

Spring 1995

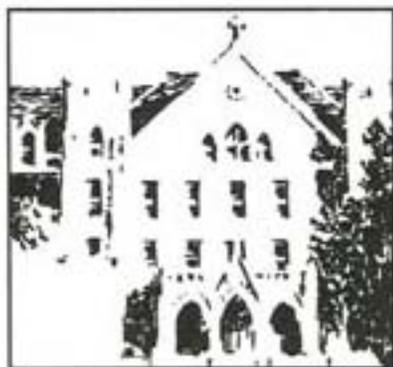
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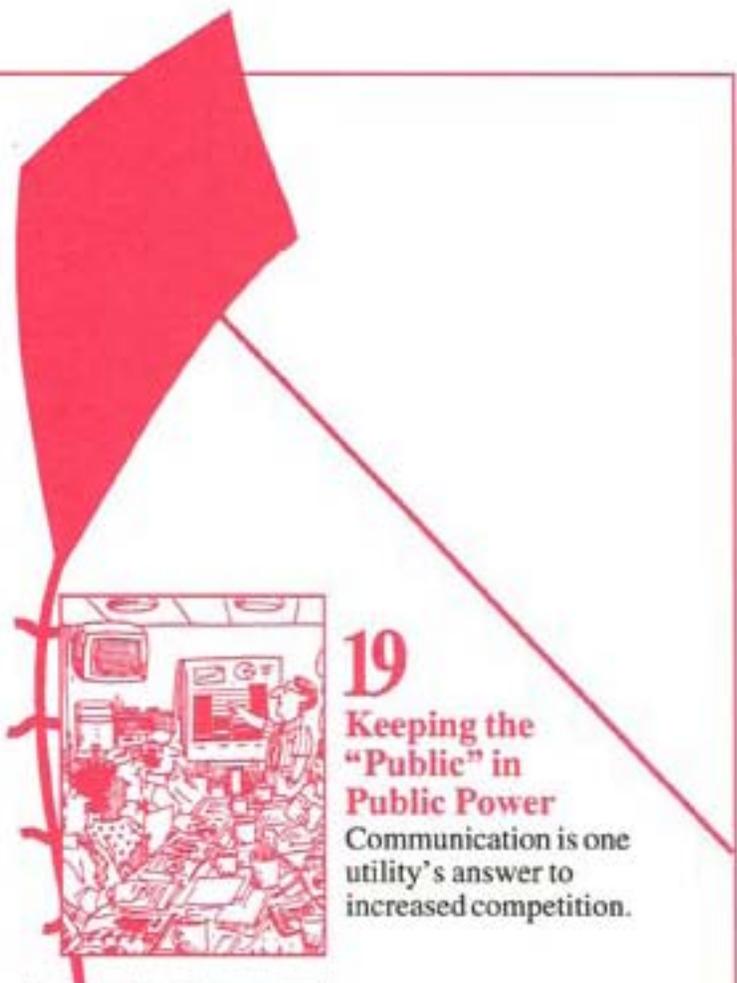
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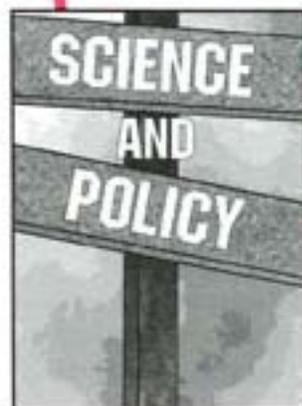
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This issue's cover photograph of spring runoff in northwestern Montana is by John Harrison.

CAMPUS

by Carlotta Collette

CONSERVATION

Two Northwest colleges graduate to higher energy efficiency.

Small school success story

Little Carroll College in Helena, Montana, has a big reputation to maintain. It has been listed in both *Barron's Best Buys in College Education* and the *U.S. News & World Report* as among the nation's best values in higher education. The reputation combines the school's low annual tuition and room and board — only \$12,750 — with high academic credentials. Both the state's governor, Marc Racicot, and many of his cabinet members are Carroll alumni.

"Carroll College's mission has been to keep tuition down while keeping the quality of education up," explains Lynn Cantliffe Etchart, vice president for finance, administration and facilities.

The mission is a worthy one, but it left Etchart with some major problems when she was hired two years ago. "Unfortunately, upgrading the buildings just wasn't a priority," she says. A long history of deferred repairs had left many of the school's structures, some of which date back to the institution's founding in 1909, in serious decline.

There was an old central steam boiler that heated many of the campus structures. The tunnel through which heat was piped around campus leaked steam and caused moisture problems in many areas of the campus.

In one of the residence halls, temperatures were controlled by on/off-only valves on the radiators. More often than not, windows would be open in one end of the building while the radiators roared at the other end.



Old, oversized boilers supplied heat as well as hot water to the cafeteria. To provide hot water, the 6.8-million-Btu boiler had to be operated year-round, regardless of the outdoor temperature.

Most of the lighting in the school was also outdated. Some classrooms were overly bright, while others were dim. Outdoor lighting improvements were also needed to ensure student safety.

Then there's the grounds watering system. With work/study students operating manual sprinklers, it was not uncommon to find systems left on for hours, even days, often watering sidewalks as much, or more, than the grounds.

At Carroll, as at colleges across the country, the venerable old buildings were in need of help. Part of the problem nationally was the rapid growth in enrollment that began in the 1940s and continued through the 1970s. According to an article published in the National Association of College and University Business Officers magazine, *NACUBO Business Officer*, "more college and university space was constructed between 1950 and 1975 than in the prior 200 years." In this rapid buildup, older structures on campus were often neglected, and new ones usually were not as well constructed as older buildings had been. Colleges and universities across America would have to invest about \$60 billion to repair existing structures, quoted the article.

Carroll College's piece of that bill would run into the millions of dollars, money the school didn't have. "Small schools like Carroll College are in competition with each other, as well as with larger, state-financed schools for students and for funding," notes Tom

"The headline said:

'How to fix all the problems in your school without really paying for them.' I wrote for the information."

McCarvel, Carroll's vice president for institutional advancement.

"What money we have has to be used very carefully. We have to think not only about how to save money, but how we can use the money we save to serve the students best. It has to be conducive to study and to their lives. We don't have a lot of money to do major repairs or even take care of the backlog of maintenance we have."

This is a theme of Etchart's, too. "I heard an expression, 'stop the world, I want to catch up.' I could identify with that," she says. "We didn't have the time to paint or put in new carpeting. Our goal is to provide an environment that is conducive to study. This is a residential school. These students don't go home at 5 o'clock. They're here 24 hours a day. I had to figure out a way to get the improvements made.

"Then I saw an ad for the Honeywell Corporation," says Etchart. "The headline said: 'How to fix all the problems in your school without really paying for them.' I wrote for the information."

What Honeywell was proposing was an arrangement known as "performance contracting," where the company would survey the school, determine where energy could be saved and at what cost, perform the necessary work, assist with financing, if necessary, and schedule payments to coincide with the savings. Carroll College would have a positive cash flow immediately, because the payments wouldn't start until the savings started. The payback period was calculated at 10 years. After that point, the savings would revert to the school, cutting annual outlays even more.

It sounded irresistible. Etchart decided to proceed, but before she signed on with Honeywell, a representative from Johnson Controls, Inc., in nearby Great Falls, came in with a similar, somewhat more ambitious proposal.

"I still don't know how Johnson heard we were considering this," says Etchart, "but they came in with a proposal for more savings, and they've got a Montana office and an excellent reputation in the state, so we decided to go with Johnson."

It was a good choice, says Etchart. Johnson's proposals were tailored to the school's particular problems and needs. Some of the biggest savings came from improvements that are unique to the school. For example, in the past, the campus swimming pool had to be drained annually for cleaning and painting. The pool had to be closed to students dur-

ing that time, and the water, chemical and heating costs added up.

Under the efficiency upgrade, a new vinyl pool liner was added along with a cover for the pool. Whenever the pool is not in use, the cover is pulled across it. Annual painting is unnecessary, and the cover limits evaporation and heat loss from the pool. The new liner saves the school about \$6,000 every year, plus the cover provides another \$5,000 in annual energy savings.

In addition, Johnson worked with students in the school's engineering program and with school maintenance personnel to both reduce the cost of the projects and increase the benefits.

"Johnson Controls stressed that they were forming a partnership with the school and with the community, too," says Etchart. "They worked with 15 of our students to develop the final proposal and present it to the board, as well as carry out some of the work. They provided initial and ongoing training to our maintenance people. They brought in the three biggest lighting contractors in town to do the work. In fact, all but one vendor was from Montana."

"They even set up a computerized maintenance program that issues us tickets when we're supposed to perform maintenance or check something," adds Butch Biskupiak, assistant director of facilities maintenance. Biskupiak is one of the program's biggest fans. "Until now, we never had time to paint or replace tiles. This got us caught up so we can start doing the things we want and need to do."

By performance contracting with Johnson Controls, Carroll College was able to replace or upgrade nearly every light fixture or

lamp on the 64-acre campus. They installed new thermostats and replaced large boilers, such as the 6.8 million Btu unit in the cafeteria, with smaller ones. (The new kitchen boiler is only 500,000 Btu.) They added computerized energy management systems to some buildings to better regulate energy use. They installed a permanent automated irrigation system that draws from the school's well rather than from city water.

The school was also able to leverage the contract with Johnson to gain additional support from other sources. Montana's Department of Natural Resources paid for the initial study to determine potential energy savings at the school. The Montana Power Company contributed through its Efficiency Plus Business Partnership and rebate programs. The Marriott Corporation, which operates the food service system in the cafeteria, contributed funds to air condition the building that houses the kitchen and cafeteria. The city of Helena even got involved, se-

curing a loan at the city's low interest rates to pay for the bulk of the project. The city's lower interest rates meant that the school had enough money to include innovative thermostats and a new boiler, which were not part of the original performance contract.

All told, Carroll College expects to save about \$110,000 in energy and water costs every year because of the project. The average monthly program payments were designed to be lower than the monthly energy savings, so the school's cash flow is positive from the onset. But Etchart, McCarvel and Biskupiak also rave about the non-energy savings.

"When Johnson figured out the savings, they didn't include things like reduced maintenance costs," Etchart notes. "They put in lighting ballasts that have five-year warranties, that's a tremendous improvement over the old fixtures. They were conservative in their savings estimates. They have to be, they guarantee the savings and the positive cash flow."



In Carroll College's cafeteria, existing light fixtures were fitted with efficient light bulbs.

Nor did Johnson Controls figure in some of the side benefits McCarvel is excited about. "The campus lighting and watering systems add value to the way Carroll looks, as well as to its efficiency," says McCarvel. "We have to try to draw students and their families to Carroll. When they see a well-lit, well-maintained campus, their first impression is a good one. If they see a place that's run down, with dying lawns and poor lighting at night, they'll be less inclined to want to go there. The night lighting also increases campus safety."

Biskupiak is as quick to point out the fresh paint and carpeting he's been able to add since the energy upgrade as he is to praise the more-efficient lighting and boilers. "We're saving money, but we're also making people more comfortable. Everything that needed to be done was done. We were always chasing fires before [not literally]. Now we can do the things we always had to put off. Plus it got the students excited and involved. We were able to set a good example," he adds.

