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NORTHWEST ENERGY NEWS

Northwest Power Planning Council

**Conservation:
The new utility challenge**

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As we go to press, a petition to list Snake River sockeye under the Endangered Species Act is being reviewed by the National Marine Fisheries Service. These are the red fish for which Redfish Lake in Idaho was named. They used to turn the whole lake crimson with their shimmering presence. Last year, only two of them made their way back up to spawn. There could be a few more coming in this year, but the run has looked bad for some time now. If this or any Columbia River stock is listed, the ramifications will be immense. We begin to cover this issue on page 6.

This issue's cover illustration is by Jud Guitteau.



POWER PARADOX IN THE PACIFIC NORTHWEST

by Gordon Lee

**Slower growing energy demand may mean
a faster growing resource base.**

Over the next two decades, the Pacific Northwest under certain robust economic conditions may need to tap into more amounts of new power each year than ever before, even as its appetite for electricity

grows more slowly than in most of the post-World War II years.

That paradox lies at the heart of a revised interim forecast of regional power demand under development by the Northwest Power Planning Council and the Bonneville Power Administration.

Their forecast suggests that energy consumption in the next 20 years may grow more slowly than in most years since 1945. But despite that predicted slackening of consumption growth, the region may need more power added to its resource base each year in the

next two decades than at any other time, including the boom decades of the 1960s and 1970s, if it experiences high economic growth.

“Because our economic base is so much larger today, a smaller rate of energy demand growth still may translate into larger annual climbs in absolute demand than in the past,” notes Tom Trulove, Council chairman. “Utilities soon may have to commit to new sources of power to meet the region’s demand for energy.”

This is the second year in a row that the Council and Bonneville have worked on a joint forecast. This year’s updated figures aren’t radically different from last year’s.

The region should see a marked decline in its energy demand growth rate in the next 20 years. Its appetite for electricity likely will grow between 0.6 percent and 1.8 percent a year, in the medium-low to medium-high growth range. If demand grows at a high level, the Northwest’s demand for electricity could climb 2.7 percent annually. That compares with yearly growth rates of 7 percent in the 1950s and 1960s, 4 percent in the 1970s and 1 percent in the volatile 1980s, a decade in which demand was relatively stagnant until 1986, after which it grew at a 4-percent annual pace.

Those forecast growth rates translate into a range of potential energy demand for the region. Customers in the Northwest could demand 29,500 megawatts by the year 2010, if high energy demand growth continues. That would be a 75-percent jump from the 16,621 megawatts the region consumed in 1988. Medium-low to medium-high economic growth

Energy consumption in the next 20 years may grow more slowly than in most years since 1945.

during that period—which is more likely—would translate into a 2,400-megawatt to 7,800-megawatt increase in regional demand, compared with 1988.

Put in different terms, the region’s energy demand would grow by an average of nearly 650 megawatts a year in the next 20 years, in the high-growth case. In contrast, the Northwest added an average of 406 megawatts a year during the fast-growing 1950s and 1960s—when regional demand grew at three times the rate of the forecast’s high-growth scenario.

However, those demand forecasts don’t equal the amount of power the region will need to produce under various growth scenarios. That’s due to a phenomenon known as transmission line loss. Because of the laws of physics, more than 7 percent of the electricity sent on power lines in the Northwest disappears during transmission. This means that to guarantee they’ll meet projected demand, producers must boost the amount of power they gener-

ate by the amount they expect will be lost during transmission.

In the high-growth case, for example, the region must produce 31,650 megawatts in order to guarantee delivery of 29,500 megawatts, Council and Bonneville analysts calculate. The four Northwest states will have to produce 26,100 megawatts and 20,400 megawatts to guarantee they will meet demand in medium-high and medium-low conditions, respectively.

The region’s existing resource base will be able to handle only a portion of that load. Without adding any new resources, Bonneville and utilities will be able to guarantee some 18,350 megawatts to Pacific Northwest customers in 2010, according to utility figures. This means that in the high-growth case, the region will have to obtain some 13,300 megawatts of new power to meet expected demand. In the more likely medium-high to medium-low growth range, the region would have to obtain between 7,750 megawatts and 2,050 megawatts of new energy.

