, but the cumulative impact of these so-called interdam losses during the upriver journey is enormous. For wild Snake River fall chinook, which have to swim past eight dams to spawn, the average loss is 61 percent of the adult run by the time fish pass the last dam, Lower Granite.

Last year, the loss was 53 percent, which Turner and Fisher consider troublesome, but at least an improvement. Turner and Fisher say this reduction largely resulted from releases of cool water in the late summer and early fall from upstream storage reservoirs.

Tester disagrees. While she acknowledges the water could have been used for hydropower generation later in the year had it been kept in storage, she said her concern is not solely for the lost hydropower. Turner and Fisher are minimizing other impacts by suggesting a strong relationship between higher flows and lower interdam losses, she said.

"We've been having higher flows in response to the Endangered Species Act, and while it is true there was higher [interdam] survival last year, the harvest rate also was lower than usual," she said. "By focusing on dams and flows, [Turner and Fisher] are not getting at the other factors. Not all deaths are dam-related."

Meanwhile, Turner and Fisher are optimistic that the Snake River run is rebuilding. They say their critics' arguments are based more on politics than on biology.

"[Our critics] would isolate harvest from all of the other things that the Council has been dealing with for going on three years, and what the Council has done is working," Turner said. Fisher agreed, adding: "I think the Council deserves credit, and frankly the region deserves credit. And I want to make the point that this isn't just due to cutting harvest, which we have done significantly, but it's because of everybody's contributions."

Ultimately, all sides of the paper-fish debate have the same goal: healthy, self-sustaining salmon runs.

"We want a biologically effective solution," Tester said. "Everyone wants the wild fish to recover."

Dr. Donald E. BEVAN

CHAIRMAN, SNAKE RIVER SALMON RECOVERY TEAM

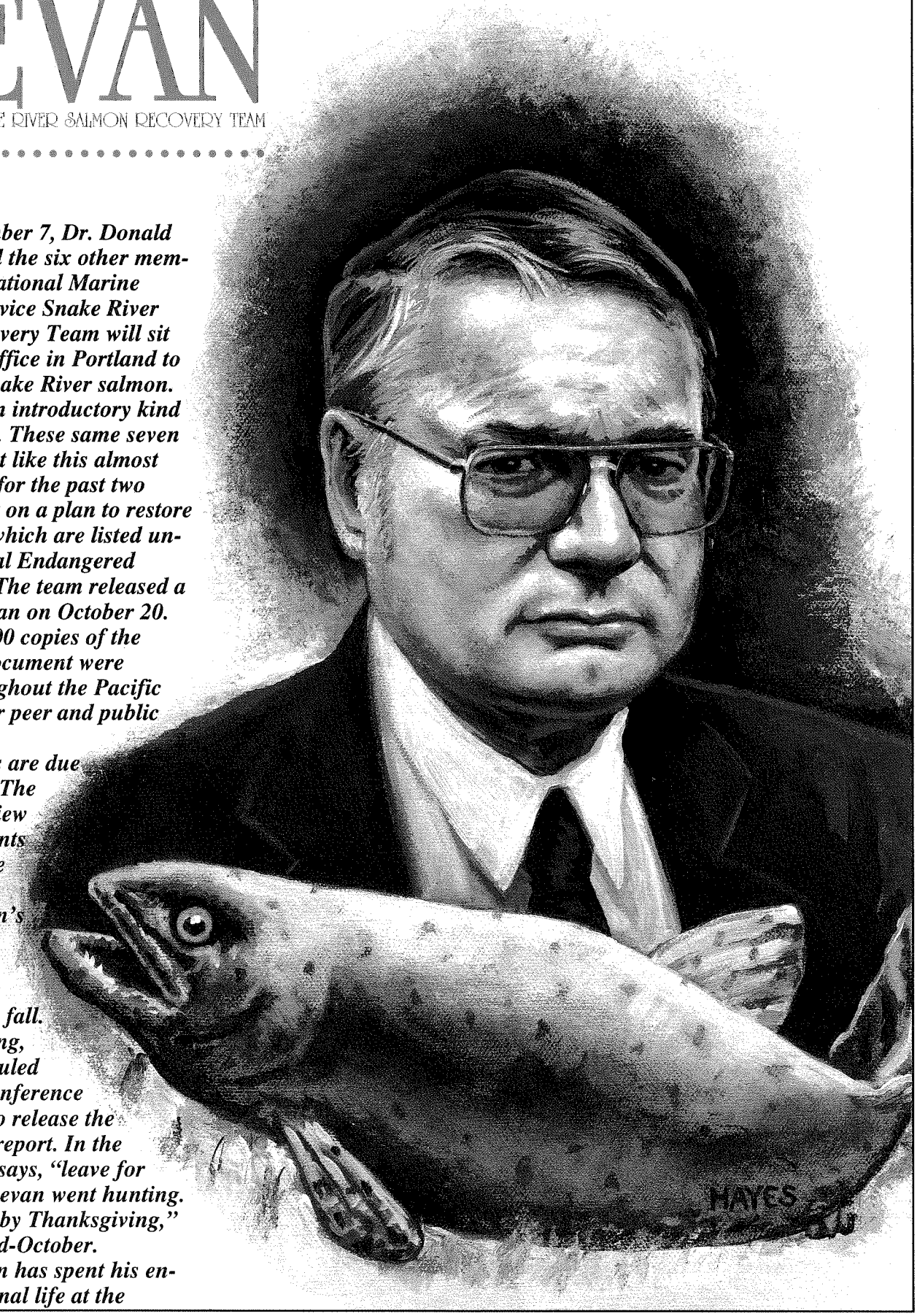
with Linda Gist

On December 7, Dr. Donald E. Bevan and the six other members of the National Marine Fisheries Service Snake River Salmon Recovery Team will sit down in an office in Portland to talk about Snake River salmon. It won't be an introductory kind of discussion. These same seven men have met like this almost every month for the past two years to work on a plan to restore the salmon, which are listed under the federal Endangered Species Act. The team released a draft of its plan on October 20. More than 500 copies of the huge draft document were mailed throughout the Pacific Northwest for peer and public review.

Comments are due December 6. The team will review those comments and revise the plan.

Don Bevan's calendar for October 20 illustrates his priorities this fall. In the morning, he was scheduled for a news conference in Portland to release the team's draft report. In the afternoon, it says, "leave for Montana." Bevan went hunting. "I'll be back by Thanksgiving," he said in mid-October.

Don Bevan has spent his entire professional life at the



Portrait by Stephen Hayes

University of Washington, teaching about and researching salmon and other fish. His undergraduate years in Seattle were interrupted by four years in the U.S. Army in World War II. After getting his Ph.D. at the University of Washington in 1959, he spent a year at Moscow University in the former Soviet Union, where he met his wife, also a fishery biologist.

Since then, he's been on the faculty at the university's School of Fisheries. A former associate dean of the Graduate School, assistant vice president of the College of Fisheries, and director of the School of Fisheries, Bevan currently is professor emeritus of fisheries and marine affairs.

At 72 — and looking about ten years younger — Bevan has been called "one of the grand old men" of West Coast fishing. Two years ago he took on one of the gravest problems for West Coast fish when he was named chairman of the National Marine Fisheries Service's Snake River Salmon Recovery Team. The assignment: write a plan to recover Snake River sockeye and chinook salmon that are listed as threatened or endangered under the federal Endangered Species Act. (See box on page 11 for a complete list of recovery team members.)

The recovery team's charge differs in focus and scope from the Northwest Power Planning Council's Strategy for Salmon adopted in September 1992. By law, Bevan's team must recommend a plan to get enough Snake River salmon returning to Idaho to spawn so the species can be taken off the endangered species list.

The Council's goal is much broader. The Strategy for Salmon aims eventually to rebuild all salmon stocks in the Columbia River Basin to harvestable levels. The Council looked at all impacts on salmon and crafted a comprehensive, regionally accepted and economically balanced salmon recovery strategy.

Even with different goals, the two plans share much in common. They look at the same problems. No one could investigate restoring Columbia River Basin salmon stocks without focusing on the "Four H's" — habitat, hatcheries, harvest and hydropower.

Before anyone had seen an advance version of the recovery team's plan, Bevan briefed the Power Council's fish committee on what he sees as the strengths of the recovery team's work and compared it with the Council's Strategy for Salmon. "There's a lot of commonality, many similarities," Bevan told the Council members. "It's based on the same information. There are no new ideas, no magic bullet for these problems."

***Q.** Could you describe the social climate in which your team released its report?*

There still is a lot of "The butler did it." "Don't bother us. We didn't have anything to do with this." "Push hydropower as hard as you can." You've got people saying: "Don't fool around with *our* hatcheries, *our* habitat, or *our* harvest. Put your attention on the big things."

I assume they mean — go fix the dams. If that's the case, they're going to be disappointed, because we're not going to do first the things related to the largest contributor to mortality. We're going to do things first that are capable of making some changes in [fish] survival. We're going to be accused of only tweeking the hydropower system.

***Q.** Is the hydropower system the largest contributor to Snake River salmon mortality?*

Yes. Most of the human-caused salmon mortalities are in downstream passage through dams and reservoirs. Nobody today can really argue that.

There are two alternatives. One is to collect the fish and transport [them around the dams]. The other is to improve conditions in the river. In our judgment, the decision to abandon either of those tracks can't be made today.

People are going to look at our section on transporting fish and say, "You have a system here that doesn't work."

We acknowledge that transport doesn't work in that by itself it is not recovering these listed endangered species. But it works a lot better than putting fish in the river. Still, it isn't good enough. So we're going on the path to improve the river to make it better for fish, and we're also going to improve transportation. One is better than the other right now. As we go along, if we find out it is better to leave fish in the river, we're going to drop transportation.

It is pretty evident that releasing those transported fish the way we're doing now below Bonneville [Dam] is dangerous to their health. We've got to look for ways of improving the way they release fish from barges and where they're releasing them.

There seems to be a reluctance to use endangered or threatened animals for scientific purposes. We simply have to get away from

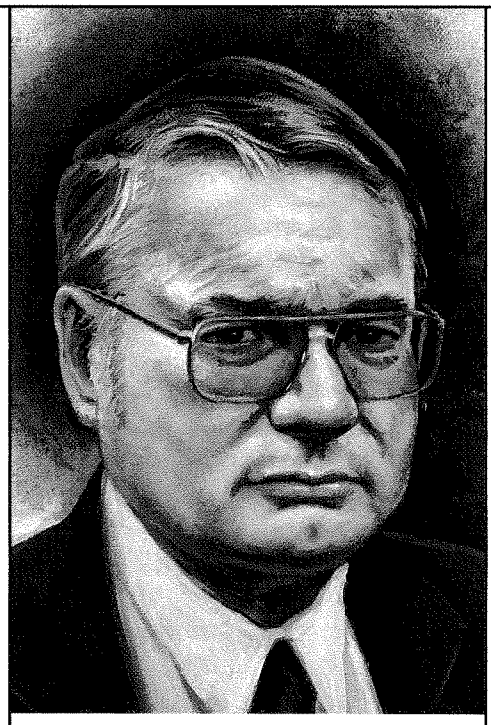
that. If you're going to say, "Well, this is too much of a risk." What do you think the risk is of not having the information? We must get better information.