Big school, big savings

The contrasts between Carroll College and the University of Washington in Seattle are sharp. Enrollment at Carroll is 1,425 students, with one teacher for every 13 students. At the University, there are about 35,000 students and 3,500 faculty. The Carroll campus covers 64 acres with fewer than 10 buildings. Seattle's campus is 703 acres with 222 buildings.

But both schools shared the problem of long overdue upgrades, and both made a commitment to higher efficiency, as well as higher learning. Efficiency improvements at both schools also were similar: replace-

ment of old, inefficient lighting; incorporation of new, computerized energy management technologies that improve heating, ventilation and air conditioning; and upgrading motors and fans to run more efficiently.

At Seattle, the project includes ensuring that new construction is as energy conserving as is cost-effective. In most cases, this results in buildings that are 10 percent to 30 percent more efficient than the city's very conserving commercial energy code requires.

The Seattle project has several components all linked through the partnership formed by the school, Seattle City Light, the Bonneville Power Administration and the Washington State Energy Office.

There is an \$8-million piece that will cover much of the upgrading of existing campus structures. These improvements were among those identified in a universitywide audit conducted by a team of consulting engineers. Seattle City Light will cover up to \$5 million of the \$8 million, with the university picking up the rest. Most of the identified improvements not covered by Seattle City Light and the university could be accomplished through performance contracts similar to the one at Carroll College. There's also another \$2 million made available by Seattle City Light to improve the efficiency of new construction.

Pulling the participant institutions together was not easy, says Javad Maadani, City Light's manager of the huge project. "I often felt like a small rabbit trying to teach elephants to tap dance."

Maadani may have a career on the pachyderm version of Broadway. These elephants, for all their lumbering about, seem to be performing pretty well together.

Since this January, efficient

lighting and advanced control systems installed in only six buildings have saved almost 1.5 million kilowatt-hours of electricity. The plan is to replace lighting and incorporate energy control systems, including sensors that automatically turn lights off when rooms are unoccupied, automatic temperature setback thermostats and variable air volume heating systems, in virtually every campus building. Total savings could go above 60 million kilowatt-hours of electricity every year from then on. The City Light/University portion of the savings are estimated to be about 38 million kilowatt-hours — enough electricity for 3,440 homes.

"We originally hoped to go for the whole 61 million," explains Maadani, "but then Bonneville reinvented itself and cut back on its funding for conservation." Bonneville underwrites much of the utility-sponsored conservation in the Northwest. In its effort to reduce its budget, the regional power marketer trimmed its investment in utility efficiency programs, expecting the utilities themselves to pick up the difference.

"That set us back," says Maadani. "We had the university ready to commit, and Bonneville stepped back."

Saving the university more than \$1 million off its annual electric bill should help rebuild trust, but staff at the school are still wary. Don Rainey, one of the original lobbyists for efficiency improvements on campus and the university's technical coordinator on the City Light project has worked at the school long enough to see Bonneville support for conservation ebb and flow.

"My dream was much bigger," says Rainey. "It would take about \$20 million and save 7 or 8 mega-

watts. What we're doing now will save about 3 megawatts. But there are many more benefits that we're seeing, too. The lighting is dramatically improved, so much so that one of our only complaints is that now people can see the dirt. Maintenance costs are way down because these lamps and ballasts don't need to be replaced as often as old ones, and we've tried to standardize on a few types of product so our storage space is even reduced. The bulbs in our old exit signs, for example, had to be replaced five or six times a year. The new signs last for 10 to 20 years before replacement. In addition, environmental conditions are much better overall."

Raine also points out that energy-efficiency investments at educational institutions have much more consistent paybacks than typical industrial or commercial building improvements. "In most commercial and industrial buildings, the occupants might change every few years. The average is about every seven years. New occupants often change the fixtures, etc. Colleges, on the other hand, are stable in that they only change every 30 to 40 years, at best. The energy-saving devices stay in place. The same people are often maintaining them for many years. You continue to get those savings for all those years."

Some of the best conservation return comes from the program's new-construction program. "Originally, all we could offer was technical design help through the Energy Smart Design Program," says Maadanian. "With this new arrangement, we can provide financial incentives for the school and the architects to go beyond city energy codes to incorporate even higher efficiency."

Side-by-side new laboratories at the school's Magnuson Health

"Johnson Controls stressed that they were forming a partnership with the school and with the community, too."

Sciences Center are a remarkable study in the benefits of fast-moving technologies and improved citywide energy building codes. H Wing, a 207,000-square-foot research facility that was completed in 1994, was constructed with Seattle City Light incentives amounting to about \$300,000. "H Wing was built to the 1986 city energy code," explains Maadanian. "We were able to put in a number of things that go beyond that code in terms of securing more savings."

But the newer, and slightly larger, K Wing, which is just being completed next door to H Wing, was constructed to the city's 1991 code. Many of the improvements made in the H Wing project were incorporated into the new code, so only \$175,000 in City Light incentives were required to go beyond the tighter standards. Both buildings are dra-

matically more efficient than older campus structures, but K Wing is a major improvement even over its young sibling structure. One need only walk the halls from one wing to the next to see the difference. K Wing also will use less electricity than H Wing, but it is visibly brighter inside.

Research laboratories in K Wing stand out as being greatly improved over the year-old building's labs. "The laboratories were a particular challenge," says construction architect Hamid Hekmat, whose firm, MBT Architecture, designed K Wing. "We built a life-size section of the lab as a test site and had scientists and students try it out. We went through many changes before we arrived at this design, which is both very practical for the scientists and still very efficient."

Medical research facilities, like hospitals, have particular limitations on the efficiencies they can achieve, largely because of health concerns. Unlike in conventional commercial buildings, heated or cooled air cannot be recirculated. Instead, all air flow in both K Wing and H Wing must be strictly in and out. Laboratory fume vents also dump heat into the air handling systems, which flush it out through the buildings' exhaust stacks. Thus handicapped, how do architects manage to achieve better-than-code efficiency levels?

"They have to look at the whole building and incorporate the best technologies," says Maadanian. "One of the best things about this project is seeing that the theory — that we can save great amounts of electricity with the right technologies — really works. We're evaluating these projects to make sure the savings are really there."

Hekmat, the architect, still needs some convincing. "The best thing about this project from our point of view is the extra check at the end. I'm not sure we'd have done all these things without that. Architects think about how a building looks, the aesthetics. On the other hand, working with the design team City Light assembled was interesting. We learned a lot."

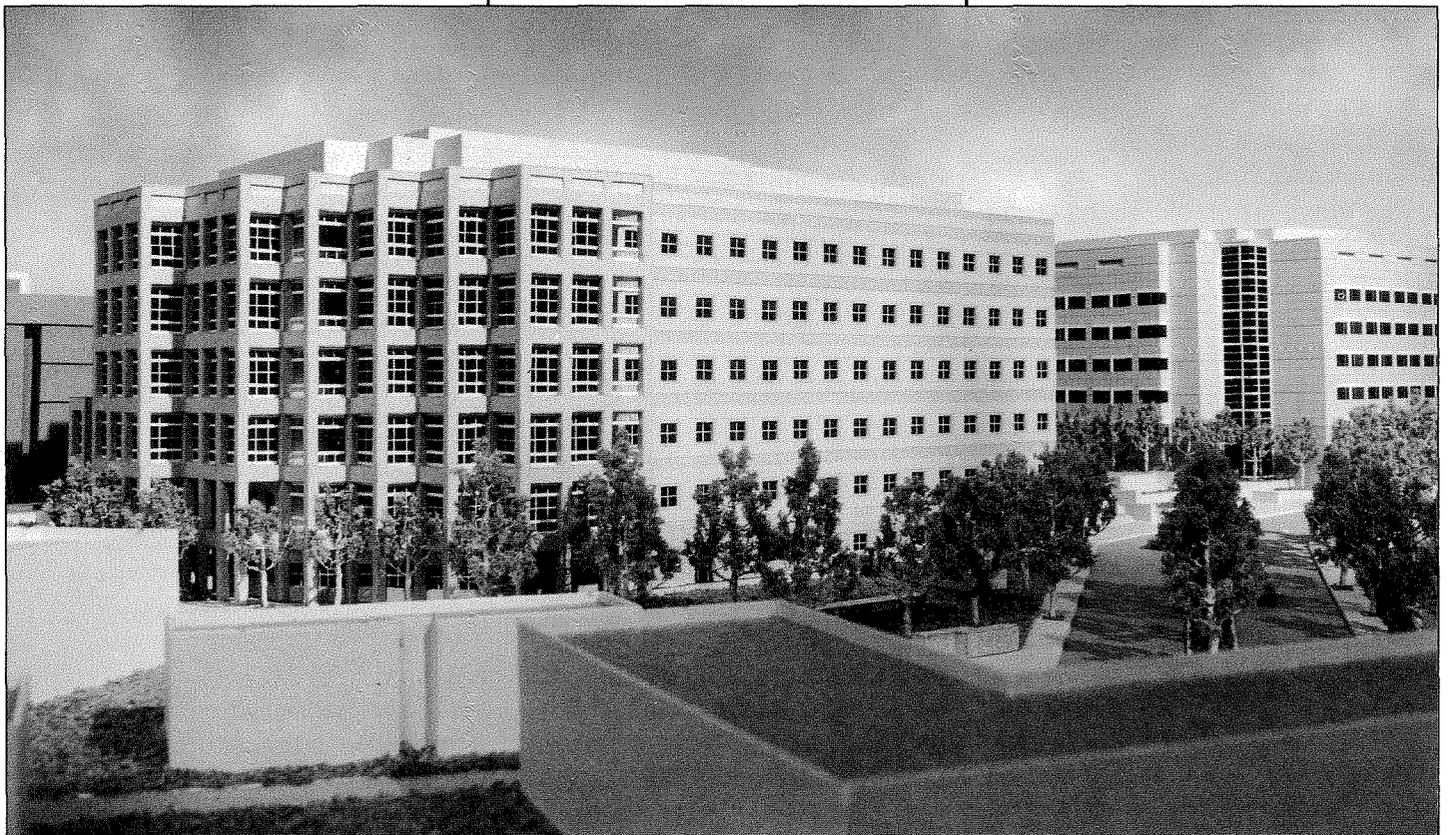
"One of the important goals of projects like this," Maadanian adds, "is getting more people to use these products so the costs come down and more products are available. Working with a school is especially good because architecture and engineering students get involved. Then they go on to design buildings that are energy efficient."

There are eight more buildings under construction on the university campus, all of which are

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significantly more efficient than they would otherwise have been because of the involvement of City Light. Four more are in the pipeline.

"This seems like the sort of project that should go on," argues Maadanian. "It benefits the city because we're a municipal utility, and this is such an inexpensive source of electricity (about 1.4 cents per kilowatt-hour). It benefits the students and faculty who are there all day and have better lighting and a better environment. Many of them worked on the project. It even benefits the state of Washington because this is a state-funded school and we're reducing overhead by \$1 million. As electric rates go up, the savings will be even greater. You don't often see a project with so many winners."



Architect's model of K Wing at the University of Washington's Magnuson Health Science Center. Adjacent H Wing is only one year old, but still less efficient than the new K Wing.

Photograph courtesy of MBT Architecture.

Interview:

Frederick Buckman

with Carlotta Collette

PacifiCorp chief executive views utility restructuring and its consequences.