Economists expect that the slowdown in the Pacific Northwest’s electricity demand growth rate will come as its economy continues to shift away from basic manufacturing, toward commercial activities. On average, the commercial sector uses 1 megawatt of electricity per 1,000 employees, compared with 12 megawatts in the manufacturing sector. By 2010, some 82 percent of the region’s total employment will be in the commercial sector, up from 73 percent in 1988, according to the revised forecast.

Even with this commercial growth, the region's active economy of the late 1980s and early 1990s is expected to slow. That spells lower rates of energy demand growth. Basic demographic trends indicate that the rate of economic growth in the next two decades—measured by employment, population, households and production—will be lower than in the past. National forecasts expect employment to grow at half the rate in the next 20 years as in the 1960–1980 period, and regional trends point in the same direction.

In addition, conservation and more efficient new buildings will require less energy than older structures. Washington recently adopted a statewide building code that requires new homes be built with super energy-efficient features. Twenty-six cities or counties in Idaho and Montana have embraced similar measures, and Oregon is considering adopting similar measures for its statewide code in 1992. Today's new

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buildings use about 30 percent less energy than existing structures, and by 2010 nearly half the region's building stock will have been built since 1984.

Demand also will slow as a result of competition from natural gas, whose relatively low price will continue to make it an attractive heating alternative to electricity. Moreover, power use by the region's traditional heavy users of electricity—the paper, wood

products, aluminum, chemicals and food products industries—also isn't expected to grow as much as in previous years. Those industries account for more than 90 percent of the region's industrial use of electricity, and each experienced significant increases in energy demand during the 1960s and 1970s. None is projected to grow at that pace in the next 20 years.

Terry Morlan, the Council's demand forecasting manager, notes that growth rates need to be interpreted with caution. For power planning purposes, the implications of slower or faster rates of growth hinge on the size of underlying regional demand. Growth was much faster in the 1950s and 1960s than Morlan expects it to be in the next 20 years. But because the economy was smaller, the amount of resources the region added each year was relatively modest, compared with the latest projections of potential resource needs in certain high-growth economic circumstances. ■■

Regional Power Predicament

**Existing resources
may not meet
forecast needs
(average megawatts)**

Source for existing resource base:
Pacific Northwest Utilities Conference
Committee Northwest Regional
Forecast, March 1990

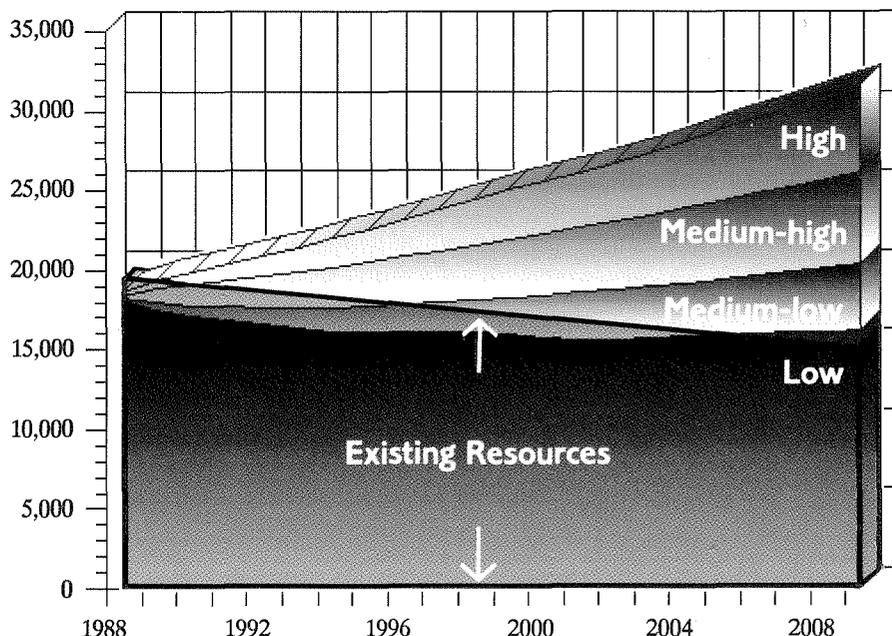


Chart by Stephen Sasser and Judy Gibson

The Law of *Last Resort*

by Carlotta Collette

Are the Columbia River's salmon endangered species?