As a general rule, we shouldn't do 100 percent of anything. We shouldn't transport 100 percent of the fish. We should have some in the river so we can measure the effects of [inriver migration] versus transportation. When conditions are good in the river, you don't put them all in the river. You transport some of them so you can measure and find out for sure how beneficial inriver migration is.

***Q.** How important is evaluation in the recovery plan?*

Recovery will not occur without it. We need to have a good set of monitoring and evaluation plans set up. We can't wait for these fish to come back a few years later and add up the different things we're doing in the river at different times and expect that adult returns are going to tell us what's successful and what's not.

We think the real answer is good survival studies in the river at the time you're changing things in the river. We have a general principle that comes out of the Power Planning Council: adaptive management. If you are going to make a change, make a big enough change so that you can measure it. After you measure it, change what you're doing to reinforce that change or shut it down and go another direction. This hasn't been done in any planned scale on the river.



"There is still a lot of "The butler did it."

***Q.** The Council said it wants the reservoirs drawn down to speed young fish past the dams, unless it is proven that drawdowns are structurally or economically infeasible or biologically imprudent. This has been very controversial. What does the recovery plan say about drawdowns?*

We would like to go ahead with exploring the use of drawdowns, but before we go ahead, we want to be reasonably certain that we can measure its results. We want to proceed with a test drawdown, providing we can get a good experimental design that we think will measure the results of drawdown.

We're going to have to start doing some things that aren't based on very good information. Drawdown is one of them. We've never done a drawdown with fish in the reservoir. So initially we're cautious because we can't be certain that drawdown is good for fish. The biggest impact on smolts may require going all the way to riverbed [natural river] flow. Do I want to measure the effects of full reservoirs drawn down to riverbed flow? I wouldn't want to make the investment to do that unless somewhere along the line I had the indication that drawdown to spillway crest had positive benefits.

If we draw down Lower Granite reservoir to spillway crest [about 50 feet down], and the indications are that we have some measurable positive effects, the next step is to go to another reservoir and see whether two of them drawn down together improves things even further. That is the track we recommend. We first need to plan to modify Lower Granite Dam for drawdown experiments.

Another big theme is upstream collection of smolts. We should hold a national competition to design an upstream collector [for fish]. We need to start some of these things in spite of the fact that the science isn't there.

***Q.** What about flows in the main rivers?*

We're pretty well adopting the Council's water budget [a designated amount of water stored in the reservoirs and released in the spring to help fish migration]. It may be that you need flow augmentation to better collect fish to transport them. And we're reasonably certain that you need flow augmentation to create better conditions in the river. We're going to

have to learn how to best use the water. There's no question that water is good for fish.

Our treatment of flow is different from last year's biological opinion [regarding the effect of river operations on salmon]. It had some very definite flow targets over long periods of time. We don't think that's a very good way to maximize benefits of reservoir storage. We think decisions to use water from storage shouldn't be set for more than a few days out.

Things change on the river. If you lock yourself into a target you can't make, then you may drain reservoirs that won't refill the next year. Your target can damage you, if not that year, then later on.

You can't set something in stone and expect that it's always going to be beneficial. It may sound good, and it may agree with many agencies' desired flows, but we don't think that's a very good way to do business. It's too inflexible to match nature's variability. We do recommend short-term flows.

Q. Who makes that day-to-day decision?

We suggest that some technical people from the weather bureau and maybe even from private engineering firms give advice to the National Marine Fisheries Service on how to do this. The important thing is to make a decision. You don't call up seven people on a conference call and try to reach a consensus.

Our view is that any time you add flow to the river for any purpose — to generate power, to help fish, or create more wetlands for wildlife refuges — any time you release water into the river, you're going to have to decrease flow in the river sometime later on, or you're not going to have a refilled reservoir.

There is no magic about how reservoirs work and how you use them. I think we have been critical of agencies who think there is an unlimited amount of water in the Snake River and all they have to do is ask for more when they don't have any responsibility or accountability for refill.

In the immediate future, our view is that Dworshak is the prime source of water to augment flows for fisheries in the Snake River. We recommend that management of Dworshak Reservoir be turned over to the National Marine Fisheries Service. Let the Fisheries Service decide how to draw it down with a sliding scale, depending on the kind of water year you have. Make them responsible for refill.

We've got to develop some priorities on the use of that water. We simply don't know today what are the benefits of using water here or using water there. I think the power folks have a point when they say we're spending millions of dollars and what do we get for our money? We need to demonstrate what they get for their money and that what we get for our money is worthwhile. I think it is. The team thinks it is. But can we prove it? No. We've got to develop monitoring and evaluation to do that.

There is no question that adding flow is a good thing to do. When you have zero flow, you have 100-percent mortality. There is a big argument over where the rest of that curve goes. The fact that we're using information that was gathered 20 years ago doesn't help. We have the tools now to develop some better flow/survival relationships. That has to be a key to monitoring what we're doing. The relationship of fish travel time to water particle time can be very well defined. Fish move with the water. But the key question hasn't been answered: Are those fish going faster in order to die sooner? That's the real question.

NMFS SNAKE RIVER SALMON RECOVERY TEAM

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Theodore C. Bjornn, Ph.D.
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Economist
Professor Emeritus,
University of Washington

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Civil Engineer
Professor,
Oregon State University

James W. Litchfield
Civil Engineer
Private Consultant

***Q.** What does the recovery team have to say about fish hatcheries?*

We have a general statement in the plan that the region is running a hundred or so hatcheries on the Columbia River with no coordinated plan and no plan to measure their effectiveness. We're not suggesting that you take the title away from the Oregon Department of Fish and Wildlife and give it to the National Marine Fisheries Service, but there has to be an overall plan.

***Q.** The Council has a team of scientists developing an integrated hatchery operation program through our Strategy for Salmon.*

Technical people aren't going to be able to make the policy decisions. They are able, I think, to put together some very good common standards on genetics, on hatchery practices, on fish diseases, etc. But if you are putting together an operating plan, who's going to raise fish and who isn't? Who ought to raise more and who ought to raise less? Which hatcheries are not producing? You better not expect that committee to come up with those kinds of answers.

***Q.** Do you want the National Marine Fisheries Service to coordinate the hatcheries?*

Yes.

***Q.** What is the recovery team recommending on fall chinook harvest?*

This is something I'm quite familiar with. I used to chair the scientific committee at the Pacific [Fisheries Management] Council, and I know the data pretty well. I don't think the overall [harvest] number has all that much importance. Yours [the Power Planning Council's] is 55 [percent of the fall chinook run] and ours is 50. Yours is a "harvest rate" and ours is an "exploitation rate."

But I think that in itself isn't the important difference. You can't manage these stocks with the amount of [harvest] effort we have. You've picked up on that, in our judgment.

In the long run, I don't think it is possible to manage weak stocks of any kind with the amount of fishing gear we have off our coast and in the river, and with the type of gear we have. We simply have to have gear that's capable of selecting fish. And we have to reduce the effort. This is a new idea.

You [the Power Planning Council] have a voluntary buyback [of commercial fishing licenses] in your plan. We have a buyback, but it isn't voluntary for Zones 1 to 5 [between the mouth of the Columbia and Bonneville Dam] and for the trollers. We're going to have to buy out some licenses. We're going to have to change the kind of fishing gear. We're suggesting that gear in the Columbia River has to shift to gear capable of releasing fish alive. Do we know what that gear's going to be? No, we don't.

***Q.** What are your recommendations for sockeye?*

We want to mark all Snake River sockeye. We're going to be trying to release sockeye, not take them.

With regard to the tribes' commercial sockeye fishery, we recommend that it be closed until we recover the Snake River sockeye salmon or until we decide that task ought to be abandoned; that we've declared them extinct and get onto something else. We do suggest that upriver sockeye may be caught above the confluence of the Snake and Columbia.

***Q.** Do you set any additional constraints on Snake River spring or summer chinook?*

No. Our view is we've done just about everything we can on that. Management on the river looks reasonable. There isn't much catch and there hasn't been for some time. We're looking for things we can change and measure, and we don't think we can measure any change in harvest at the present time. We don't have any specific targets or suggestions on spring and summer chinook.

***Q.** Did the recovery team look at the economic impact of its plan?*

The draft doesn't have an economic section. This has been turned over to the economic and technical committee, and they're going to cost it out. Are they going to be able to cost out the benefits? No. You aren't going to be able to do a cost-benefit analysis. The question is how far do you go and how much money do you spend? I think it depends on what you run into when you do some tests. I think that's maybe a good thing about this plan. When you do some things this year, you're not able to move a lot of concrete. You're not able to spend a lot of money. We do need to start the engineering and develop plans to modify the dams

The team is going to have to come back and look at the economics. Economics is important.

The Endangered Species Act says that if two ways of doing things have equal results, you pick the cheapest one.

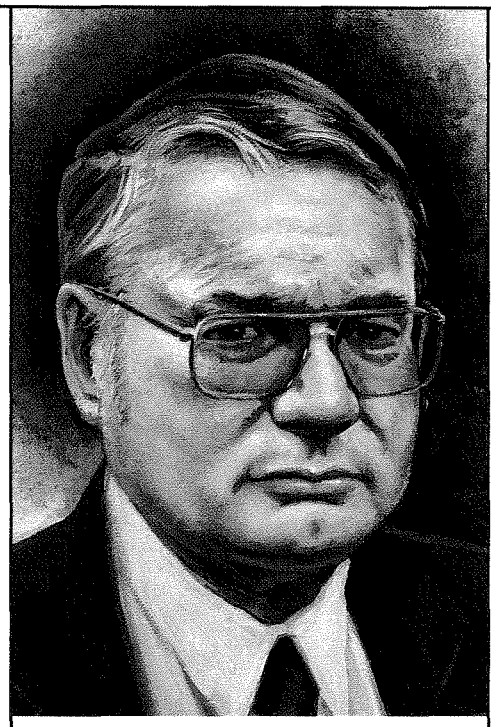
***Q.** What do you think are the most significant points in the recovery team's plan?*

In my view, the two most important things in this plan are not in your Strategy for Salmon. We feel it is important to put someone in charge. We feel that's the reason why the region is where it is. It hasn't been able to get a consensus. Without a consensus, things bog down and don't happen. And that's the chief reason for being where we are with endangered and threatened salmon.