Forty-nine year old Fred Buckman has probably always been a whiz kid. He's the sort of person who leaves high school at age 16, not to run in the streets, but to pursue greater intellectual challenges — more advanced physics, for example. At the University of Michigan, one of the few schools that would accept him without a high school diploma, he was able to complete a bachelor of science in engineering by the time he was 20. Going on to the Massachusetts

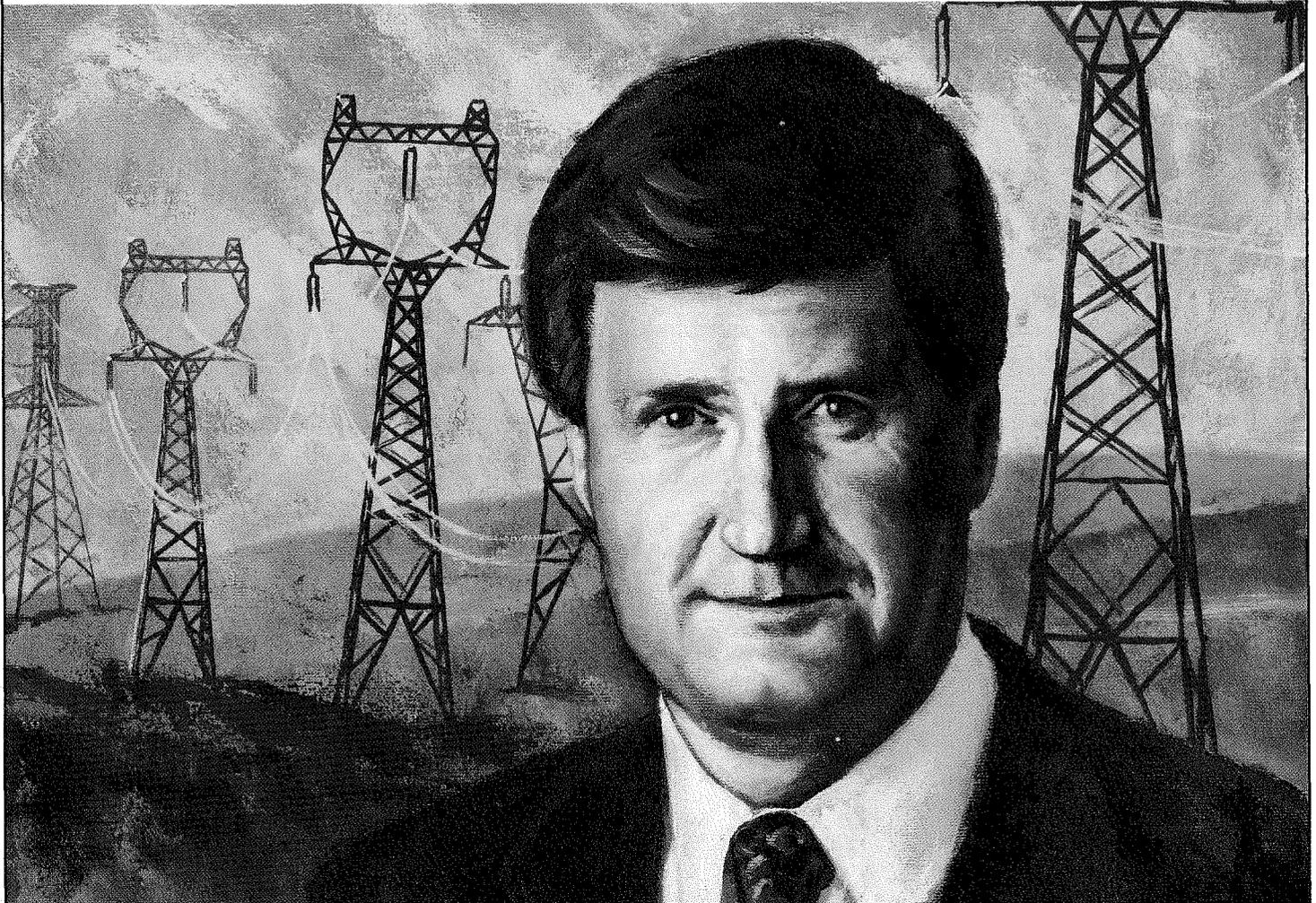
Institute of Technology, he garnered his doctorate in nuclear engineering with a perfect grade point average by age 23.

He did all this not because he figured someday he'd be the chief executive officer of the Northwest's largest investor-owned utility, but because these were the things he wanted to think about: physics, nuclear science and engineering. He thought maybe he'd be a teacher.

Instead, he went to work for Consumers Power in Jackson,

Michigan, where he remained, save for a three-year hiatus when he was president of a utility consulting firm in Pittsburgh, until PacifiCorp, based in Portland, Oregon, tapped him in February 1994 to head up the seven-state, \$3.5-billion utility holding company.

Buckman's priorities at the 9,500-employee corporation are to emphasize customer service and focus on delivering electricity, while shedding some of the company's diverse holdings, in-



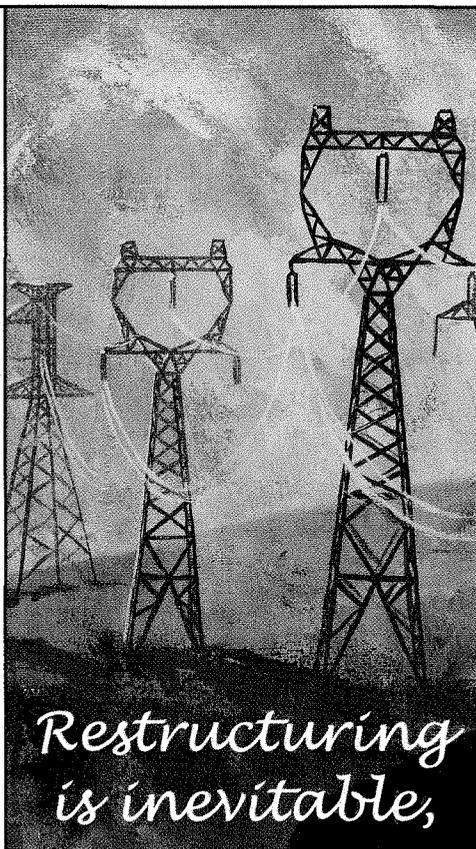
Portrait by Stephen Hayes

cluding large tracts of real estate. A big piece of that goal may have been reached in March, when PacifiCorp announced it had a buyer for major chunks of its northeast Portland properties, which include the 241,000-square-foot Port of Portland Building, where Buckman has his 16th-floor office, and about five blocks of parking and development land in the same area.

In the year Buckman has been in charge at PacifiCorp, the company's Wall Street standing has greatly improved. In the March 1995 *Investor's Monthly*, published by Standard and Poor's, PacifiCorp was listed among eight U.S. electric utilities with "superior performance in 1995." The newsletter said, "this Oregon-based utility is poised to gain market share at the expense of its competition." Buckman agrees.

Q *In an era when most electric companies and even organizations as vast and powerful as the Bonneville Power Administration seem to be terrified about the restructuring and widening competition in the electric utility industry, you appear calm and assured. Doesn't the loss of monopoly status in your industry unnerve you?*

I'm not terror struck. Restructuring is inevitable, and fear only gets in the way of helping guide a course through the waters before us. But PacifiCorp is a company that is very well positioned from a restructuring perspective. Our greatest asset is that we have really creative, forward looking, forward thinking people. I have great confidence that, between my skills and the skills of other people at PacifiCorp, we will find a way to be successful as we move forward.



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We're also a company that has great natural resource assets: low-cost power plants, low-cost coal and a robust transmission system. We have a diverse customer base. We have customers in different time zones, rural and urban, different economies, different seasons in which they use most of their energy. So we have a lot of ability to roll with the punches. We have a set of resources both human and natural that allow us to compete very effectively. To the extent that the restructuring is being driven by competitive forces, this is a company that's going to do very well.

Q *You have negotiated an arrangement with Clark Public Utilities in Washington to assume many of the load-shaping and reliability functions the Bonneville Power Administration used to provide for Clark. Is this an indication of what we can expect to see from PacifiCorp in the future?*

Clark is a non-traditional customer for us. Traditionally our customers have been more the investor-owned utilities as opposed to the public power agencies. Public power agencies have looked to Bonneville as their supplier of first resort. The fact that Clark County has come to PacifiCorp and to Washington Water Power is indicative of a real change in the Northwest in terms of who the partners are going to be, and who the suppliers are, and who the relationships are going to be with as we go forward.

But more importantly, the Clark County deal is an opportunity for us to structure new products. Clark is buying products and services from us that we haven't traditionally sold. Traditionally we sold power. Clark is buying services that turn a single power plant into "system supply." In the event that the power plant they're building isn't running at some point, then we have agreed that we will step in and supply. If the plant's providing more than they need, we will take the excess. We may at times be storing their energy for them, taking energy at times when they don't need it and giving it back to them at a time when they do. We may be marketing excess power for them.

These are not services we have traditionally provided to any of our customers. In effect, what we have done is taken all the things

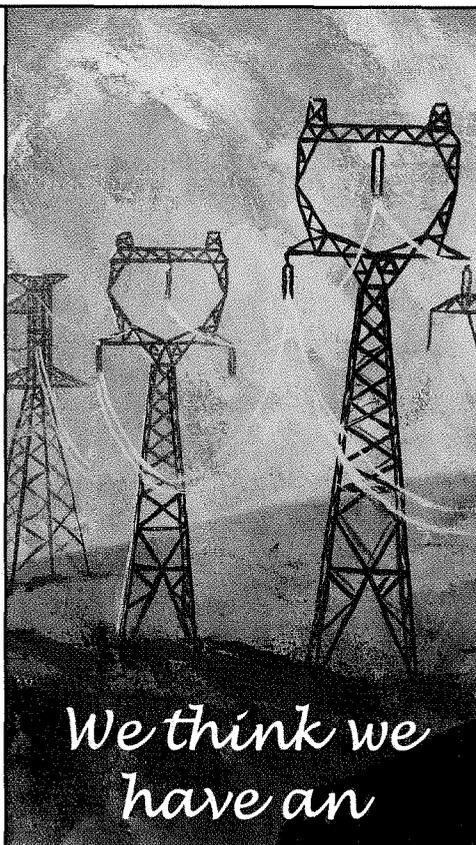
that we can do, separated them out and tried to identify where those services can be of value to our customers. You will see more of that from us with the Clark County's and Snohomish's and Portland General's and Washington Water Power's and whoever we can provide service to. You will also see that with other kinds of customers — large industrial customers, commercial customers, residential customers — as we try to find how we can add value to those customers rather than simply sell the product that we've sold.

Q *Clark was one of the original participants in the Washington Public Power Supply System's*

ill-fated nuclear power plant construction program. When Bonneville agreed to assume the debt for that program, it was on behalf of customer utilities like Clark County. It is that nuclear debt that is making Bonneville a more expensive power supplier than some of its competitors. Should Clark be able to leave Bonneville and its remaining customers with that debt?

I don't have a great answer. The issue we're talking about is stranded investment. My sense is that the stranded investment costs, whether they are Bonneville costs or Southern California Edison costs or whoever, they are stranded investments in which there is going to be a sharing of responsibility. No one constituency is likely to, nor do I think it should, pay the entire cost of that stranded investment.