In February, Oregon Trout, an advocacy group that supports protection for the region's wild fish populations, notified the National Marine Fisheries Service that it is "beginning the petitioning process under the federal Endangered Species Act for Snake River chinook salmon and lower Columbia River coho salmon."

On March 22, the Shoshone-Bannock Tribes of Idaho petitioned the federal government to list the Snake River race of sockeye as endangered. The sockeye are one of two Snake River runs (sockeye and coho) that many experts suspect have already gone extinct. These runs caught the attention of the National Marine Fisheries Service and others late in 1989. While many experts believe it is too late to salvage them, other experts extend the hope that extraordinary action could save these fish.

The runs identified in the Oregon Trout announcement (Snake River spring, summer and fall chinook and lower river wild coho) have been seriously depleted, but rigorous protection may stop their decline. The federal fisheries agency has stepped up its review of these stocks.

The National Marine Fisheries Service is the lead federal agency charged with reviewing and enforcing petitions to list ocean-migrating fish under this legislation. The Act, which was adopted in 1973, is designed to pull species back from the brink of extinction.

Fish or wildlife considered to be extremely vulnerable can be listed as "endangered" or "threatened," calling into play some of the most rigorous protective measures permitted under federal law. Listing a species as threatened would require development

of a recovery plan, consultation with the Fisheries Service regarding federal agency actions that may jeopardize a listed species, and the development of alternatives to avoid adverse impacts on the species.

A listing as endangered could stop virtually all development or activity that might harm that species. For example, the Endangered Species Act states that it is unlawful for any person to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct" affecting an endangered species.

When a petition to list a species is filed, the service must determine whether the proposed population is indeed a distinct species or subgroup and whether it is at the threshold of endangerment. They must also study the role hatcheries might play in preserving or jeopardizing that stock. The lower Columbia River coho, for example, number more than a million fish, but these are nearly all hatchery stock. Oregon Trout is concerned that the wild lower river coho are a dying race.

Lorraine Bodi, the Fisheries Service attorney reviewing the status of Columbia Basin runs with regard to the Endangered Species Act, hopes to avoid having to list any basin stocks. She calls the Act "the law of last resort."

The fisheries service had begun action to list Columbia River stocks in 1978, when the Northwest Power Act was still under consideration in Congress. These actions were suspended when the Power Act was signed, and the Columbia River Basin Fish and Wildlife Program was called for to "protect, mitigate and enhance" the river's fish and their habitat. The caveat in the Power Act, however, was that "an adequate, efficient, economical and reliable power supply" should not be lost in the bargain.

But Bodi questions whether the fish and wildlife program has done enough to stop the decline of the runs. Particularly on the Snake River, she says the flows provided for fish are "a compromise of a compromise of a compromise." Her agency and other fisheries managers are proposing a new regime for operating the basin's dams during the spring outmigration of young salmon and steelhead.

Negotiating a solution now could give the region more flexibility in how it runs its river system, according to Bodi. If any Columbia River stocks are listed, Bodi says the consequences are hard to predict. The U.S. Supreme Court has said that the Endangered Species Act "reveals a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies."

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Thus, it is possible that no fishing of the listed stock would be permitted. Beyond that, Bodi speculates that the Columbia could become a "single-purpose system, with the Endangered Species Act calling the shots. We're not too thrilled about that," she adds.

These are, of course, not the first Columbia River Basin runs to die out. A 1984 stock assessment compiled by the Bonneville Power Administration listed seven basin salmon or steelhead runs that were extinct at that time.

Another 15 salmon stocks (populations that move into specific river or tributary reaches at specific times) were considered on their way to extinction in the Bonneville report.

In 1987, the Northwest Power Planning Council reviewed the status of Snake River runs and found that about 22 Snake River salmon and steelhead stocks had fewer than 1,000 fish returning up the river. At that time, the Council reported that between 400 and 1,000 fish in each stock would be needed to maintain that population's viability.

A more recent draft report prepared by members of the American Fisheries Society's Endangered Species Committee, lists 13 Columbia River Basin native runs (as opposed to hatchery-supported runs) as "depressed and declining," including the two Snake River runs that are considered extinct. A dozen more Columbia Basin wild runs are described as "depressed and stable," in the Fisheries Society's draft.