We've looked at all the possibilities, including different states, the Power Council, Bonneville, the tribes, and it comes out that it should be a federal agency. We're recommending the National Marine Fisheries Service.

I'm going to anticipate your question. Do we think the Fisheries Service is capable of doing that job? The answer is very clearly, no. Not yet. We've had some experience working with the Service in the last two years, and they cannot do this job unless they get the resources and they put people in the right places. The only thing that really encourages me is that we're going to have Rollie Schmitten back [in Washington, DC] in charge. He's familiar with this plan, and I think he has been quite supportive of the process we used to develop it.

The other important piece is an independent body to advise the Fisheries Service. Not the recovery team members. We suggest



"It can be a long process. Somewhere between now and never."

that the recovery team nominate some senior people with credibility in the region — retired governors, retired judges, retired Power Council members, some senior scientists who have no contact with the agencies involved.

***Q.** What happens next with this recovery plan?*

Not very long into the new year we will have an official team plan submitted to the National Marine Fisheries Service. Then the clock starts, and they go through the legal process of publication in the Federal Register, holding hearings.

What is their record? I think the fastest they've ever done anything like this is two years for the stellar sea lion. It can be a long process. Somewhere between now and never.

The Service can accept or reject our recommendations. My guess is once this document formally goes to the National Marine Fisheries Service, and maybe even before, it is going to have an impact on their management of the river next year.

THE PIMBY FUTURE

by Carlotta Collette

THE 21ST CENTURY DEMAND MIGHT BE FOR "POWER IN MY BACKYARD"

Illustration by Larry Milam

Old fashioned power plants, fueled with natural gas, oil or coal, can sprawl over acres of land, pollute the airshed for miles around and give off a roar that precludes siting within earshot of towns or cities. Because of these characteristics, they often require tentacles that spread across vast distances to deliver the power they produce to the places it is needed. In recent years, the tentacles themselves have been the object of increasing scrutiny as potential health hazards.

These power plants of the past were accepted because they were essential. Societies grew and communities prospered in large part

because they had electricity. There appeared to be few problem-free alternatives to the huge plants that produced it.

Only a relative handful of brave and self-reliant souls were willing to give up the security of central power generation to live cleaner, quieter and, almost certainly, darker lives. But there are new choices on the horizon.

THE BRIGHT NEW ALTERNATIVES

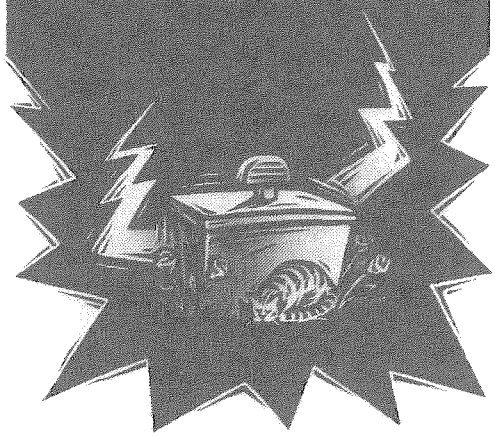
Much of the electricity needed in the 21st century will likely be produced through what are known as "distributed generation" technologies. They are smaller, cleaner and quieter than traditional power plants. Those that require fuels use their fuel more efficiently. Some rely only on sunlight or wind to produce electricity.

Because of these features, they can be located where their power is used: in the basements of hospitals and hotels; in parking lots of apartment complexes; inside and on the roofs of houses. This means they require little or no new transmission lines to connect them to power grids.

There are numerous technologies that fall into the category of distributed generation. Most are relatively young, but some grow out of ancient understandings. The power of wind and solar energy, for example, has been utilized for centuries. But solar photovoltaics and wind turbines used to generate electricity are comparatively new applications.

Diesel-fueled back-up generators, which many people employ to power cabins and other remote sites, are the most common form of distributed generation in use today.

SOCIETIES GREW AND COMMUNITIES PROSPERED BECAUSE THEY HAD ELECTRICITY.



But they are often as noisy, polluting and inefficient, relatively speaking, as their larger and older counterparts.

Small combustion turbines fueled by natural gas are an old technology made more cost-effective by current low gas prices and more-efficient plant designs. The new plants are smaller, and they can be sited more easily and quickly than the large-scale power plants of the past. These new gas-fired power plants are being installed at numerous industrial sites, where they provide both electricity and heat for manufacturing processes.

But the technology with perhaps the most promise for distributed power generation is fuel cells. Based on a concept first demonstrated in 1839 and first applied in the U.S. space program, fuel cells rely on an electrochemical reaction to generate electricity using natural gas, another hydrocarbon or hydrogen itself as the fuel. The process is nearly twice as efficient as steam turbine generation because the fuel is processed into electricity through chemical reactions, without being combusted (see box). Fuel cells are similar to batteries, but they can operate continuously as long as they have a fuel source. There are no turbines. In fact, there are almost no moving parts at all.

The generating process is so quiet and emission-free in fuel cells that they could be installed in homes and office buildings. They'd be about the size of a furnace or air conditioner — larger for commercial applications, smaller for residences.

The principal discharges from fuel cells are hot water and carbon dioxide. The Southern California Gas Company, which is a leading U.S. enterprise in its commitment to fuel cell applications, maintains that the exhaust from fuel cells is sometimes even cleaner than the Los Angeles air around the gas company. And the "waste water" given off by the process is purified, having been distilled through the fuel cell process.

Distributed generation technologies may eventually displace electric utilities from serving new electrical loads. Neighborhoods could acquire their own block-sized generators. Commercial buildings could own their own power plants. Examples already in use range from one small enough to provide the propulsion energy for a city bus, to the largest, an

11-megawatt unit in Japan that can meet the electrical needs of 4,000 homes.

BRINGING THE COST DOWN

The major factor keeping fuel cells from broader distribution is cost. "Most new electric power generating plants cost about $750 per kilowatt in capital investments," says Jeff King, senior resource analyst with the Northwest Power Planning Council. King and the Council are studying fuel cells in preparation for development of the Council's next electric power plan for the Pacific Northwest. New technologies and changes in the utility industry are likely to play bigger roles in this next plan than they have in the past because the Northwest needs new sources of electricity, and utilities will probably not be the only providers of that power (see box on new utility industry).

"At current costs, fuel cells are probably not cost-effective for this region, with its low-cost hydropower-based system and relatively inexpensive new gas-fired combustion turbines," King admits, "but the technology is coming along very fast, and we'll be seeing more of it in the next decade. You couldn't buy a fuel cell power plant at almost any cost only a decade or so ago," he says.

"You can buy a 200-kilowatt fuel cell system pretty much off the shelf today," explains Rocky Goldstein, of the Electric Power Research Institute. "But you'll have to pay $3,000 per kilowatt for it. That's about twice what it ought to cost," he adds.

Cutting that cost at least in half — to $1,500 per kilowatt or less — is one goal of a massive public/private sector collaborative effort. The Electric Power Research Institute, the Gas Research Institute, the U.S. Department of Energy and the U.S. Department of Defense are working with U.S. fuel cell manufacturers to bring the technology up and the cost down.

Their strategy calls for natural gas fuel cells to be commercially available and affordable in the mid to late 1990s.

"The need for new supplies of electricity, coupled with the environmental problems of old

A NEW UTILITY INDUSTRY

For the first hundred years or so of its existence, the electric utility industry was the model of stable, one might even say, staid corporate America. Energy use was expected to grow at a fairly steady, reasonably predictable pace essentially forever. Electric power companies had no competitors and ever-expanding markets for their "goods." Investments in utility stock were recommended as the perfect place for socking away nest eggs. Lucky folks who secured employment with utilities could expect to stay there, earning comfortable salaries until their retirement, which also would be well-provided for.

That relatively placid state of affairs began to change in the 1970s and 1980s. Several things combined to unsettle the industry, including societal concerns about electric power generation's impact on the environment, the opening of the industry to independent producers of electricity, legislation that likely will result in easier access to power transmission systems, and technological developments that could alter longstanding relationships among power producers, marketers and consumers. These forces combined to challenge the industry to become more competitive.

The pattern is not unique to utilities. Industries worldwide are having to learn to produce and market their products more efficiently than ever before.

The Northwest Power Planning Council is studying this trend toward a more competitive power industry because these changes will almost certainly affect this region in coming decades. The Northwest Power Act of 1980, which is the legislation that guides the Council, set goals of affordable, reliable and environmentally responsible electric power for this region's citizens. How the utility industry adapts to the challenges it faces will determine whether the goals set in the Power Act will be achieved.

The Council is preparing an issue paper to address the new level of competition in the utility industry and its potential consequences for Northwest electricity ratepayers. Northwest Energy News also will explore these changes in the industry in this and coming issues.

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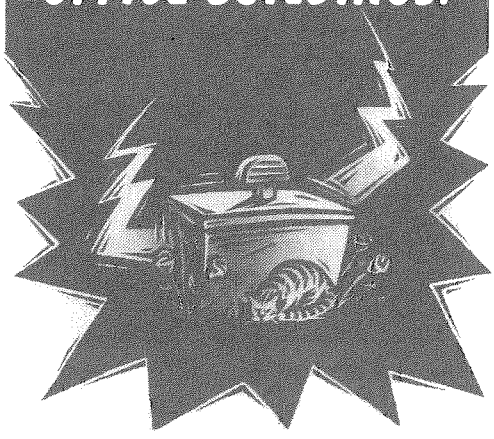
electrical resources, has given fuel cell research higher priority than it might have had before," says Goldstein. "The Department of Defense has ordered a lot of new fuel cells," he adds, "and that's going to help bring the cost down."

While the United States may still have a grasp on world leadership with its fuel cell technologies (most of the fuel cells in the world are manufactured by U.S. companies), Japan is the world leader in the number and size of fuel cells installed and operating. There are dozens of fuel cell power plants in use in Japan. Together, they generate approximately 30 megawatts of electricity, according to recent U.S. Department of Energy statistics. The Japanese government also is working closely with Japanese industries to develop fuel cell technologies. Their goal is commercial production of packaged units that can be exported for installation in commercial and industrial sites.

The United States and Japan have pretty much divided up the rest of the world's fuel cell power plant market. Each nation has supplied about half the fuel cells installed in Europe, Scandinavia and the United Kingdom. However, European countries have entered the competition to resolve cost problems and commercialize their own fuel cell technologies. Germany, Italy and the Netherlands, in particular, are funding fuel cell development.