I think that the likely outcome at Bonneville is that the wholesale customers would absorb a part, retail customers would absorb a portion and the federal government would absorb a part. It



We think we have an obligation to better understand what our impacts are and to try to take steps to mitigate those impacts.

would be spread around. There would be a sharing of those costs.

Q *What mechanism do you think will be used to distribute the costs: transmission fees for everyone on the system, exit fees charged to the utility leaving the system or what?*

I think that of all the options

available, the one that bothers me the most is a transmission fee. You need to keep the costs close to where they currently are. When you start imposing artificial pricing, you distort the market in ways that you have to be very careful about in a market that's becoming more competitive. In our industry, we traditionally have not worried about that because it was a fully regulated industry. As it becomes a more competitive, market-driven industry, every time you impose a fee or tax or anything like that, you're sending signals to the market that will change market behavior. You need to be careful about doing that because you can't predict how the market will respond.

Straight tariffs and fees make more sense to me than some sort of pricing alteration on the transmission system, or something like that. Whether it be an exit fee or an end-user fee or some sort of rate charge would be more reasonable. The bottom line is, there are costs to be paid and somebody needs to pay those costs. The questions are: how long do you want the payments to last, whom do you want to pay, and how do you want to spread it? Some of the debt is going to have to go back to the federal government. The government represents the "stockholders" of Bonneville.

Q *In a restructured utility world, what role do you think will be played by energy conservation and renewable resources? How would you finance these resources, which have greater near-term rate impacts, but lower long-term costs and fewer environmental consequences than conventional generating resources?*

I may take a position that's a

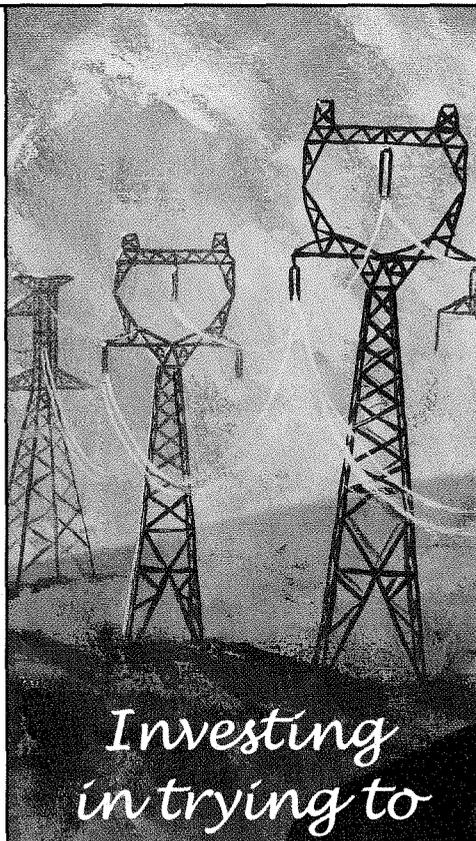
little unusual. I think the general feeling is that the competitive marketplace is making it more difficult to fund conservation. I don't agree with that.

I see the restructuring of the industry as one that will separate the functions between the power supply end of the business and the distribution end of the business. The distribution and services end of the business will continue to be regulated. That will make it easier for the part of the industry that is managing distribution activities to respond to customer and regulator needs independent of economic and generation issues.

In a restructured environment, it will probably be easier to institute social policy through the distribution arm of a utility than it is today. Conservation programs are likely to be viewed as one of a variety of services provided by the distribution provider. The question becomes, who should pay for those programs? I think there are some programs where it makes sense for the utility to provide the program and pay the costs associated with the program and then spread those costs back out over its customers.

There are other programs where the utility may be the catalyst in the process, but that the right funding mechanism is not the utility at all. It'll either be a public bonding program or perhaps a Bonneville type financing, or any of a number of types of financing that may not have anything to do with the operation of the utility itself.

I liken it to the national movement to improve the fuel economy of vehicles. How do you think it would have worked if we had asked the oil companies to be responsible for improving fuel economy? That's really what we've done with electric energy



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from now.*

consumption. We've asked the utilities to take responsibility for cutting electricity use. They are an easy way of collecting funding in today's environment. It'll be more difficult tomorrow. I think that what will evolve as we move forward in a restructured industry is that we'll begin to understand that there are other ways to implement conservation programs to the

extent that they are good social policy.

Q *What about renewable resources? PacifiCorp has some renewable resources in the works. How do they stack up?*

I think renewable projects may need financial incentives to put them on an equal footing, but once that's done, I think the best thing to do is stand out of the way and let them happen. We're pursuing a couple of wind projects, and we've invested in several solar technologies. We're exploring some other kinds of renewable projects. I think the marketplace will allow those to happen if suitable public policy is established. I'm reasonably optimistic about renewables. I think the generation side of our business will continue to look for diversity in our supply. PacifiCorp has a lot of coal supply. One of the reasons we're looking at renewables is to build a better balance of supply alternatives into our base.

Q *PacifiCorp is also beginning to get some press because of environmental programs you've initiated or participated in. Why is PacifiCorp spending its money on the environment?*

We understand that we are a significant partner with the environment. Trying to be a partner in a sustainable way is important to us. We don't want to be a consumer of the environment. Doing things like carbon dioxide offsets and tree planting and supporting scientific research on the White Salmon River to find the best way to restore salmon habitat are just a natural part of the business we're in. This is a business where we are

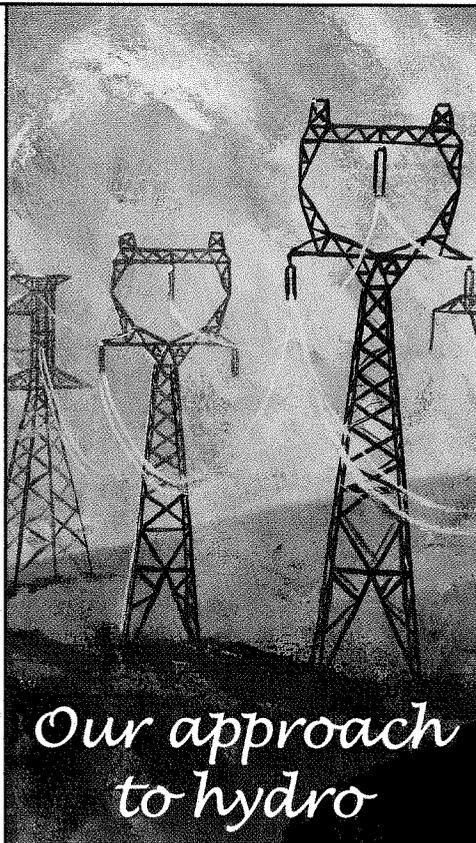
very much involved with the waters of the Northwest, and we're involved with air quality. We think we have an obligation to better understand what our impacts are and to try to take steps to mitigate those impacts.

Are these bad financial investments? I don't think so. If you look at this company not in a two-year horizon, but over a hundred-year horizon, then I think that investing in trying to preserve the environment is one of the ways that will earn us the right to be here a hundred years from now.

Q *PacifiCorp has several hydroelectric plants coming up for relicensing over the next decade. What is your strategy for complying with new fish and wildlife protections?*

Our strategy has been that in order to relicense the projects we need to understand what the impacts of the projects are on the fish and wildlife around them. Spending some money to better understand the science of fish restoration is something we have to do prior to proposing what the right steps are.

We're a company that's very good at concrete and steel. It would be very easy for us to propose some concrete and steel kinds of fixes that would appease people, but if it doesn't improve the fish population, will we really have accomplished what we want to accomplish? So we're spending money trying to understand what's happening on the river with the idea that when we propose specific relicensing projects, be they fish ladders or augmentation of hatcheries or fish transportation or habitat restoration or whatever it is, we'll have



Our approach to hydro

relicensing has evolved, and it now includes a strong public involvement component.

some scientific basis for what it is we're proposing and why we've proposed it.

Probably the single biggest frustration I have in the relicensing process is that there are an awful lot of agencies that we deal with, and the agencies are not of a single mind about what the right thing to do is. I feel that I'm servant to many masters.

I'd like to see a new dialogue with the agencies, where we all focus on the most effective ways

to get the best results for fish and wildlife.

Our approach to hydro relicensing has evolved, and it now includes a strong public involvement component, which has benefited fish and wildlife. For instance, as we prepared our relicensing application for the North Umpqua River, we formed a citizens involvement committee in Roseburg. This group, along with the agencies, wanted us to focus on natural production of salmon and steelhead, so we altered our application to reflect that direction. We will form similar public involvement groups as we prepare other relicensing applications, and we think this approach will benefit fish and wildlife.



by John Harrison

Biologists hope to boost fish production by warming the water of the icy Flathead River.

Near Bigfork, Montana — Brian Marotz is shouting to make himself heard above the whine of the outboard motor as we navigate up the broad, glassy Flathead River, towing a contraption that looks a little like an aluminum catamaran without its sail.

“The lake trout have been coming up here since about 1988, and they damage the bull trout and the cutthroat,” he shouts. “We’re hoping to change that.”

We are about 12 miles from where the Flathead flows into its namesake lake. Here, the lowest, sinuous reaches of the river flow almost imperceptibly through the rich agricultural land of the Flathead Valley past stands of cottonwoods and brush, now punctuated with the calls of geese and wild turkeys. It is early March, and while the sun is shining, the air and water are cold — both about 38 degrees.

Marotz, a biologist for Montana’s Department of Fish, Wildlife and Parks, is here because of bull trout and west slope cutthroat trout, two native species that support popular recreational fisheries, but whose numbers are declining. Cold water appears to be one reason for the decline, promoting the growth of non-native lake trout that feed on juvenile bull and cutthroat trout.

“I remember 1988 as a sort of baby boom year for lake trout,” Marotz yells. “They were real chow hounds.”

Swarming Flathead Lake that year, the voracious lake trout devastated populations of yellow perch, northern squawfish and trout and went looking for more.

“They were starving, emaciated. They looked like swimming heads,” Marotz shouts. “They began coming up the river, up here.”

On this day, Marotz and four of his colleagues from the Department’s nearby Kalispell station, will assemble and anchor a floating trap to gather data on the number and types of fish in this stretch of the river. Data from the fish trap, and another like it about a mile downstream, will help the biologists determine how well raising the temperature of the river boosts production of bull

COULD WATER CRISIS

trout and westslope cutthroat trout and the food organisms they need to survive. Better control of Flathead River temperature, which the biologists could have as soon as June, will result from an ambitious remodeling project at Hungry Horse Dam on the South Fork Flathead River about 30 miles upstream.

Selective withdrawal

Remodeling the dam, and monitoring fish production downstream, are two parts of the same project to mitigate the impact of Hungry Horse Dam on fish in the Flathead River system. The work is being funded primarily by the Bonneville Power Administration through the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program.

It wasn't until 1991 that biologists had solid proof — from stomach samples — that lake trout indeed were eating young bull trout and westslope cutthroat trout. The Hungry Horse selective withdrawal project has its roots in a report prepared that same year by the Department of Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes, whose reservation includes the southern half of Flathead Lake.

That report confirmed what biologists had suspected for years — that water released from the dam was lowering the temperature of the river for miles downstream and harming fish production as a result. The study also proposed a solution: modify the dam so that cold water at the base of the dam

could be mixed with warmer water near the surface of the reservoir, thus raising the temperature of water discharged down the South Fork.