Most of these runs originate in basins above Bonneville Dam. Bonneville and the 18 major dams and hundreds of minor dams above it have been blamed for about three-quarters of the decline of these runs. Overfishing, irrigation withdrawals and the general development of the Northwest from a wilderness into an industrialized society account for the remaining quarter of the losses.

The rivers now serve many purposes: power generation, recreation, navigation, irrigation, as well as the fisheries. The press of all this use challenges the remaining runs' precarious balance.

The Columbia's bad news is a mirror of the growing list of extinct fish reported in *Fisheries*, the publication of the American Fisheries Society. The Society numbered 27 species and 13 subspecies of fish that have gone extinct in the past century. In a related report in the same issue (Volume 14, Number 6), the Society added 139 fish to their list of fish that are endangered, threatened or of special concern. The complete list, which includes the United States, Canada and Mexico, numbers 364 fish species in these three categories. ■■

Point of View

W. Lester Bryyan

with Dulcy Mahar

A look at new resources from the utility's perspective.



W Lester Bryan, better known as Les, is a man who exudes enthusiasm when he talks about his job. "I like the challenge of trying to make things happen," he explains. "I like putting business arrangements together, and I think the challenge of bringing parties together when they have opposing views, although it can be very difficult and frustrating, is also very rewarding when it happens."

Bryan is vice president for power supply at Washington Water Power Company. The investor-owned utility, based in Spokane, serves nearly 250,000 customers in eastern Washington and northern Idaho. Bryan is also chair of the system planning committee for the Pacific Northwest Utilities Conference Committee (PNUCC). He and his committee have been working closely with the Northwest Power Planning Council in the development of the new Northwest Power Plan.

While Bryan obviously loves working in power sales, it was not his original choice. When he was considering careers, he thought about pharmacy, but then someone told him there was a lot of money in electrical engineering.

"Well, in that case I'll be an electrical engineer," he announced as he headed for Washington State University. He considers himself very lucky that when he graduated and went to work for his first utility—Puget

Sound Power and Light Company—they found a niche for him in the power supply area.

After spending seven years with Puget Power, Bryan joined Washington Water Power, also in power supply. "I think the power supply area tends to be more business oriented than any other area in the utility, as far as where you might find an electrical engineer," Bryan explains. "So I have been very much at home in this area. I guess I have exceeded all of my expectations as far as career satisfaction. I am just amazed at the opportunities that I have been given."

Q. Can you tell me what the Pacific Northwest Utilities Conference Committee's (PNUCC) system planning committee does, what its role is and particularly, what its connection is with the Council's new power plan?

The system planning committee was set up by the PNUCC board basically to develop a resource plan for the utilities in the region. This committee existed long before the regional Power Council came into being. We have kind of been marking time while the region worked its way out of the surplus.

In this last year, the members of PNUCC and the system planning committee concluded that it was time we became more involved and work constructively to develop a regional plan that the utilities can accept, instead of shooting out barbs as we had in the past. So we set some goals and objectives early last April, and I think that the process has

The real challenge is to try to take those different resource estimates and put them into a portfolio.

been moving ahead on a positive basis.

We have been working and meeting on a regular basis with the regional Council staff. We have committed utility resources to provide positive input wherever we could. As you know, we have been following each of the issues as they've been developed and discussed in the public forum, so that megawatt estimates of potential resources would be set at a level that we felt reasonably comfortable with. Now the real challenge is to try to take those different resource estimates and put them into a portfolio.

Basically, what you have in the system planning committee are power supply managers whose role in their individual utilities is to develop resources and resource strategies for their individual companies. The committee is trying to meld those individual strategies into a consensus, hopefully a consensus that will cut across and be accepted by the entire region.

We must have a plan where the utilities say, "Yes, this is a plan that we can buy into and support."



Q. Do you feel that PNUCC has been able to participate enough in the process?

We have worked very hard on positive participation, and I have to give much of the credit to the PNUCC staff. They have taken the challenge and have been a real help in trying to get the utilities together to reach consensus. You have the generating utilities as well as Bonneville's full requirement customers all driven by different objectives.

I have really been impressed with the way everybody has pulled together, and I think a part of that has been the cooperation and the commitment that Jim Litchfield [the Council's power planning manager] and his people have made in trying to involve the PNUCC members more directly in the development of the resource alternatives.

Q. Do you feel that the assumptions and technical data so far are reasonable? Are there some areas that you are uncomfortable with?