The Pacific Northwest has its own special world-market niche with the advanced fuel cell technology developed by Ballard Power Systems of British Columbia. Ballard leads the world in the development of fuel cells that use a conductive polymer in the fuel cell reaction. Because the polymer reaction is much cooler (40° to 90° centigrade compared with the next coolest fuel cell technology at 200° centigrade), lighter and more powerful for its size, Ballard's polymer fuel cell holds particular promise for use in motor vehicles. Since March 1993, the British Columbia Transit Company has had a polymer fuel cell-powered bus in its fleet.

THE GENERATING PROCESS IS SO QUIET AND EMISSION-FREE IN FUEL CELLS THAT THEY COULD BE INSTALLED IN HOMES AND OFFICE BUILDINGS.



"We wanted a public demonstration that it would work," says Paul Howard, Ballard's vice president. The 32-foot bus is the only one of its kind in the world. "It produces zero emissions, absolutely no pollution," boasts Howard. "It doesn't end up on the road very much, however, because it is mostly being used for testing and showcasing the technology. People come from all around the world to see it."

With an engineering and development price tag of about $5 million, the Ballard bus may be a cost-effective research vehicle, but it's not likely to replace urban transport fleets in this century. The question comes back to cost.

"In the grossest terms," says Howard, "fuel cells are expensive because they're heavy. The most commonly available 200-kilowatt units weigh about 60,000 pounds. They've got lots of parts and little pieces. All of those metals and plastics that go into fuel cells have to be shaped and bent and machined. It all adds up. If you can substantially reduce the weight, you can reduce the cost. It's pretty simplistic, but engineers tend to think in terms of dollars per pound."

OUT OF THE LABORATORY

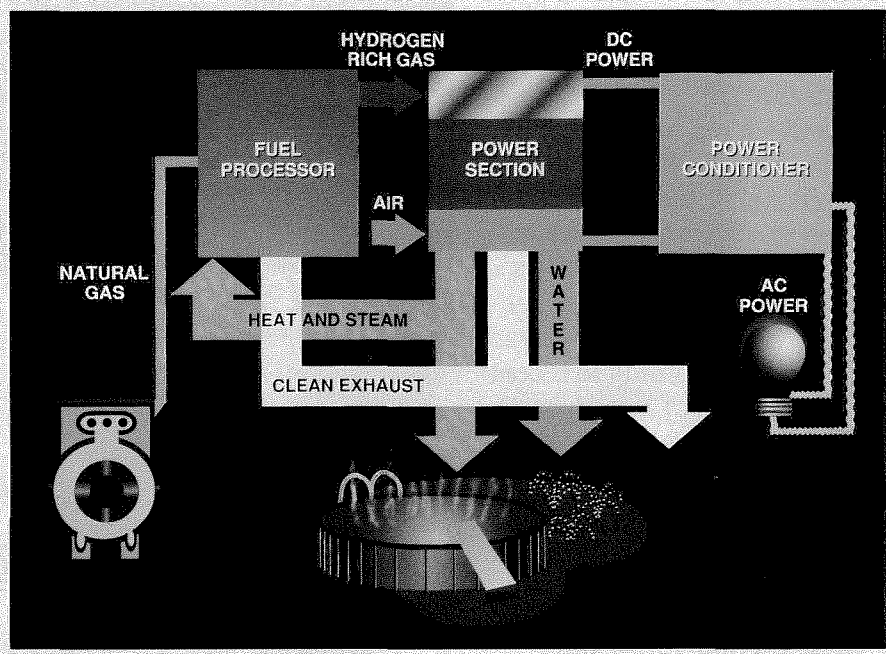
There is also the issue of level of production, however. Customers expect to pay a premium in the early stages of a product's development, but the costs should go down as problems are resolved and production rates increase.

That is what companies like the Southern California Gas Company, which serves Los Angeles, are counting on. Attracted by the opportunities for marketing natural gas as the fuel in fuel cells, the Southern California Gas Company has been studying fuel cells for more than 25 years. In the early 1980s, the gas company participated in a nationwide research project that was cosponsored by

HOW A FUEL CELL WORKS

Anyone who has ever seen hydrolysis demonstrated has the beginning of understanding how a fuel cell works. Hydrolysis is the process by which hydrogen and oxygen are given off by passing an electrical current through water. The electrical current separates the molecules of hydrogen and oxygen that make up the water (H_20). The gas bubbles that rise to the surface in this demonstration are hydrogen and oxygen gas.

In a fuel cell, this process is essentially reversed. Hydrogen and oxygen are combined in an electrolyte, an electrically conductive material, such as phosphoric acid. The products are electricity, heat and water. Since the process is chemical rather than mechanical (there is no turbine to spin), fuel cells are quiet. They can be sited in urban areas, even inside buildings.



The chemical reaction is also more efficient than burning fuels to produce steam to drive turbines. Heat *is* created by the chemical reaction, however, and that heat can be used in other applications, much like a conventional cogeneration facility where waste heat from electricity generation is used in manufacturing processes.

The hydrogen in fuel cells generally comes from natural gas (a hydrocarbon, CH_4) which is processed to separate out the hydrogen. Coal gas, methane from biomass or alcohol fuels could also be used. The hydrogen is added to the negatively charged side of the fuel cell where it breaks into hydrogen ions and electrons. The hydrogen ions move through the electrolyte to the positively charged side of the fuel cell. But the electrons cannot move through the electrolyte, they require an external electrical circuit. It is the movement of the electrons through the external circuit that creates direct current electricity.

In a fuel cell power plant, there is a third step. The direct current electricity created in the fuel cell is converted to alternating current so it can be used in common applications.

Fuel cell types are named after their electrolytes. The most common form is the phosphoric acid fuel cell. Phosphoric acid fuel cells are commercially available, but expensive, costing roughly $3,000 per kilowatt. Conventional power plants produce electricity for about $750 per kilowatt.

There are prototype models of three additional types of fuel cells: molten carbonate, solid oxide and one using a proton exchange membrane (also known as a polymer exchange membrane). Several U.S., Japanese and European firms are engaged in the development of molten carbonate, solid oxide and polymer exchange membrane fuel cell technologies. Commercial products of various sizes that rely on these technologies are expected to be available by the end of this decade.

A fourth fuel cell technology was developed for use in military and space applications. These cells utilize an alkaline electrolyte, but they are too expensive for utility or industrial application.

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Chart from Southern California Gas Company

the Gas Research Institute, the Electric Power Research Institute, the U.S. Department of Energy and International Fuel Cells, the major U.S. manufacturer of fuel cells.

The first tests were expensive, but promising. The company decided to move forward, purchasing ten 200-kilowatt fuel cell power plants to test in different settings.

The first was installed in 1992 at the new headquarters of the South Coast Air Quality Management District of Southern California. This was a good test site, because

the Air Quality Management District is the agency that monitors power plant emissions and issues or denies generating permits based on those emissions.

"Our fuel cell plants were exempted from permits by the District because of their extremely low emissions," says Carol Bailey, fuel cell program manager for the gas company.

The Air Quality District's plant has been operating almost continuously since it was turned on, Bailey says. "Fuel cells like to be kept on," she explains, "they don't like to be cycled on and off again. They have operating availability of about 95 percent." That tops almost any conventional power plant.

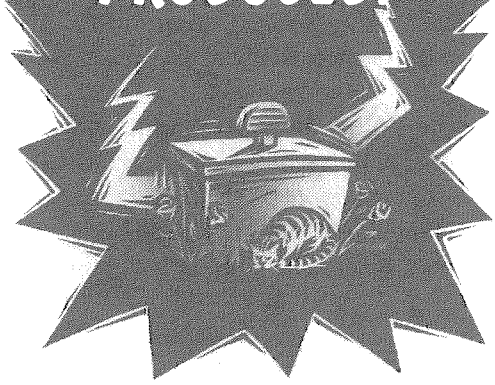
"In our case," says Bailey, "the fuel cells are especially useful in places like hotels and hospitals, which require clean, hot water 24-hours a day. The waste water from fuel cells is about as clean as water gets."

The company installed a fuel cell power plant at a Hyatt Hotel, where it provides about 20 percent of the hotel's peak electricity needs, 90 percent of its space heating and most of its hot water. Another one is sited at a Kraft food processing plant. A third provides the power for the Los Angeles County Metro Blue Line Control Center. The Metro Blue is the new mass transit rail line designed to cut highway traffic and reduce pollution in Los Angeles.

Four of the gas company's 200-kilowatt power plants are now installed and operating. Another is now being installed, and five more are planned for installations. They were all manufactured by International Fuel Cells, the U.S. company that also leads the world in fuel cell installations. The gas company owns and maintains the fuel cell plants at their customers' facilities, charging the customers for the gas used.

"They're still pretty expensive," Bailey concedes, "but we're working with the manufacturer and with the Department of Energy to cut costs."

CONSUMERS COULD HAVE MORE CHOICES ABOUT WHO WILL SUPPLY THEIR ELECTRICITY AND HOW IT WILL BE PRODUCED.



With electricity use in the United States expected to double in the next 35 years, according to the Electric Power Research Institute, plentiful new power supplies will be needed. The National Energy Policy Act of 1992 established a U.S. priority for more efficient and environmentally responsible resources. In response to that priority, the Department of Energy budgeted more than $50 million in Fiscal Year 1993 to refine and promote fuel cell technologies to meet some of that new resource need.

In addition, each branch of the U.S. military has been directed by Congress to purchase up to $6 million worth of fuel cells manufactured in the United States. Gas and electric utilities are also funding research to help fuel cell technologies mature and become commercially competitive with more conventional power generation.

While numerous questions remain, distributed technologies are likely to transform the energy world of the next century. Power production could be tailored to suit applications. Consumers could have more choices about who will supply their electricity and how it will be produced. Utilities will be compelled to compete with independent power producers to offer the most cost-effective resources and the best customer service. All of this will almost certainly cost more than consumers pay for electricity today. But consumers will be investing in a new commodity — a cleaner, more efficient future.

HELPING MORE JUVENILE SALMON GET AROUND THE DAMS.

McNary, Oregon — Behind the giant dam that straddles the Columbia River here, an aging gantry crane points its gray metal arm over the calm water of Lake Umatilla.

The crane sits at the top of the fish ladder that adult salmon use to make their way over the dam. Several times a week, workers use the crane to service equipment in the fish ladder.

Last April, a pair of ospreys flew in. "They kept trying to build their nest right on top of the crane arm," said Brad Eby, biologist for the U.S. Army Corps of Engineers at McNary Dam. "They'd bring in a few sticks; we'd climb up there and knock them off. It just wasn't a safe place for a nest."

But the birds insisted, and this gave Eby an idea. "We put up a pole with a platform on top," he said.

Today a large osprey nest sits atop the pole, which is safely away at the far end of the crane's platform.