Hungry Horse Dam, built by the federal Bureau of Reclamation, was completed in 1952. It is more than 500 feet tall on its downstream side, and on the reservoir side the only outlets are through four penstocks at the turbine entrances. These are about 240 feet below the surface when the reservoir is full. Water at this depth maintains a year-round temperature of about 38 degrees.

The South Fork is one of three forks of the Flathead River. The North Fork and Middle Fork, which merge to form the mainstem Flathead a few miles above the mouth of the South



Brian Marotz, left, and Rick Malta of Montana's Department of Fish, Wildlife and Parks measure fish caught in a trap on the Flathead River.

Fork, have no dams. Water temperature in the Middle and North forks is regulated naturally — by sun, wind and air temperatures. But the South Fork is chilly all year. Studies have shown that this cold water affects fish production in the five miles of river between the dam and the confluence, and all the way downstream to Flathead Lake, a distance of about 40 miles.

The problem is that fish are very sensitive to water temperature. When the water is too warm or cold, they won't grow as fast or migrate to spawning areas. They will find an area of the river

changes in water temperature of only a few degrees, at most.

More importantly, however, young bull trout and westslope cutthroat trout in the Flathead system emerge from their spawning beds in June and July. Cold water releases from the dam, which vary with the amount of electricity being generated, lower the river temperature and encourage predator fish from Flathead Lake to come up the river, where they can feed on the juvenile trout.

The solution, now under construction, is known as "selective withdrawal." It's a simple concept, but a challenging engineering

up, or wherever. By mixing cold water from the base of the dam with warmer water from higher up, dam operators can literally pick the temperature of the water that is released. Thus, they will be able to match South Fork Flathead River temperatures with temperatures in the North and Middle forks.

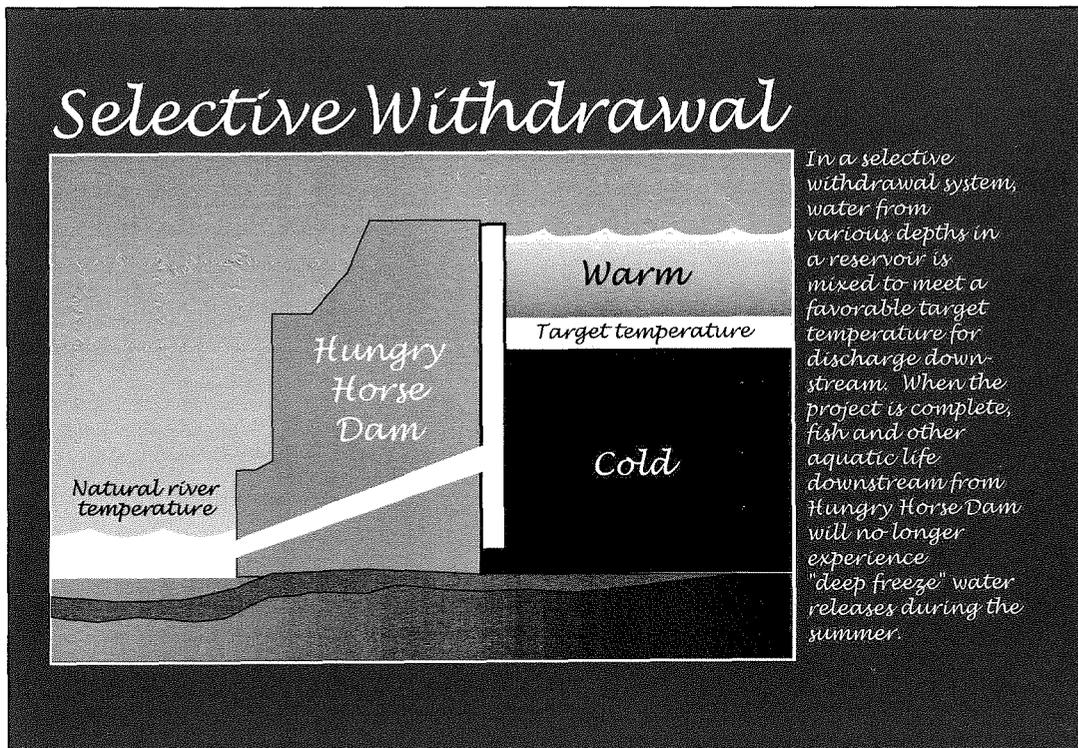
Additionally, dam operators will be able to protect the layer of plankton — important food for fish — that lies between the cold water and the warmer surface water in the reservoir behind the dam. That plankton is needed for fish production in the

reservoir, but plankton-rich water could be directed into the river system through the selective withdrawal system to help fish production there, as well.

According to the 1991 report, "Thermal control through selective withdrawal could reduce or eliminate the presence of predaceous lake trout during the period when juveniles are most vulnerable." This will be accomplished using four existing trash-rack structures on the back of the dam. Each trash rack covers one of the four penstocks that

lead to the dam's four turbines.

The trash racks look like elevator shafts rising up the back of the dam. Built of thick metal bars, they keep floating debris from entering the turbines. Into these racks, the Bureau of Reclamation, which owns and operates the dam, will lower enormous, semi-circular steel plates, one atop the other, and



where the water temperature is comfortable and wait for the temperature to change. In the Flathead, Marotz has measured instantaneous temperature spikes of as much as 14 degrees Fahrenheit when cold water suddenly is released from the dam. That's a tremendous shock to fish, which are accustomed to gradual

project. It works like this: Hungry Horse, like many other dams of its post-World War II generation, can release water from its reservoir at only one level — near the bottom, at the base of the dam. Selective withdrawal means that dam operators can release water from the top of the reservoir, where it can be 10 or 15 degrees warmer, or the middle, or a third of the way

bolt them together, forming a three-gate structure that will operate a little like a telescope. The lowest piece is stationary, the upper two can be moved up and down. About 70 feet below the normal surface elevation of the reservoir, hydraulically operated slide gates — each is five feet by seven feet — will let water in or keep it out of the structure. Temperature sensors will be installed at five-foot intervals and at the turbines.

“It’s an innovative design,” dam superintendent Dennis Christenson said. “Normally, you would see these selective withdrawal systems built on the outside of the trash racks, but by designing ours to fit inside, we were able to cut the project cost nearly in half.”

The original cost estimate for the selective withdrawal system — proposed for outside the trash racks — was \$11.4 million. But

further review showed that the existing trash racks could be used if the structures were built inside them, lowering the cost to \$6.3 million, Christenson said. The first structure should be completed by June — in time to help moderate temperatures for fish born this summer. The remaining three should be done by the end of the year.

In comparison to the rapid progress being made by the Bureau of Reclamation, the U.S. Army Corps of Engineers has only studied the feasibility of installing temperature control devices at Cougar, Blue River and Detroit dams to aid fish production in Oregon’s Willamette River system. The Council first asked the Corps to conduct the temperature control investigations in 1982. The report was completed this year.

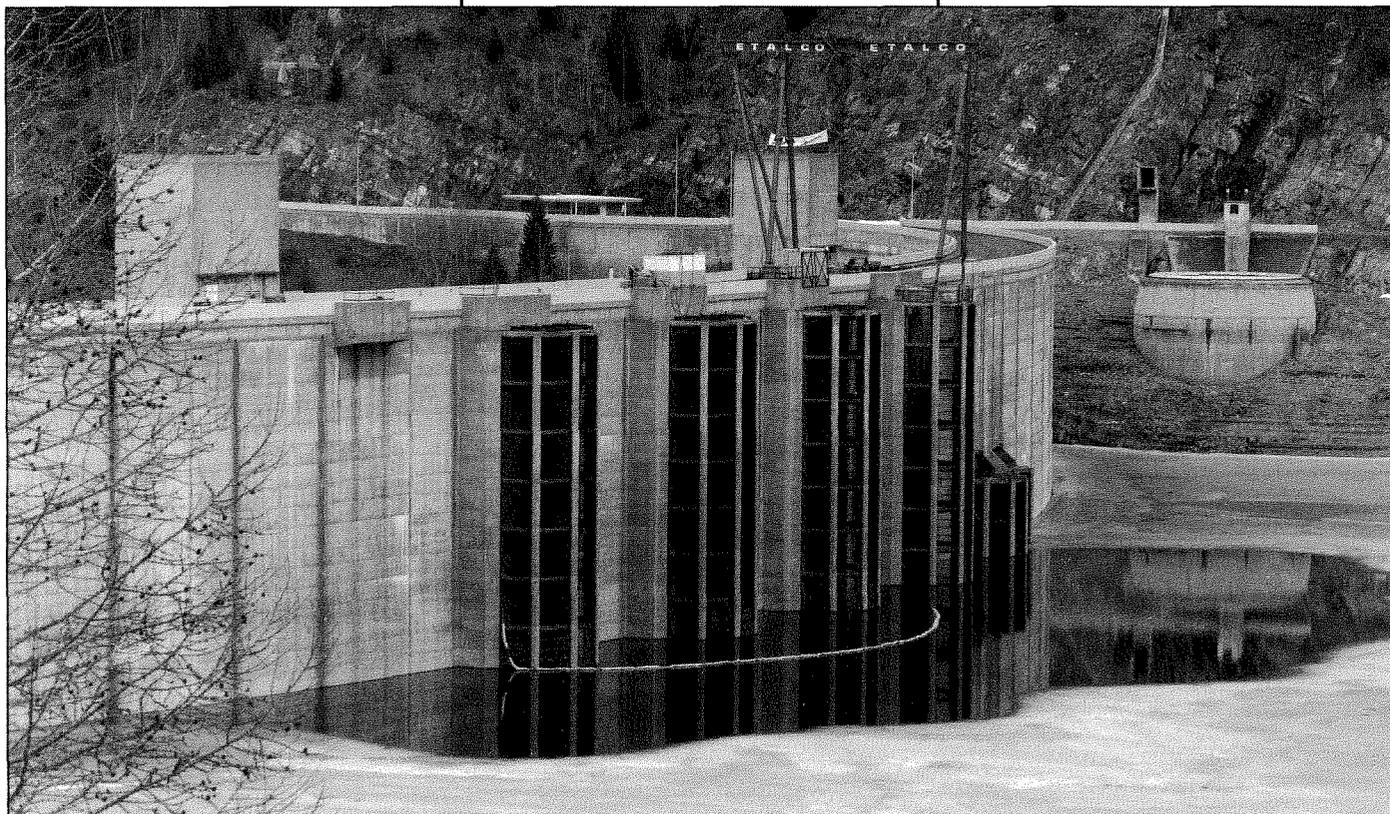
Montana isn’t the only place where projects in the Northwest

Power Planning Council’s fish and wildlife program are under way to improve resident fish populations. Other projects under way or set for Bonneville funding in the coming year include:

Idaho

■ Studying the impact of construction and operation of Dworshak Dam on resident fish and developing recommendations to mitigate the losses. Two projects are under way. Bonneville funding for both in 1995 totals \$305,000. Idaho Department of Fish and Game and the Nez Perce Tribe are doing the work.

■ Operating and maintaining a white sturgeon hatchery on the Kootenai Indian Reservation in northern Idaho on the Kootenai River. The hatchery is operated by the tribe. 1995 funding totals \$425,000.



Selective withdrawal equipment at Hungry Horse Dam will be installed inside the trash racks, which look like outdoor elevator shafts up the back of the dam.