Estimates of some of the potential resources exceed my personal range of reasonableness. But I think what we have are the basic building blocks. How we place those building blocks together is where the proof of the pudding will be.

I'm optimistic that some of the resource estimates that I might view as extreme will be placed in the final resource portfolio where PNUCC members feel comfortable with them. Consensus on the portfolio will take a lot of compromise and discussion among the utilities, the customers of the region, and the regional Council.

I'm looking forward to that. As I indicated up front, I don't necessarily buy into all of the resource assumptions as being viable, but I think that the current assumptions are reasonable at this stage. The assumptions will likely change as we begin the next phase.

Q. Which are the resource areas where you feel there has been too much optimism on the estimates?

I'm a little bit uncomfortable with the extent to which natural gas-fired resources will be included in the resource plan. I'm also uncomfortable with some of the exotics such as wind power. Even though people view wind power as a more environmentally benign alternative, I think the dependability and the cost of this type of resource are highly questionable.

We have a lot to learn on the development of cogeneration, its availability and risks. Some of the utilities that have gone out with requests for proposals are finding that the issue of who carries the risk on cogeneration development is a real tough nut to crack when you go through and evaluate the development of these resources. Of course, a lot of [the cogeneration projects] are also fired with natural gas, so you have further dependency on natural gas.

We have also had questions relative to conservation estimates. I don't see those as being outside the range of reasonableness. I think that we'll end up working out differences in those areas without too much trouble.

The portfolio is where the system planning committee is really put to the test, because this is

where the real work is. Once we've listed resource alternatives and the potential megawatt capability, the tough part is shaping those alternatives into a plan that is workable and provides the region the flexibility to deal with changes and uncertainty, as well as meeting the least-cost test. Of course, we must have a plan where the utilities say, "Yes, this is a plan that we can buy into and support."

Q. What do you consider the key issues the region is facing as we develop the new power plan?

The issue that probably would concern me the most is the issue of uncertainty and how we are going to deal with either increases or decreases in projected growth in the region. There are a lot of people who feel that we have underestimated our load growth, especially since we are currently seeing load growth that is in excess of the average that we're forecasting.

Whether this is just a short-run situation we're experiencing, I don't know, but I am convinced that there will be an awful lot of changes in the way that energy is supplied to our consumers. This is my personal view. To me, the single biggest issue when you develop a 20-year plan is to construct it in a way that addresses the issues of uncertainty.

Q. One of the concerns the Council has had is that utilities are a bit gun-shy about making resource acquisitions now. What kinds of actions do you think the plan should be calling for?

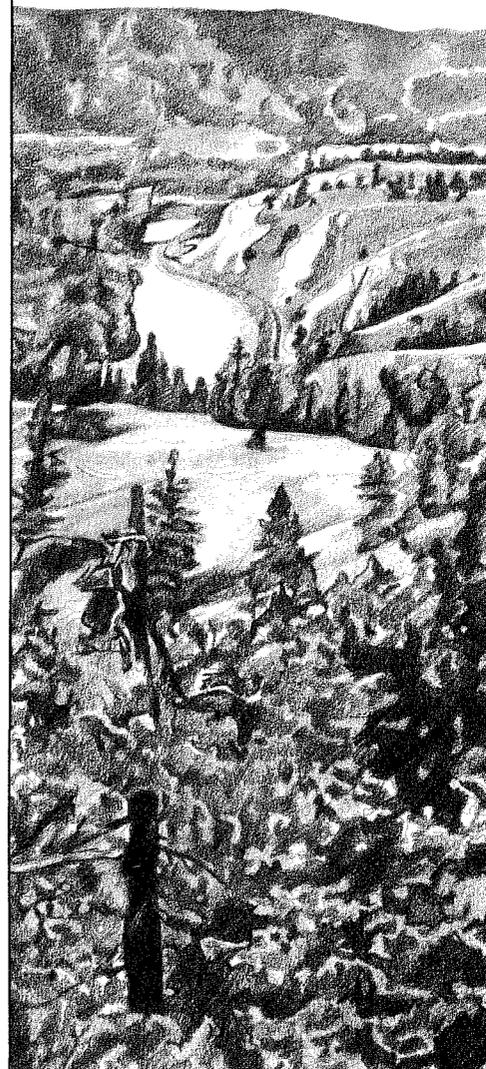
We need to aggressively work on the development of conservation, load management and a feed-back system so we can feel comfortable that we know what's happening out there and what savings we're achieving. The effort in conservation is cumulative, so I think that conservation should be dealt with aggressively. I know that my company plans to aggressively move into that area this year.