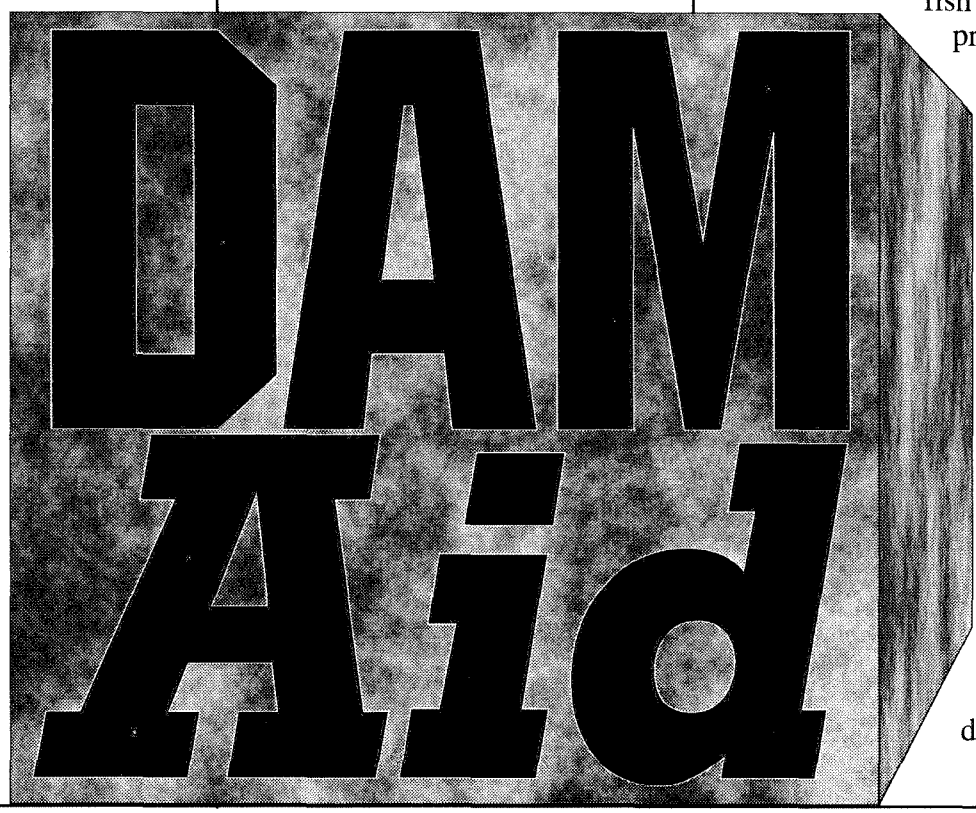
In a sense, this example of a necessary, even ingenious, response to the persistence of wildlife symbolizes the Corps' response to the needs and persistence of juvenile salmon and steelhead.

Hydroelectric dams kill fish. The Corps operates the eight federal hydroelectric dams on the lower Snake and Columbia rivers. Historically, these dams, and others like them, were capable of killing 15 percent or more of all juvenile fish that passed each dam. Collectively, the dams comprise just one of many threats to the survival of juvenile salmon. Others include predator fish and birds, disease, destruction and pollution of spawning habitat, harvest in the rivers and in the Pacific Ocean, and the impact of abundant hatchery fish on steadily decreasing wild runs. Through the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program, these multiple impacts on salmon survival are being addressed throughout the basin — including at the dams.

Fixing the dams is a giant effort that includes installing screens to keep young fish out of turbine intakes, installing or improving bypass systems that collect and carry juvenile fish around the dams, and transporting some fish past the dams in barges. Work is under way at all eight Corps dams, to lesser and greater degrees, but the most visible and ambitious effort, as 1993 draws to a close, is at McNary.

A new facility to collect and handle fish and load them onto barges is under construction on the downstream side of the dam. The new facility will triple the fish-holding capacity of the facility it replaces. Inside the dam, the flume that carries fish to the collection facility is being remodeled and enlarged, and extended-length screens — twice the length of existing turbine intake screens — are being tested. Eventually, all 42 turbine intakes at the dam will have extended-length screens.

by John Harrison



A LONG-TERM EFFORT

This work follows provisions in the Council's 1984 and 1987 fish and wildlife programs that juvenile fish bypass systems be improved or installed at Corps-operated dams on the Snake and Columbia. The Council also called for bypass systems at the five mid-Columbia dams operated by public utility districts.

The anticipated completion date for the Corps' $345-million program is September 1998. The money comes from U.S. taxpayers, but $302.5 million will be repaid over time by Bonneville Power Administration ratepayers. The Northwest Power Act and other laws obligate hydropower customers to pay for the damage done to fish by the dams.

The thrust of the Corps' effort is to build or improve systems to move juvenile fish past the dams quickly and efficiently. Some of the eight Corps dams on the lower Snake and Columbia — those completed in the 1960s and 1970s — were built with bypass systems. The older dams were not. McNary, for example, completed in 1953, had no bypass system.

"People just didn't know" that bypass systems would be needed, said John McKern, chief of fisheries management in the Corps' Walla Walla District office. But people became concerned when juvenile fish began showing up in the slots above turbine intakes — gatewells — at the dam. Obviously, young fish were being pulled into the turbines. Some fish managed to escape to the gatewells, but they were trapped there.

In response, 6-inch holes were drilled through the wall of each gatewell at a point below the water surface. Through these holes, the juvenile salmon swam into a sluiceway designed to collect ice, trash and other debris and carry it away from the turbines. With some modification, the sluiceway carried fish around the dam.

"That was the first bypass system," McKern said.

Today, the holes in the wall are still there, but they are plugged. Now the fish are deflected into the gatewells by giant screens that angle out into the river in front of each turbine intake. Once in the gatewells, the fish pass through 12-inch holes — there are 84 in McNary Dam — and into a much-enlarged sluiceway. This trip through the dam is interrupted at the existing fish-holding and collection facility. The current facility is crowded against the north side of the dam, adjacent to the navigation lock. The new facility, located on the south side of the dam, will be completed in March 1994.

THE NORTHWEST POWER ACT AND OTHER LAWS OBLIGATE HYDROPOWER CUSTOMERS TO PAY FOR THE DAMAGE DONE TO FISH BY THE DAMS.

FEWER FISH ARE DYING

Slowly, the dams are becoming more fish friendly, but there is a long way to go. On average, screens at the Corps' Columbia and Snake dams divert about 65 percent of the juvenile fish into bypass systems. For the remaining 35 percent, a trip through the turbines does not mean certain death, but many die and many are stunned, making them easy prey for predator fish and birds on the downstream side. Predators also prey on fish as they emerge from the bypass system.

Of those fish diverted into bypass systems, the survival rate through the systems is high. At McNary Dam, for example, fewer than 3 percent of the fish that enter the current bypass system die there, and some of that 3 percent entered the system diseased or already injured. At the Snake River dams, the fatality rate in bypass systems is even lower. The Corps believes the new McNary system, with its larger sluiceway, should improve survival of certain fish, fall chinook salmon, for example, which are more susceptible to fluctuations in water temperature and turbulence than other species. Water in the larger sluiceway should be less turbulent than water in the current system.

McKern anticipates juvenile survival will continue to improve along the river as screens are installed and bypass systems are completed in the next five years. All of the Corps dams now have screens except The Dalles Dam, which has six screens installed for testing purposes. The Dalles Dam is the biggest screening project. It needs 66 screens.

In all, McKern estimates the eight Corps dams will need a total of 286 screens. That's a big order. The so-called standard-length screens, installed in the newer dams in the 1970s, are 20 feet long and about half that wide. They consist of a continuous nylon mesh mounted on rollers around a steel frame. The mesh is constantly moving, carrying the young salmon up into the gatewells and away from the tur-

bine entrances. Each screen weighs about 30 tons and costs more than $200,000.

The Corps is testing extended-length screens that are 40 feet long. These will replace the 20-foot screens if tests show a higher fish survival rate. So far, testing at several dams, including McNary, is positive. But there are problems. The longer screens divert more water than the shorter screens, and that increases the pressure on juvenile fish as they travel up the screen. This increased pressure, and the longer travel time along the screen, apparently leads to increased loss of fish scales.

McKern said he hopes to reduce the pressure, and thus the descaling, by changing the size of perforations in the screens or through other modifications. Severely descaled fish probably don't survive, he said.

MORE THAN SCREENS

The Corps has other work under way to improve salmon survival at the dams. For example, outfalls below the dams where juvenile fish re-enter the river are being modified. Rather than a single pipe, where predators have learned to congregate, the Corps will disperse the fish. Work is continuing at the second powerhouse at Bonneville Dam, where the fish bypass system never has worked as well as expected.

At each of the dams, rigorous testing and evaluation is leading to a safer environment for migrating fish, McKern said. This includes collecting fish and transporting them downriver in barges through predator-infested reservoirs and past the dams, something the Corps has been doing since the early 1980s.

McKern bristles at the suggestion that fixing the dams will fix the salmon's problem. It will help, but it won't be the complete solution, he said.

"Even if you get bypass survival up to 99 percent at each dam, you still have a substantial loss in each reservoir — maybe 10-15 percent. In the John Day reservoir it can be as high as 40 percent," he said.

That was the conclusion of a study conducted by the National Marine Fisheries Service. The 76-mile-long John Day reservoir is the biggest and slowest-moving of the reservoirs. In summer, when the water warms, the reservoir is a haven for fish that eat young salmon. "A lot of predator fish have been introduced [into the Columbia] over the years to improve the fishery," McKern said. "I can think of six, at least — walleye, large-mouth and smallmouth bass, channel catfish, black and white crappies. And disease takes a big toll, particularly bacterial kidney disease. A lot of fish show up at our dams dead or injured — they have a fungus, or they are blind or they have no tails — but they are counted as a mortality at our facility."

In all, it's a big challenge. But like the osprey nesting pole at the end of the old dock, innovative responses to the needs of fish are paying off with increased fish survival at the dams.