■ Studying natural production of kokanee in Lake Pend Oreille. Idaho's Department of Fish and Game will conduct the study. This project was not funded in 1995, but \$350,000 is proposed for Fiscal Year 1996.

■ Studying fish populations and improving spawning and rearing habitat on the Fort Hall Indian Reservation in southern Idaho. 1995 funding is \$100,000.

■ Stocking trout in Mountain View and Sheep Creek reservoirs on the Duck Valley Indian reservation of the Shoshone-Paiute Tribe. 1995 funding is \$100,000.

Oregon

■ Studying the status of bull trout in Oregon rivers within the Columbia River Basin. 1995 funding totals \$123,500. Oregon's Department of Fish and Wildlife is the contractor.

Washington

■ Continuing to help pay for operation of the Washington Department of Fish and Wildlife's Sherman Creek kokanee hatchery on Lake Roosevelt. 1995 funding is \$120,000.

■ Evaluating hatchery success and determining fish losses that result from fish being swept over Grand Coulee Dam. 1995 funding is \$253,000.

■ Funding operation of the Colville Tribal Fish Hatchery (\$290,000 in 1995) and Spokane Tribal Fish Hatchery at Galbraith Springs (\$450,000) on Lake Roosevelt.

Basinwide

■ Studying the status and habitat requirements of white sturgeon in the Columbia and Snake rivers. Contractors include the Washington and Oregon departments of fish and wildlife, the National Marine Fisheries Service and Columbia River Inter-Tribal Fish Commission. The 1995 budget is \$1.9 million. Separate studies are being conducted on sturgeon in Lake Roosevelt behind Grand Coulee Dam. ♦

Resident Fish and Wildlife Amendments

This year the Council is working on amendments to the resident fish and wildlife chapters of the Columbia River Basin Fish and Wildlife Program.

The Council received about 80 recommendations for amendments. An outline of the proposed amendments and a briefing paper were prepared, and briefings and consultations were conducted with interested persons. The formal amendment proceeding began in April with the release of a draft amendment document. (#95-3) Public hearings and consultations will be conducted in May and June, and the Council expects to make a final decision in July.

While a number of issues were raised in the amendment

recommendations, several stand out. The one that portends the biggest change in current operations, raised primarily by Indian tribes in eastern Washington, northern Idaho and northwestern Montana, calls for fundamental changes in the way the Columbia River system is operated. The proponents say too much attention is paid to the needs of salmon and steelhead and not enough to the needs of resident fish. For example, these parties contend that river flows are manipulated to aid salmon and steelhead migration with little attention to the impact on fish that live in the reservoirs that provide the flows. Among the recommendations from these parties are increased funding for resident fish enhancement projects and new operating rules

for all of the major storage dams to better protect resident fish.

There also were recommendations for changes in implementing the fish and wildlife program. The Upper Columbia United Tribes, for example, proposed that an implementation plan be developed by the Columbia Basin Fish and Wildlife Authority, which represents state, federal and tribal fishery managers. Currently, the Bonneville Power Administration does implementation planning. ♦

KEEPING THE "PUBLIC" IN PUBLIC POWER



Communication is one utility's answer to increased competition.

by Jim Middaugh

While many utilities are cringing in the face of competition, increased communication with customers is keeping the Emerald People's Utility District on the cutting edge of the changing energy industry.

Emerald, which was formed on November 23, 1983, serves nearly 16,000 customers within a mostly rural 550-square-mile service territory in Oregon's Lane County. The utility is in the midst of updating its five-year-old integrated resource plan — a road map that will help its elected Board of Directors guide the power provider into the next century and the uncertain world of the marketplace.

The hallmark of the plan is the public, according to Alan Zelenka, Emerald's senior resource specialist. "We believe the 'P' in PUD really means something. People is

what public power is all about — it means allowing customers to participate in the decisions that affect them instead of having the decision made behind closed doors."

To find out what its customers want, Emerald formed a citizens advisory committee. A notice inviting people to participate in the committee's planning process was mailed out with monthly bills. More than 130 customers — from industrial to residential — responded.

"We warned people that participation could mean some heavy duty work, including homework, evening and Saturday meetings," said Jeff Shields, Emerald's general manager. "Nonetheless, we had a great response. I think it demonstrates that customers want to have a say in resource planning."

Respondents' names were separated according to which Board of Director's district they were in and by end-use class. Each Board member selected one name at random from his or her district. In addition, one participant was selected at random from each end-use class and from the previous resource planning citizens committee. The result is a broadly representative committee made up of nine customers and Emerald's five Board members.

The committee's charge is to develop and recommend a two-year action plan for Emerald to implement immediately and a five-year and a 20-year plan for the utility to follow over the medium and long term. But to complete its charge, the committee needed some education.

Over the course of eight meetings, the committee heard pro and con presentations on each resource. Following each presentation, committee members were able to have discussions with and ask questions of the presenters and Emerald staff members. According to Shields, since Emerald's Board members were participating, too, the committee knew its input would actually be used, that it wouldn't simply sit on a shelf.

"We provided the committee with briefings, spread sheets, cost analyses and comparisons for each of the 12 resources (supply-side, purchases and demand-side) available for our potential portfolio," Zelenka said. "But we did more than simply feed them information. We allowed them to talk directly with experts."

"Ordinarily, a utility's staff and Board develop what they think is the best strategy and then engage a citizen's committee to endorse the plan," Shields said. "We gave the committee all the information we had and said, 'You tell us what you think is best.' It's a substantially different citizen involvement approach than most groups use."

Given the widely held perception that competition has made short-term rate impacts the critical factor in current resource planning, the committee's decisions may seem surprising to people who don't work directly with their customers. The committee ranked resources after developing evaluation criteria and analyzing environmental impacts and perceived risks for each resource. The risks included price increases, fuel interruption, under-performance and potential environmental impacts.

After all the evaluation and discussion, conservation came out on top and gas-fired combustion turbines on the bottom. In between,

"We believe the 'P' in PUD really means something. People is what public power is all about."

according to the committee's rankings, were Bonneville Power Administration tier one power, solar water heaters, wind, fuel switching for space heating, retrofit hydropower plants, solar, other power purchases, geothermal, cogeneration, fuel cells, Bonneville tier two power and advanced batteries. Since the committee made its rankings, Bonneville has dropped tiered rates. This information will be incorporated into the remainder of the process.

"Even though we spent a lot of time talking about short-term cost, none of the committee members said conservation should play no role in our portfolio. But nine of the 14 said combustion turbines should play no role," Zelenka said.

"In the utility industry, we tend to think the public wants the cheapest thing today," Shields said. "But they understand you can make decisions that are cheap today, but more expensive over time. That's where the industry is headed with gas turbines today and certainly where it was with nuclear power. I don't think we

give our ratepayers enough credit in their understanding of this concept," he said.

Emerald Board Chair Katherine Schacht says, "Short-term thinking often creates long-term problems. If we don't pay the full costs for our actions today, we will simply have to pay later. Public involvement can be a low-cost way to look beyond the next quarterly dividend towards customers' — and stockholders' — long-term needs."

Emerald's staff is now using a computer model to analyze the impacts various resource mixes — including the committee's preferred portfolio — will have on everything from revenue requirements and capital requirements to bills and rates. Once the modeling is done, the committee will make a recommendation to the Board on the resource mix Emerald should pursue. Emerald's staff will make a separate recommendation to the Board. Armed with the input, the Board will choose the final portfolio.

Shields and Zelenka admit that there is a lot of perceived risk in bringing the public into decision-making. "You have to give up some of your political capital when you bring the public in," Zelenka said. "Many executives believe the public will produce radical, stupid ideas. But if you give people good information you will get informed input. Resource planning is not so complex that it can't be understood by the average bill payer," he said.

Emerald committee member Rob Lilley agrees. "The public needs to be familiar with the issues, but they don't need to be experts. If you have a reasonably intelligent group that has made a commitment to participate, a little education will be enough," he said.

Another important factor is a spirit of cooperation and trust. "People can't already have their minds made up. There has to be some give and take. Trust needs to be built into the process right up front. If people know they are going to be taken seriously, they are going to participate effectively," Lilley said.

At the same time, utilities shouldn't use a public process unless they are committed to listening to the public. Otherwise, Lilley says, "It's worse than not doing it all." As an example, Lilley cites many land-use decision-making processes. "An agency asks the neighbors of a proposed development what they think. The neighbors say they don't want it, but the agency allows it anyway," he said. The fact that public participation is mandatory for the land use planners who are not really committed to using the information means public involvement becomes an effort to "sell refrigerators to Eskimos," Lilley noted.

In an increasingly competitive utility environment, that kind of sales pitch is likely to fall on deaf ears. "If there's one thing we've learned from competition, it's that competition doesn't only mean lowest cost, it means people choosing what's best for them," Shields said. "If we choose for them we will sometimes make mistakes. If we involve people we will be leaders and survivors. The point is, cheapest is not necessarily best. People will choose what is important to them. Understanding what that is, is key to a utility's survival. That's why public involvement is becoming more and more important," he said.

Shields cites "Ma Bell" as an example. The phone company used to be routinely cursed.

"If we don't involve our customers today, at some point they will force us to involve them by seeking other sources of power."

"Now, rates aren't cheaper, but customers have choices that meet their needs. Competition means giving people choices. And the way to determine what those choices should be is to get people involved," he said.

Every utility needs to make decisions about where it's going to go in the future. Policy makers have a choice: "We can use internal decision-making only, or we can involve the public in the process. Emerald is firmly on the side of public involvement," Zelenka said. "Public involvement makes sense. It adds credibility, builds support, and it creates rational business decisions," he said.

Schacht says public involvement is "very useful in making business decisions. Even if you work for the world's largest utility or sit in an ivory tower, it's important to know what your customers want and what they will support. It is much more cost-effective to find out up front than it is to wait until you face a crisis or you're midstream in the development of a

new resource. Besides, given the competitive nature of the industry, if we don't involve our customers by choice today, at some point they will force us to involve them by seeking other sources of power," she said.

The fact is, Shields says, "You can't buy the kind of public relations benefits you get from involving your customers in resource planning. Not only does public involvement help you understand your customer base, it also lets your customers know they are part of the decision-making process. When it comes time to develop resources, your customers own the decision."

From Emerald's perspective, public involvement creates a win-win-win situation. The public wins because it gets to participate and contribute. The Board wins because it receives more input and more public support. And the staff wins because they get a plan that is easier to implement.

"You have to adapt to what your customers want. In terms of staff time and resources, public involvement is a low-cost way to do it. The cost of changing attitudes, however, may be more expensive," Lilley said. 

For more information on Emerald's Integrated Resource Plan and its public involvement process, contact Alan Zelenka at 503-746-1583, or write to Emerald People's Utility District at 33733 Seavey Loop Road, Eugene, Oregon 97405.

The interpretation of science is at the root of policy disagreements over salmon recovery actions.

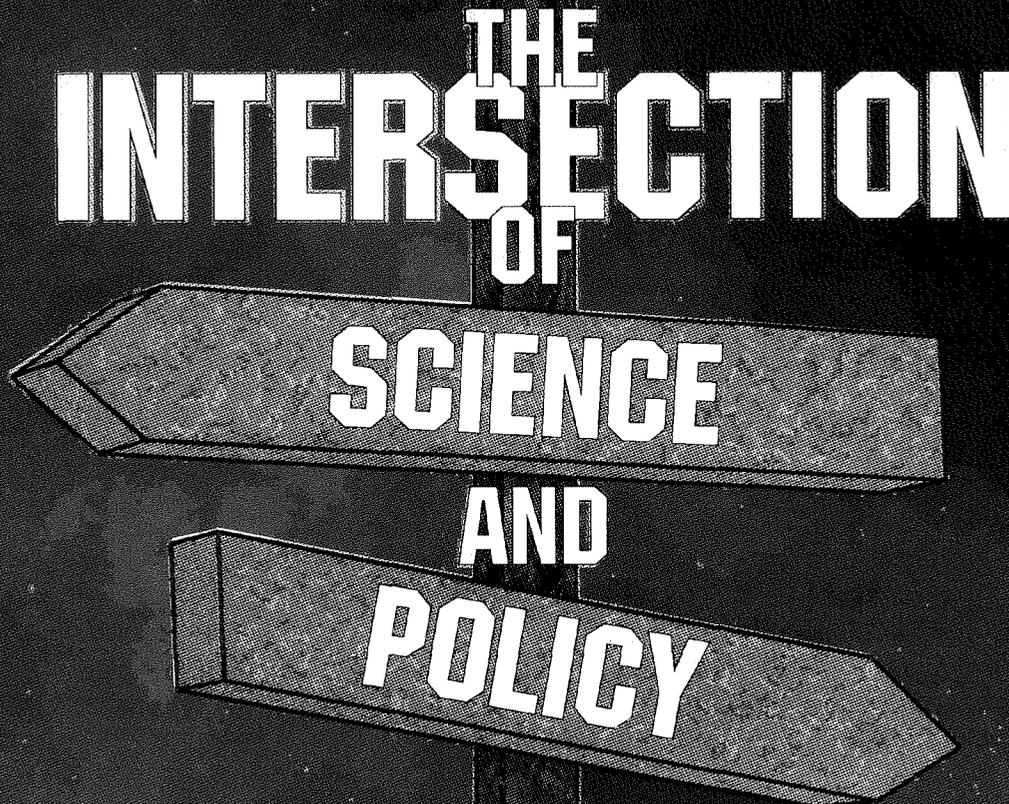
by John Harrison

By next spring, the Northwest Power Planning Council will find itself at a critical crossroads, the place where biological science meets public policy decisions. It's a place Council members want to be, the culmination of a deliberate effort to improve their understanding of the science underlying the most controversial parts of the Columbia River Basin Fish and Wildlife Program.

The Council last amended its fish and wildlife program in December 1994. But Council membership has changed since then. Two Council members have retired, and two new members were appointed in Idaho by incoming Governor Phil Batt. In addition, Council Chair Angus Duncan of Oregon intends to resign in September. Governor John Kitzhauber has appointed John Brogoitti of Pendleton to replace

Duncan. Only four of the current members were on the Council in December. Two favored the amendments, and two voted against them.

Council members have acknowledged that most of the program — habitat improvements, harvest restrictions, changes in fish production practices, protecting reservoirs in the upper Columbia Basin and research into key biological uncertainties —



generally has their support. But some parts of the program don't have the support of all Council members. Specifically, the Council will investigate the science underlying the fish-survival benefits of increased flow and water velocities in the Snake and Columbia rivers, spill at the dams, barge transportation of juvenile fish, and reservoir drawdowns in the lower Snake and at John Day Dam on the Columbia.

"We're not backing away from our plan," said Ken Casavant, eastern Washington member of the Council and chair of the Council's fish and wildlife committee. "The effect of the re-examination is that most of the program will continue to be implemented, but some parts will take longer and, ultimately, the Council may go in another direction."

Washington's other Council member, Mike Kreidler, agreed. Even though he was appointed to the Council this year and did not vote on the December amendments to the program, Kreidler said, "I want to make it clear from my standpoint that we are not in the process of going back and reviewing what were the bases of the decision that was made in December. What we're looking at is an ongoing evolution of knowledge on which we base decisions that are so important to preserving wild runs of salmon and resident fish."

Other new Council members, including Joyce Cohen of Oregon, and Mike Field and Todd Maddock of Idaho, also agreed that the Council should undertake the science review.

A panel of independent scientists, known as the Independent Scientific Group, will assist the Council to ensure maximum objectivity and credibility. The

Independent Scientific Group was created in the late 1980s by the Bonneville Power Administration and the Columbia Basin Fish and Wildlife Authority to provide independent scientific evaluation on a variety of topics. The Council's fish and wildlife program, as amended last December, calls on the panel to review the program once every two years.

For the science review, four panels will be created to look into four specific components of the Columbia Basin ecosystem, beginning with a review of relevant scientific literature: headwaters, mainstem Snake and Columbia rivers, the estuary and the Pacific Ocean. Within each ecosystem component, the panels will review biological science on life-cycle diversity of both ocean-going and non-ocean-going fish, sources of mortality, habitat conditions, fish production and fish harvest.

One or two members of the Independent Scientific Group will serve on each panel, and each panel will bring in between four and eight outside experts to assist in the work. These outside experts will be chosen for their expertise and not necessarily for their affiliation with particular interest groups, although such affiliation will not automatically bar an expert from participating.

The panels expect to complete the literature review by the end of September, and then the Council and the panel members will decide whether – and when – to conduct workshops. These would provide an opportunity for the Council and panel members to explore the four subject areas in greater detail.

"There's really never been such a review in the Columbia River Basin," University of Montana ecologist Jack Stanford said when the Council met with the scientists

in March. Stanford is a member of the Independent Scientific Group. "We've had a number of scientific conferences, but nothing of this scale. The objective is to produce a clear and concise statement of what the science is pertaining to fisheries ecology in the Columbia River ecosystem."

To that end, the group proposed segmenting the Columbia Basin ecosystem into interconnected components for purposes of the review. Past reviews of biological science have focused too narrowly on issues — barge transportation of smolts, for example, or the survival benefits of increased river velocities. Stanford said the Independent Scientific Group prefers to focus on what science says about fish and wildlife survival, not whether one survival strategy is better than another. In this way, the process will shed light on controversial issues like transportation and flows, but these will be secondary to a thorough scientific review.

"It spins the review differently, and it spins it on a sound science axis, and we think that's the way to go," Stanford said.

While Council members expressed satisfaction with the review proposal, some said they wished the process could be completed more quickly. Nonetheless, "this review could end up serving some broader purposes for the region in both educating ourselves and others on the state of the science," Council Chair Angus Duncan said.

Montana Council member Stan Grace said the review "... is the most objective approach to improving scientific understanding that I have seen to date." Grace said the review offers the Council the opportunity to work out compromises on issues where there is disagreement.

Duncan said he hoped the review could be structured so that "...we can state some of the more targeted questions we have and address them early in the process. In particular, if we are able to deal with issues of life-cycle history and sources of mortality, those both include mainstem issues such as mortalities at the dams and in the reservoirs. There's an intersection here between science and public policy responsibilities," Duncan said. "We need to make sure that this inquiry will serve both purposes."

That's the goal, Stanford agreed, adding that the Council should be well aware of the distinction — and of the limits of science in the policy arena. "Science may not have all your answers," he said. "However, science does produce strong inferences. That is, a summary of science strongly suggests a course of action. We will articulate that for you, but don't expect scientists to implement anything that is a

policy decision for you to make."

Council Vice Chair John Etchart of Montana said he also sees value in a thorough review of science. "If we could actually come to an unvarnished, clean, objective statement of the state of the science, we would do the region, and Congress, and the federal judiciary and many others a real service," Etchart said. "But we need strong inferences from the science. We need strong inferences in about a half dozen clearly controversial, terribly costly measures. "For instance, we need strong inferences about whether drawdowns make sense, about volumes of water, about spill and about where money is spent most fruitfully," Etchart said. "Those are the kinds of inferences we need, and as long as our process takes us there, I think we're doing what we ought to be doing."

Stanford said some inferences already are obvious from the available science. Native fish are in deep trouble in the Columbia

Basin, he said, but the region's responses to date may or may not be the best for the fish. For example, whether juvenile salmon are barged or left in the river to be swept to the estuary with faster current, the assumption is that salmon benefit if they get downstream quickly.

"A new paradigm may be required, an alternative to the rapid-mass-transit model that we've been using to date," Stanford said. "On the other hand, the science review may clearly indicate that, with a number of key modifications, the model should have a strong possibility of resulting in some good."

One thing is certain, however, and Stanford made it clear to Council members:

"I think we are about to move, with this level of scientific review, to a new realm, and it will be incumbent on you to be as informed as possible in order to capitalize on this new level of information."

Members of the Independent Scientific Review Group

Richard N. Williams, chairman of the Independent Scientific Group, is a fisheries genetics consultant who lives near Boise, Idaho. He has conducted post-doctorate research in applying molecular genetic techniques to fish populations including cutthroat, rainbow and bull trout. Recently his research has focused on the population genetics of native salmon and trout in the Pacific Northwest.

Richard R. Whitney is the group's co-chairman. He taught at the University of Washington School of Fisheries. Now retired, he lives near Leavenworth in central Washington.

Lyle Calvin is a professor emeritus of statistics at Oregon State University. He has worked with state and federal agencies, primarily the U.S. Army Corps of Engineers, for a number of years.

Charles C. Coutant, is a general aquatic ecologist at the Oak Ridge National Laboratory in Oak Ridge,

Tennessee, and also the 1995 president of the American Fisheries Society. He conducted salmon research in the Hanford Reach of the Columbia River in the 1960s and now works on developing temperature criteria for aquatic life for the National Academy of Sciences and the federal Environmental Protection Agency.

Mike Erho worked for 23 years at the Douglas County Public Utility, where he was responsible for implementing mitigation projects for Wells Dam. Today he works as a consultant.

James Lichatowich is a fisheries consultant who lives in Sequim, Washington, on the Olympic Peninsula. Before beginning his consulting work, he was chief of research and assistant chief of fisheries at the Oregon Department of Fish and Wildlife.

William J. Liss is a professor of fisheries at Oregon State University. His research includes salmonid ecology, lake limnology and use impacts on stream

habitats in the Oregon Coast Range and in the Columbia River Basin.

Willis E. McConaha, a fisheries scientist for the Northwest Power Planning Council, is the group's technical and scientific liaison. His responsibilities at the Council focus on the analytical and technical aspects of system planning, fish passage, research and monitoring.

Phil Mundy is a consultant based in Lake Oswego, Oregon. Mundy formerly was chief fisheries scientist for the state of Alaska and also has worked for Puget Sound-area Indian tribes and the Columbia River Inter-Tribal Fish Commission.

Jack A. Stanford is a professor of ecology at the University of Montana. He also directs the university's biological station on Flathead Lake. He has spent 25 years working on the ecology of the Flathead River and lake system.

SHORTS



Millions of fish could be saved by new test. Scientists at the Seattle office of the federal National Biological Service have been able to use a new DNA probe to distinguish deadly strains of a salmon virus from less deadly strains. In the past, when this test was not available, millions of infant salmon at Northwest hatcheries were killed because they were thought to carry the lethal and fast-spreading virus. Now, using the test, fisheries biologists can identify less dangerous strains of the virus, sparing the lives of the infected fish. [Source: *The Columbian*, of Vancouver, Washington, February 23, 1995.]