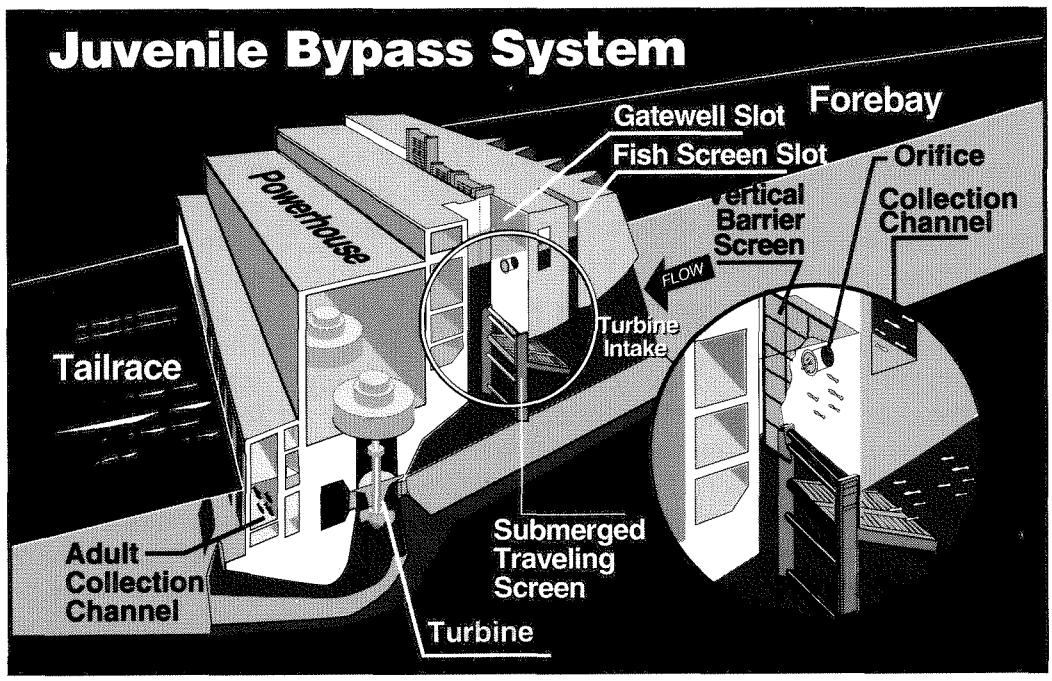


Illustration courtesy of the U.S. Army Corps of Engineers

GOING WITH THE GREEN LIGHTS

by Carlotta Collette

What do Alaska Airlines, Albertson's, Boeing, Fred Meyer, Jantzen, Microsoft, Nike, U.S. Bancorp, Westin Hotels, the city of Portland, the states of Idaho and Oregon, several Northwest counties and the Northwest Power Planning Council have in common? They are among the 50 Northwest participants in a voluntary federal effort to cut electricity use in the United States by 10 percent or more, just by changing light bulbs.

The U.S. Environmental Protection Agency's "Green Lights" program is based on the assumption that electricity use is inextricably linked to air quality. On average, every kilowatt-hour of electricity saved "prevents the emission of 1.5 pounds of carbon dioxide, 5.8 grams of sulfur dioxide and 2.5 grams of nitrogen oxides," reports the Agency.

With about 20 percent of all electricity in the United States being used for lighting, and technologies readily available to cut that use in half and make money doing so, the logic behind the Green Lights program is hard to resist. "Partners" in the program agree to upgrade their lighting systems wherever it's profitable to do so, within five years of signing on to the program. The program also has "allies," who are in the lighting industry — utilities or manufacturers of lighting equipment, for example. These participants also agree to upgrade their lighting and help the Environmental Protection Agency promote the program. A third level of participants are known as "endorsers." These are organizations like the Power Council and the Seattle Lighting Design Lab, which are not required to upgrade their lighting, but are called on instead to help publicize the effort.

Federal encouragement for energy efficiency reaps savings in the Northwest.

Key to the whole concept of the program is that the "green" in Green Lights refers as much to profits as it does to the environment. Participants only make those changes that have positive financial as well as environmental returns.

That's probably why there are already more than 750 U.S. participants in the program, including, as of January 1993, 13 states. These participants are already saving more than 95 million kilowatt-hours of electricity every year. That translates to about $9.4 million in annual savings off their electric bills, and the prevention of more than 120 million pounds of carbon dioxide from being dumped into the atmosphere.

The city of Portland, Oregon, plans to cut its electricity bill by $1 million every year with energy

Illustration by Frank Farah

saving measures that should all be in place by the year 2000. Participating in the Green Lights program is a part of Portland's strategy.

"The Green Lights program will allow us to not only save money and improve our lighting quality, but also help the environment," said Portland City Commissioner Mike Lindberg when he announced his city's March 1992 decision to join the program.

The Boeing Company is the Northwest's, and possibly one of the nation's, biggest saver in the Green Lights program. In the two years since Green Lights was initiated, Boeing has cut its electricity use by more than 18 megawatts. That's enough electricity to power a small city — almost 12,000 homes worth!

"I think we've plugged into more savings than anyone around," says Steve Cassens, manager of energy services for Boeing. Boeing was one of the first participants in the Green Lights program. "We're 'founding partners,' we even helped develop the software the program uses to determine lighting savings."

Boeing had been working with the three Northwest utilities that serve its various facilities: Snohomish Public Utility District, Seattle City Light and Puget Sound Power and Light, plus the Bonneville Power Administration, to carry out every cost-effective energy-efficiency improvement the giant aerospace company could identify.

"The Green Lights program helped us along with the lighting improvements," says Cassen. "We've got eight four-drawer file cabinets that hold all the audit in-

formation and drawings just for the lighting upgrades," he adds.

Boeing has studied 45 million square feet of its facilities to determine potential energy savings, and is continuing to work on older buildings that were put off until last. "All of our newer facilities are built to be efficient," Cassen notes.

Boeing has basically two reasons for doing all this, he explains. The first reason is economics. "It makes us more competitive by lowering our overhead. We can put those financial resources elsewhere — in research and development. We can keep more people on the payroll. Plus these investments pay us back very quickly," Cassen adds. "We have projects that had positive cash flows within eight months. You can't go wrong. It's just too good a deal."

The second big reason for Boeing's efficiency awareness is social and environmental. Cassen says, "We want to be able to return resources to the community. We can prevent the need to generate some electricity so there's more electricity to go around. That saves carbon dioxide and all that other stuff from being discharged into the air."

"People in businesses already know that their resources are not endless," says Ronald Radke, the Northwest coordinator of the Green Lights program. Radke came out of an early retirement from the banking industry to promote a different kind of savings and investment. "Green Lights is just a great opportunity for companies. It makes it very easy for them to make the best of what they have," he notes.

Participants are already saving more than 95 million kilowatt-hours of electricity every year.

Radke has been very successful in garnering program participants in the Northwest states of Alaska, Idaho, Oregon and Washington, which are all in the Environmental Protection Agency's Region X. "But I'm not so much interested in the number of people I sign up as I am in the actions they take," he reasons.

A similar attitude is expressed by Mark Comp, Radke's counterpart in region VIII, which includes Montana. "Montana doesn't have a single Green Lights participant," says Comp, "but the state government is already retrofitting government buildings and making the kinds of changes we'd want them to make. I'd like them to become Green Lights participants mostly so they'd get some public recognition for their efforts," he adds.

Green Lights could also help Montana, as it has other participants, determine the full range of potential lighting efficiency improvements that are cost-effective. The Environmental Protection Agency offers participants (as well as non-participants) two days of training in existing technologies, their problems and advantages, and techniques for installation. The Agency also has computer programs that participants can use to analyze their lighting needs and maximize lighting quality as well as efficiency. There is even a Green Lights hot line to call where a data base of financing mechanisms is maintained.

"In the beginning of the program," says Radke, "we figured participants could save as much as 50 percent of their existing lighting bills. But while 50 percent is very typical, actual savings range above 70 percent." Oregon's Jantzen swimwear company is one example of a 70-percent saver.

The Green Lights program was inaugurated in 1991, as part of then-President George Bush's non-regulatory approach to cleaning up the environment and conserving energy. William K. Reilly was administrator of the Environmental Protection Agency. In his kick-off address for the program, Reilly admitted that he wished "every environmental initiative ... could be so non-controversial. I'm no mathematician, but the Green Lights equation is simple," he said. "Proven technologies, plus lower costs, plus less pollution, equals energy efficiency, equals competitiveness, equals success."

CASCADIAN STYLE CONSERVATION

SKAMANIA LODGE MARRIES EFFICIENCY AND CHARACTER.

by Carlotta Collette

The first thing that comes into view is the massive stone chimney rising over the tops of trees. As you turn off Washington State Highway 14 heading away from the Columbia River and toward the Skamania Lodge, there appears a roof, broad and green-shingled. Finally the building itself, its stone porch and sloping front lawn facing back across the river to Oregon.

The impression is clear — this is a solid shelter enriched with tradition. Classic "lodge" architecture. The sort of building you walk into and hear yourself saying, "They don't build them like this anymore."

But they do.

The Skamania Lodge, a joint project of Skamania County and the owners of Salishan Lodge, on the Oregon Coast, was completed in February 1993. It may be brand new, but it bears deliberate resemblance to some of the great rustic structures, like Timberline Lodge on Mount Hood, that were built through the Works Progress Administration and the Civilian Conservation Corps of the New Deal era.

Photographs courtesy of Skamania Lodge

Like Timberline, Skamania Lodge emphasizes indigenous materials: Douglas fir from the surrounding woods, stone from the nearby Wind River quarry, native plants as much as possible in the landscaping. Like Timberline, many of the furnishings were custom designed and manufactured by area artisans. But unlike Timberline and comparable lodges of the 1930s, Skamania Lodge has another emphasis — efficiency.

"The energy efficiency of Skamania Lodge grew out of the involvement of the community. In that sense it was like a public works project," says Ian Muirden, the hotel's manager. "The lodge was built with a combination of public and private money," Muirden explains. "The Scenic Area Act of 1987 mandated protection of the Columbia Gorge and offered funding for economic development to replace jobs lost in the lumber industry because of that protection. The hotel/convention center and Gorge interpretive center are how Washington decided to use the money. We all wanted to make sure the hotel would have low operating costs."

"We had our own interest in getting the project costs down," says Mark Hughey, energy conservation manager with the county's public utility. Skamania County put up $10 million of the $26-million construction cost of the structure. (The federal government is expected to reimburse the county for $5 million of that investment.) The county wanted the

UNLIKE TIMBERLINE AND COMPARABLE LODGES OF THE 1930S, SKAMANIA LODGE HAS ANOTHER EMPHASIS -EFFICIENCY.

building to be efficient "so it would be leaner and more likely to succeed," says Hughey.

In addition to energy conserving construction details that meet or exceed state energy codes, the utility leveraged financial incentives from the Bonneville Power Administration to install energy-efficient lighting systems that will cut the hotel's annual lighting bill by more than $11,000.

"Light switches are a thing of the past," suggests the hotel's Muirden. "These lights are micro-processor controlled. It can be a little frustrating when you want to just flick the switch, but it's a lot more efficient."

Among the only lights that are not super-efficient are those in rooms with daylight dimmer controls. These sense the availability of natural light and adjust the electric lights accordingly. Most efficient light bulbs cannot be dimmed.