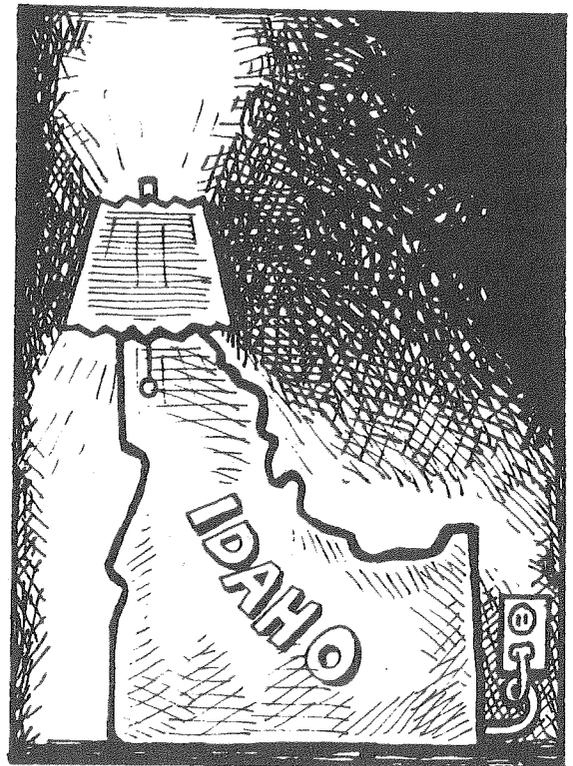
U.S. petroleum imports hit all time high in 1994. The record — 8.9 million barrels of both crude and refined petroleum products — amounted to more than half the oil used in the United States in 1994, according to the Energy Information Administration. That's the first time in U.S. history the nation has used more imported oil than oil that's domestically produced. [Source: *Environmental News Briefing*, February 1995.]

Canadian government calls for reorganization of West Coast salmon management. Citing a report produced by John Fraser, Canada's ambassador for the environment, Fisheries Minister Brian Tobin has criticized last year's federal management of sockeye salmon runs, which nearly eliminated Fraser River sockeye populations altogether, and called for "a radical program of change." Management provisions dating back to 1992 left the sockeye with almost no one enforcing fishing limits in 1994. As a consequence, what had been projected to be a record sized run was overfished at every opportunity, leaving only a

remnant population to return to spawning grounds. The Fraser report also called on the government to establish a conservation council to oversee West Coast fisheries. [Source: *The Vancouver Sun*, Vancouver, British Columbia, March 8, 1995.]

Japan planning to build 30,070 megawatts of new generating resources by 2010. The nation's Ministry of International Trade and Industry has invited foreign developers to participate in the huge energy buildup as long as they have domestic partners in their proposals. Japan specifically is asking for proposals to build non-oil fired cogeneration and waste-burning plants, solar resources, fuel cells and wind projects. [Source: *The Energy Newsbrief*, March 23, 1995.]

Idaho lamp company announces breakthrough in efficient lighting. The company, Beacon Light Products, Inc., of Meridian, Idaho, is claiming its new hybrid ballasts offer lower prices and longer lives than currently available ballasts or lamps. One of the limitations on electronic ballast compact fluorescent bulbs is that their lives are generally shortened by being turned on and off repeatedly. In tests conducted by Beacon, the "Quick-Start" ballasts survived up to 10 times the number of on/off switchings as did comparable fixtures. The company is awaiting test results from independent laboratories. [Source: *Idaho Currents*, March 1995.]



CALENDAR

June 13 Northwest Power Planning Council meeting in Portland, Oregon.

June 14-15 Northwest Power Planning Council meeting in Seattle, Washington.

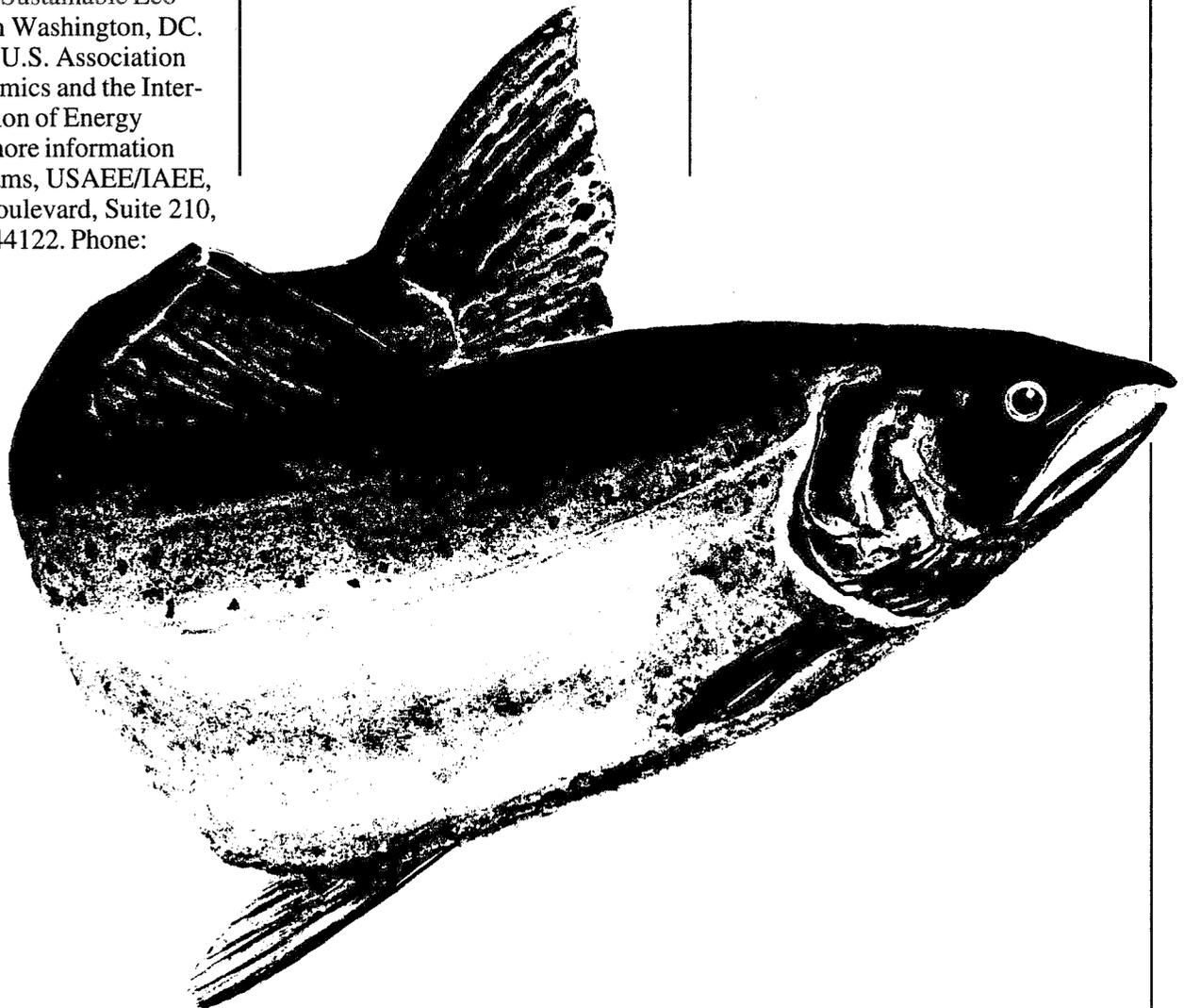
June 28-30 Seventh National Demand-Side Management Conference, "Delivering Customer Value" in Dallas, Texas. Sponsored by Electric Power Research Institute and U.S. Department of Energy. For more information contact: P. Turner, EPRI, Box 10412, 3412 Hillview Avenue, Palo Alto, California 04304. FAX: 1-415-855-2041.

July 5-8 Harmonizing Energy Policy, Environment and Sustainable Economic Growth, in Washington, DC. Sponsored by the U.S. Association for Energy Economics and the International Association of Energy Economics. For more information contact: D. Williams, USAEE/IAEE, 28790 Chagrin Boulevard, Suite 210, Cleveland, Ohio 44122. Phone: 1-216-464-5365.

July 10-12 Northwest Power Planning Council meeting in Butte, Montana.

July 15-20 Solar '95, 10,000 Solutions: Paths to a Renewable Future, in Minneapolis, Minnesota. Includes the 24th American Solar Energy Society Annual Conference and the 20th National Passive Solar Conference. For more information contact: American Solar Energy Society, 2400 Central Avenue, Suite G-1, Boulder, Colorado 80301. Phone 1-303-443-3130 or FAX 1-303-443-3212.

August 1-4 ACEEE 1995 Summer Study on Energy Efficiency in Industry, Holiday Inn Resort and Conference Center, Grand Island, New York. Co-sponsored by the American Council for an Energy-Efficient Economy and the New York State Energy Research and Development Authority. This event will explore the changing relationships among industries, the government and utilities. For more information contact: Katherine Gallagher, ACEEE 1995 Summer Study Office, 2140 Shattuck Avenue, #202, Berkeley, California 94704. Phone: 1-510-549-9914. FAX: 1-510-549-9984.



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



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COUNCIL PUBLICATIONS ORDER FORM

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

Publications

- (95-4) *Proposed Resident Fish and Wildlife Amendments to the Columbia River Basin Fish and Wildlife Program.*
- (95-3) *Discussion paper and summary of resident fish and wildlife amendments.*
- (95-2) *Synopsis of Council's February 14, 1995, Northwest Renewable Forum.*
- (95-1) *Recommendations to amend the resident fish and wildlife sections of the 1994 Columbia River Basin Fish and Wildlife Program (approximately 700 pages).*
- (94-55) *1994 Columbia River Basin Fish and Wildlife Program, includes response to comments (approximately 300 pages).*
- (94-54) *Briefing paper: Market Transformation: What is it and How do We Get There?*
- (94-53) *Issue paper: Draft Bonneville Power Administration Incorporation Legislation.*
- (94-52) *Acquiring Energy Efficiency More Efficiently.*
- (94-50) *Accounting for Environmental Externalities in the Power Plan.*
- (94-49) *Fiscal Year 1996 Budget and Fiscal Year 1995 Revisions.*
- (94-46) *Issue paper: Sustaining Conservation in the Era of Competition.*

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- Northwest Energy News* (this bimonthly magazine)
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from the **CHAIR**

Contrary to what you may have read in the papers, the Council has not determined to reopen or rescind its vote on the Columbia River Basin Fish and Wildlife Program, which was adopted in December. While there clearly is not Council consensus on the program, neither is there consensus on whether or how to revise it. Until that consensus emerges, the rule stands as adopted.

But Council members are generally in agreement on the majority of the actions called for in that document. What we are doing — by consensus — is re-examining much of the scientific information on which that December decision was based. We are doing this in part to keep the program current with the “best available science” — something of a moving target. We are doing it in part to assist four new Council members who did not spend the months listening to the various points of view on this issue that last year’s Council did.

But my own principal purpose in this undertaking is to try to build a foundation of science for the program that will earn greater regional confidence. I am hoping we will learn what questions science can answer today, what questions demand greater scientific scrutiny, and how public policy can deal with the most controversial questions of flow, downstream travel time and barge transport of fish, when the science remains inconclusive.



Success in delineating these issues will not resolve our differences or set the salmon on an unambiguous road to recovery, but it should make the job — for new Council members, for the National Marine Fisheries Service and for the region — easier, surer and less rancorous.