Hotel building systems manager Rod Warren wishes even these could have been efficient bulbs. "We have to change the bulbs a lot more often on the fixtures with dimmers. The efficient bulbs save us in labor costs probably as much or more than in electricity because we're not running around with ladders having to replace them all the time."

The fact that the Skamania Lodge conserves energy every day doesn't show on the surface. What does show is the sensitivity and attention to detail that, in this place, just happens to include efficiency.

A HOT IDEA

by John Harrison

INNOVATION YIELDS ENERGY SAVINGS AT A MONTANA MOTEL.

From the outside, the secret of the new 4Bs Inn in Missoula, Montana, is well hidden. Situated in a cluster of gas stations, motels and restaurants along Interstate 90 west of the city, the 4Bs is a three-story rest stop for travelers.

License plates in the parking lot bespeak the motel's primary clientele. As afternoon became evening one day last summer, the parking lot filled steadily with bug-spattered cars, vans and trucks from far-away places — Illinois, Florida, Minnesota, California, to name a few.

Inside, the lobby is clean and well-lighted. Comfortable sofas face a television. There's free coffee and around a corner, a hot tub.

There's little indication that this is an unusual place. In fact, the only visible clues are two awards for energy efficiency — one prominently displayed at the end of the check-in counter and the other on the wall behind. One award is from the Northwest Power Planning Council, and the other is from the Montana Power Company.

THE MOTEL'S INNOVATIVE HEATING AND COOLING SYSTEM HAS BEEN PATENTED.

Both awards honor the 4Bs for something that guests experience, but never see — efficient heating and cooling. In fact, the motel's innovative heating and cooling system, designed by an energy analyst in conjunction with the Montana Power Company, has been patented. It already has been installed in two other new motels in Montana — a Comfort Inn in

Photograph courtesy of 4Bs Motel

Bozeman and a Day's Inn in Great Falls — and it's being installed at a Day's Inn under construction in Butte.

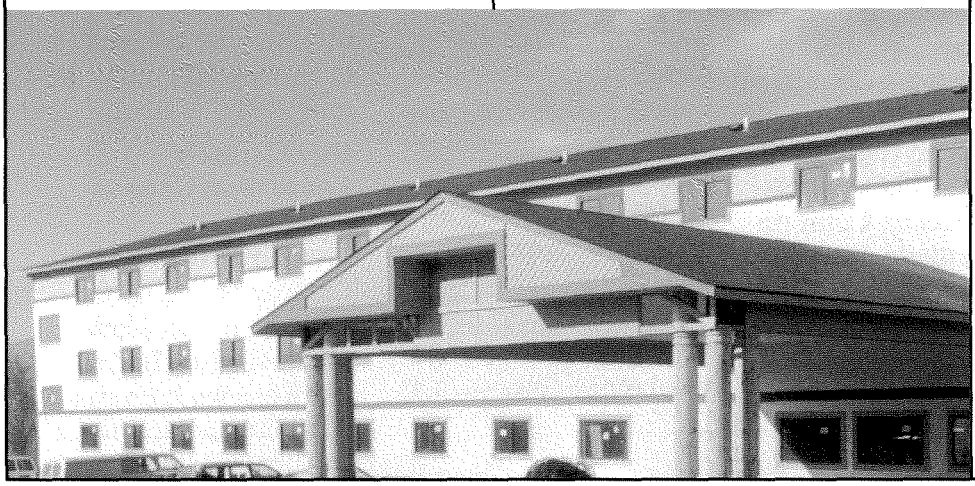
What makes the system unique is its cost-saving redundancies. The pipes that carry hot water to guest rooms also are coiled in the heaters for those rooms — that's heat and hot water from the same pipes. Similarly, the cold water pipes feed the cooling system for each room and also double as the fire protection system. The result is tremendous savings in construction costs and energy consumption.

Since October 1991, when the Missoula 4Bs opened, energy savings have been impressive. Missoula, home of the 4Bs chain, has two 4Bs motels. Compared to the older building, the new building is saving the corporation between $700 and $1,000 a month in energy costs during winter months, said Keith Bass, a Montana Power Company account executive. Summer energy costs are about the same at both motels, Bass said.

Missoula's new 4Bs was the first building to try the innovative heating and cooling system, and it has been refined since then, Bass said. For example, the Great Falls Day's Inn "may be the most energy-efficient commercial building in the country," Bass said. Monthly energy bills for the 62-room motel average $700, about two or three times less than normal for a building that size, Bass said.

THE PIPES THAT CARRY HOT WATER TO GUEST ROOMS ALSO ARE COILED IN THE HEATERS FOR THOSE ROOMS.

The success in Great Falls is partly due to what Bass called "a real leap of faith" on the part of 4Bs vice president Jim Betty at the chain's Missoula headquarters, Bass said. The success in Missoula convinced other motel chains to try the system.



In a sense, Montana Power Company took the first step. In 1991, motel construction was booming in Montana. Engineers at the utility, which serves the 4Bs site, became concerned because inefficient air conditioning/heating units installed in each guest room were the industry standard. The utility approached Betty about designing an efficient, buildingwide system for the new 4Bs. It was a step away from another industry standard — separate heating and cooling units for each room.

Betty was intrigued by the possibilities of a high-tech, centralized heating and cooling system, although each room has a wall-mounted thermostat. Montana Power also offered to sweeten the deal with $40,000 in incentives to install the $103,000 system.

"Mr. Betty had already broken ground for the building and had lined up his subcontractors, but he gave us the opportunity to do an energy analysis and propose an alternative to the standard, through-the-wall air conditioners and heating units," Bass said. "He took a chance on an unproved system."

And it paid off.

"I put a lot of confidence in the engineering expertise and the cooperative approach that Montana Power offered," Betty said. "I'm a believer in energy conservation. Another important factor for us was that this system used off-the-shelf technology."

Betty said the chain is sold on the system and is installing it in an expansion at the other 4Bs in Missoula.

Letters TO THE COUNCIL

Editor's Note

In the last issue of Northwest Energy News, we announced that we would begin publishing a sampling of letters we receive that comment on stories in the magazine. Please keep your letters under 200 words, refer only to topics covered in Energy News, and address them to LETTERS when you send them to our office.

Dear Editor:

You asked to be informed if you left out an important point of view. In your piece "A Place by the River," I feel you left out the point of view about how successful are mitigation efforts after major construction projects such as McNary Dam.

You discussed the Herculean efforts to acquire the 2,700 acre Conforth Ranch. Louie Dick commented, "it's a wonderful day to be getting a portion of our body back." Knowing how much time and effort it took to acquire Conforth Ranch and how happy the Umatilla tribe was to reclaim part of their heritage, I wondered how much was really lost.

I believe it would have been instructive for you to state how many acres of wetlands were lost with the construction of McNary Dam. With that information, we could compare the 2,700 acres to the original land area lost and could compute the "portion of our body (the Umatilla tribe got) back." We could compare the time and effort to acquire the Conforth Ranch to the time and effort it took to destroy the wetlands.

I believe it would be good for readers to develop a feel for the environmental costs we pay when we demand more power-generating facilities.

Larry Erickson
Beaverton, Oregon

Response:

The reservoir behind McNary Dam inundated 15,639 acres of land. Most of that was prime waterfowl habitat along important migratory routes. But the Council is not attempting to replace lost acreage. What is critical is the *quality* of new habitat. Conforth Ranch with its diversity of landscapes and habitat types is an especially fine example of a wildlife mitigation project.

It would be good for readers to develop a feel for the environmental costs we pay when we demand more power-generating facilities.

Dear Editor:

In the September/October issue of Northwest Energy News there is a story on Tenaska, the newly approved gas-fired power plant. While I consider this a better option than a nuclear plant, it is still a fossil fuel project which will send tons of pollutants into the atmosphere.

In the article it states that, "the Council will want some assurance that Bonneville is continuing to make progress on acquiring renewable resources such as solar energy, and also high-efficiency co-generation."

What progress have they made in the past toward renewables such as solar? What are their future plans? It seems to me that this should be the wave of the future.

I have written to the administration and the congress in times past about the need for more research on renewables. To date, I haven't received very good answers to this question. We seem to be able to spend billions for an atom smasher in Texas to learn more about the origin of the universe, but only paltry sums on renewables.

Ray C. Davis
Beaverton, Oregon

Dear Editor:

Your article on the Tenaska power plant was revealing. In finding that Tenaska is consistent with the Northwest

Letters
TO THE COUNCIL

Conservation and Electric Power Plan, the Power Planning Council has apparently given short shrift to environmental concerns. Instead of basing their decision on an objective and detailed scientific analysis of air quality impacts, we are told their decision is based on "information provided to the Council by the developers." Was the information taken at face value, or did the Council confirm the developer's analysis with its own?

The manner in which cost was addressed was also interesting. The assumption has apparently been made that because carbon dioxide emissions will meet Puget Sound Air Pollution Control guidelines, and are expected to be lower than emissions from a similarly sized cogeneration plant, Tenaska is considered cost-effective. This leap-of-faith misses the mark. The ability to meet existing regulatory requirements has little to do with the cost-effectiveness of a resource. Perhaps you would consider a follow-up article with greater attention given to the cost-effectiveness of Tenaska compared to the diversity of conservation resources that are waiting to be tapped. At a minimum, it would be interesting to follow Tenaska through the local regulatory\environmental review process.

Gordon Thomson
Seattle, Washington

Dear Editor:

Carbon mitigation projects to compensate for new power plant emissions can support the Council's interests in fish and wildlife programs by "adder" fees (tax) and credits for investments in approved mitigation projects. Many people believe that the day will soon come when regulations will be in place.

A forest plantation in Russia [such as the one proposed to compensate for emissions from the Tenaska power plant] might hurt our own forestry groups down the road. Mitigation funds applied locally, as the Council wishes, would certainly help our own local economy and sequester carbon as well as any Russian project could. This is only one aspect of the issue.

Costs are the main driver of the selection of mitigation projects. However, we can leverage some funds by the application of those funds with the grant funds that are available from several government entities and perhaps become cost-effective enough to compete with the likes of the Russia forest project.

Please see what you can do to cause good local American projects to get their fair share and what justifiable support that they might be due.

Sidney N. Clouston Jr.
Beaverton, Oregon

Dear Editor:

Since reading an issue of Northwest Energy News a while back, I can't throw a hook in the water without thinking, "Would there be 20 times more fish in this creek if there were no dams?"

I suppose a person could have their own solar panels, but then there is the issue of batteries — what sort of toxic guck is inside of those? And aren't they pretty expensive?

The batteries will need to be replaced every 5 to 15 years and that might steal all of the monetary and environmental savings that a person may have been seeking.

I wonder: Could there be some sort of two-way electrical meter (TEM)? Rather than buying batteries, a person could buy a device that replaces their electrical meter directly from the power companies. The TEM could monitor how much power was generated by the solar panels and fed to the power company as well as the same job the old power meter did — monitor the amount of power consumed by the household.

The household will be charged for the net amount that they consume. If the household generated more power than is consumed, they will receive a credit from the power company. At the end of a year, if there is still a credit, the power company could cut a check to the consumer.

The consumer pays for the power generation device(s) and the TEM (the price of which includes some sort of environmental quality inspection to qualify for such a program). The consumer helps the environment directly and might even save (or make!) money in the long run.

Paul Wheaton
Missoula, Montana

SHORTS

The Northwest

U.S. Windpower has applied for permits to construct a 50-megawatt wind farm in Klickitat County near the Columbia River Gorge. The facility had been planned for Rattlesnake Ridge above the Tri-Cities, but there was strong local opposition to the project. The new site is three miles south of Goldendale. Annual average wind speeds in the area are 14 to 18 miles per hour, according to U.S. Windpower. Participating utilities include Puget Sound Power & Light, Portland General Electric, Pacific Power & Light Company and the Idaho Power Company. [Source: Northwest Conservation Act Coalition Report, September 3, 1993.]

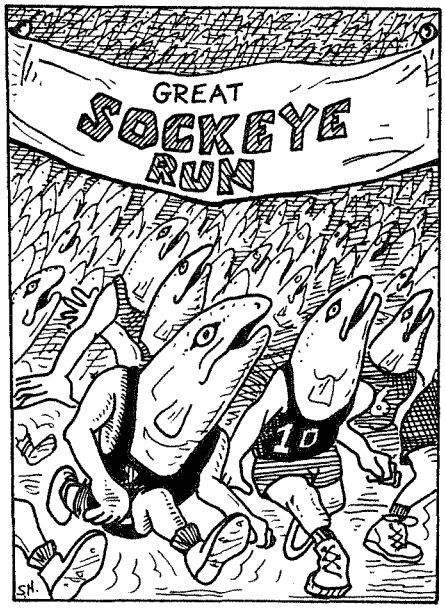
Bonneville tests new transmission technology. The Electric Power Research Institute in a $19-million project with the Bonneville Power Administration is testing a new device that improves the transmission of electricity. The device, known as a thrystor-controlled series compensator, can be used to direct the flow of electricity more precisely along transmission lines, stabilize interruptions caused by short circuits and expand the usefulness of power lines, according to the Research Institute. The new devices replace mechanical switches on transmission lines. Bonneville could save $150 million over the next 20 years by using the new devices, an official predicted. The testing project is being conducted at a Bonneville substation in northern Oregon through the end of 1993. [Source: Electric Power Research Institute news release, September 1993.]

Public utility sees power from fish bypass. Northern Wasco County Peoples Utility District of The Dalles, Oregon, has applied for a permit to construct a hydroelectric turbine at The Dalles Dam. The turbine would use water from the juvenile fish bypass system at the dam. The utility estimates the project could produce about 4 megawatts of electricity. They already produce about 5 megawatts of electricity at the dam. [Source: Northwest Public Power Bulletin, September 22, 1993.]

Northwest population is growing despite slow economy. Economic forecasters in Idaho expect the state's population to grow about 3 percent per year through 1995, three times the national average. Washington's population growth rate should be about double the national average and Oregon's about 70 percent faster than the national average through the same time period, according to state economists. Meanwhile, the employment outlook for Idaho and Oregon is better than for Washington, where the aerospace and forest products industries are flat or declining. [Source: Marple's Business Newsletter, September 15, 1993.]

Salmon enforcement effort ends. The Columbia Basin Salmon Enforcement Team, which included state and tribal fishery officers, concluded its work in September after following migrating salmon up the Columbia and Snake rivers in boats and planes, keeping an eye out for illegal fishing. Two persons were cited for fishing in areas closed to salmon fishing, and officers were aware of only one fish being taken illegally. "We feel a significant deterrent effect has been realized due to increased enforcement and publicity as a result of this project, and most people we contacted were aware of the Endangered Species Act listing of Snake River salmon and support it," said Paul Sommerfield, a conservation officer with the Idaho Department of Fish and Game. [Source: Columbia Basin Salmon Enforcement Team news release, September 14, 1993.]

Illustrations by Stephen Hayes



Fraser River sockeye run is largest since 1913. The Pacific Salmon Commission, which sets ocean salmon fishing off the Pacific Coast of the United States and Canada, recently estimated that the sockeye salmon run returning to British Columbia's Fraser River will be 22.4 million fish, the largest return since 1913. By mid-September, commercial catches of Fraser River sockeye totaled 15.9 million, and the commission shut down the sockeye net fishery. U.S. fishers took about 2.6 million fish, and Canadians took about 13.2 million, the Commission reported. [Source: Pacific Salmon Commission news release, September 10, 1993.]

The Nation

Energy savings resulting from utility conservation programs increased 50 percent between 1989 and 1991, according to a recent report by the Oak Ridge National Laboratory. Demand-side management programs operated by utilities across the nation saved a collective 26,700 megawatts, or 4.8 percent of the nation's total energy demand, the report said. During the same time period, demand-side efficiency expenditures doubled at these utilities. [Source: Energy Conservation Digest, July 12, 1993.]

Bristol Bay sockeye catch sets a record. The Alaska Department of Fish and Game predicted a record Bristol Bay sockeye catch this year, with landings expected to exceed 40 million fish. The previous record was 37.4 million fish in 1983. Six major rivers flow into Bristol Bay, and each had a strong sockeye run this year, the department reported. Despite the abundance — some boats were landing 20,000 pounds of fish during 10-hour fishing periods — the price was low. Processors were paying 60 cents per pound, down from 75 cents and 80 cents during the early part of the season. One reason for the abundance this year was the high number of 6-year-old fish, according to the department. [Source: National Fisherman, October 1993.]

The World

Reservoirs behind hydroelectric dams contribute greenhouse gases such as carbon dioxide to the atmosphere, according to a study in Canada. Researchers found that methane and carbon dioxide releases are far greater in flooded reservoirs than in natural lakes. When reservoirs are flooded, much organic matter remains. This can create a "fermentation tank" of undesirable proportion, the researchers concluded. It's not known whether or to what degree dam reservoir emissions affect the world's climate, the researchers said. [Source: The Energy Newsbrief, September 2, 1993.]

Beam Us Up

The information superhighway may not be complete yet, but there are stretches of it that are already driveable. One of those is the Electric Ideas Clearinghouse electronic bulletin board system. The Clearinghouse is operated by the Washington State Energy Office for the Bonneville Power Administration. Its primary purpose is to provide a medium through which energy conservation professionals throughout the region can access the latest information on programs, training and technology that can help them in their day-to-day work.

The Clearinghouse recently also became a medium for involving energy professionals and the public with the work of the Northwest Power Planning Council. Beginning in November, the Council's power-related issue papers and other relevant information will be posted in the Northwest Power Planning Council power issues forum (NPPCPWR in the language of the Clearinghouse system).

Interested persons can review the papers, ask questions and make comments, which will be entered into the official record for those issues. In the rapidly changing utility world of today, the Clearinghouse bulletin board should help the Council fulfill its responsibility to involve the public in its decisions in a timely and efficient manner.

In addition to access to Council papers, the Clearinghouse includes a library, a listing of energy conservation training opportunities and a number of "forums" on topics of interest. The Clearinghouse recently went West Coast wide when the Western Area Power Authority decided to support bulletin board access. The Power Authority is also linked to a similar information exchange bulletin board operated by the Michigan Public Service Commission.

Those wishing to access the Clearinghouse bulletin board can do so via computer and modem by dialing 1-800-762-3319. It is available 24 hours a day. Set your communications software for 8-N-1. The system can handle modem speeds up to 1.44 kilobytes. The Electric Ideas Clearinghouse can also be accessed through Internet (use Telnet: eicbbs.wseo.wa.gov).

CALENDAR

November 29 to December 4 — 13th International Symposium of the North American Lake Management Society, Seattle. Contact the Lake Management Society at P.O. Box 101294, Denver, Colorado, 80250.

December 9-10 — Northwest Power Planning Council, Portland, Oregon.

January 10-13 — Pacific Salmon and the Ecosystems: Status and Future Options, Seattle. Contact Deanna J. Stouder, Fisheries Research Institute WH-10, University of Washington, Seattle, 98195, 206-685-2724.

February 2-4, 1994 — Non-utility generating conference, Salt Lake City. Find out about the latest implications of environmental regulations, purchased power, changing fuel supplies and alliances between financing entities. Contact Jo Hoglund, Northwest Electric Light & Power Association, 503-231-1994.

March 18-19, 1994 — Idaho Rivers Symposium, Boise, Idaho. The 1994 symposium theme is "Rivers at the Crossroads: Law, Science, Politics & People." The conference will focus on emerging concepts and issues related to ecosystem management, public water and the public trust. Contact Marti Bridges at Idaho Rivers, 208-343-7481.

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

NORTHWEST ENERGY NEWS

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Writer: John Harrison
Production Assistant: Tamara Nester

COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council. (Note: not all publications are available immediately, but they will be sent to you as soon as possible.) A listing of all Council publications circulated since 1987 also is available from the Portland central office.

Publications

- ☐ 92-21 Columbia River Basin Fish and Wildlife Program -Strategy for Salmon
- ☐ 92-21A Columbia River Basin Fish and Wildlife Program -Strategy for Salmon-Volume II
- ☐ 93–2 The Green Book: Tracking Pacific Northwest Electric Utility Conservation Achievements 1978-1991
- ☐ 93-7 Mid-Course Review of the Implementation of the 1991 Power Plan
- ☐ 93-11 Commercial and Industrial Energy Efficiency: Profiles of 1992 Northwest Electric Utility Programs
- ☐ 93-12 Tenaska Washington II Generating Project: Consistency with the 1991 Northwest Conservation and Electric Power Plan
- ☐ 93-15 1993 Annual Report
- ☐ 93-16 Transcript of panel presentation on utility industry changes (from the Hood River Council meeting, August 1993)
- ☐ 93–20 Final Phase 4 amendments to the 1987 Columbia River Basin Fish and Wildlife Program
- ☐ 93-21 Response to comments on the Phase 4 amendments to the 1987 Columbia River Basin Fish and Wildlife Program
- ☐ 93-22 Review of information pertaining to the effect of water velocity in the survival of juvenile salmon and steelhead in the Columbia River Basin - prepared for the Council by Dr. Glen F. Cada
- ☐ 93-23 Acquiring energy efficiency more efficiently

Mailing Lists

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

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

Please ***delete*** my name from the mailing lists for the following publications (please include the 12-digit number next to your name on the mailing label).

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

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