Some of the other IOUs [investor-owned utilities] have been way ahead of Water Power as far as what they've been doing. Both Puget [Sound Power and Light Company] and Pacific [Power and Light Company] as well as Portland General [Electric Company] have been moving pretty aggressively in the area of conservation. I would say that action needs to be taken fairly quickly.

We need to review the bidding process¹ that is currently taking place. Puget has just completed a bidding process. Water Power will be going out this year with a request for proposals. PNUCC is

1. Bidding refers to a process by which utilities seek bids for power resources from independent developers as an alternative to building their own resources.

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trying to work with Bonneville to develop a partnership for bidding. We need to evaluate the types of resources that are coming to the table, to get a feel for what we have there. I see the bidding process—getting private developers to develop new resources—as being something that we should work very hard at over the next few years.

Also, as a part of developing resources by third parties—in other words, through the bidding process—I think a key is to develop acquisition agreements with Bonneville so that a partnership can indeed be developed, and Bonneville can acquire those resources through a utility. To date, I know of no acquisition agreement that Bonneville has entered into with a utility to acquire a generating resource. There is a hydro project they have acquired, but I'm not sure how that is working. We need to work on the development of acquisition agreements.

The concern that the Council has is very real. Utilities all across this country found out that building [power plants to generate electricity] to a surplus didn't work. Utility commissions disallowed facilities and rate bases where their margins exceeded some standard that the commissions felt was appropriate. So there is a penalty for constructing to a surplus, and so far you don't know what penalty the utilities could discover for building to a deficit. There's a real concern in the utility community about building resources that may not be needed and then having to carry the cost for their customers or their shareholders.

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So, I would work on actions to develop resources that are either developed by our customers or by independent resource developers. We need to test the "optioning"² process and see how it works, whether it's optioning of a coal-fired plant or gas-fired turbines. We need to have some base-load resources available to us and be prepared to bring those on line in the late 1990s, if conservation and cogeneration don't materialize.

Q. What role do you think Bonneville should play in the regional utility system?

I believe Bonneville should be a facilitator, and the utilities should be the ones that take action. While I recognize there are public agencies that rely on Bonneville's expertise in different areas, I believe it's the utilities in the region that should control their own destiny. The region's utilities need to be active in the resource development business, Bonneville should be facilitating that and encouraging the utilities to be the actors, rather than being an active player itself. My focus right now is to encourage the utilities to develop mechanisms whereby they would be the developers of resources.

Q. How do the investor-owned utilities in the region view the Council's plan? Is it something that can be useful to investor-owned utilities?

Even though investor-owned utilities may not be putting a requirement [for new power] on Bonneville, we view the Council's plan as a blueprint. I know the commissions that regulate us view it as a blueprint as to what our

2. "Optioning" refers to a process in the Northwest Power Plan that phases resource development to allow time-consuming but relatively inexpensive siting and design of resources before a commitment to build is made. As actual resource needs become clearer, projects can be tabled or completed with less risk.

resource strategy ought to look like. Both the states of Idaho and Washington,³ which regulate my company, have least-cost planning processes. Idaho doesn't call it a least-cost plan, but it's similar.

We see the Council's plan as being important in providing the foundation for our least-cost plan. We think the regional plan that is developed by the Council is very important to the decisions that the investor-owned utilities make, even though we may not be making them through the contractual arrangements set forth in the regional [Northwest Power] Act.

Q. In your least-cost plan, what activities has Washington Water Power identified for itself over the next few years?

We have identified conservation and development of cogeneration within our service territory, as well as purchases from other utilities as the resources that we will be developing to meet our loads over the next 10 to 15 years. Our first plan talked in generalities, and we are now in the process of updating that with a plan that would be more specific. A new section within our company is now trying to inventory and estimate energy management efforts.

As I indicated earlier, we are going out with our first request for proposal for generation on our system that could be developed by our customers or independent power producers. We are also exploring transmission interconnection as a further resource. We are currently discussing potential purchases with other utilities within the western systems

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group that may have resources that fit our needs.

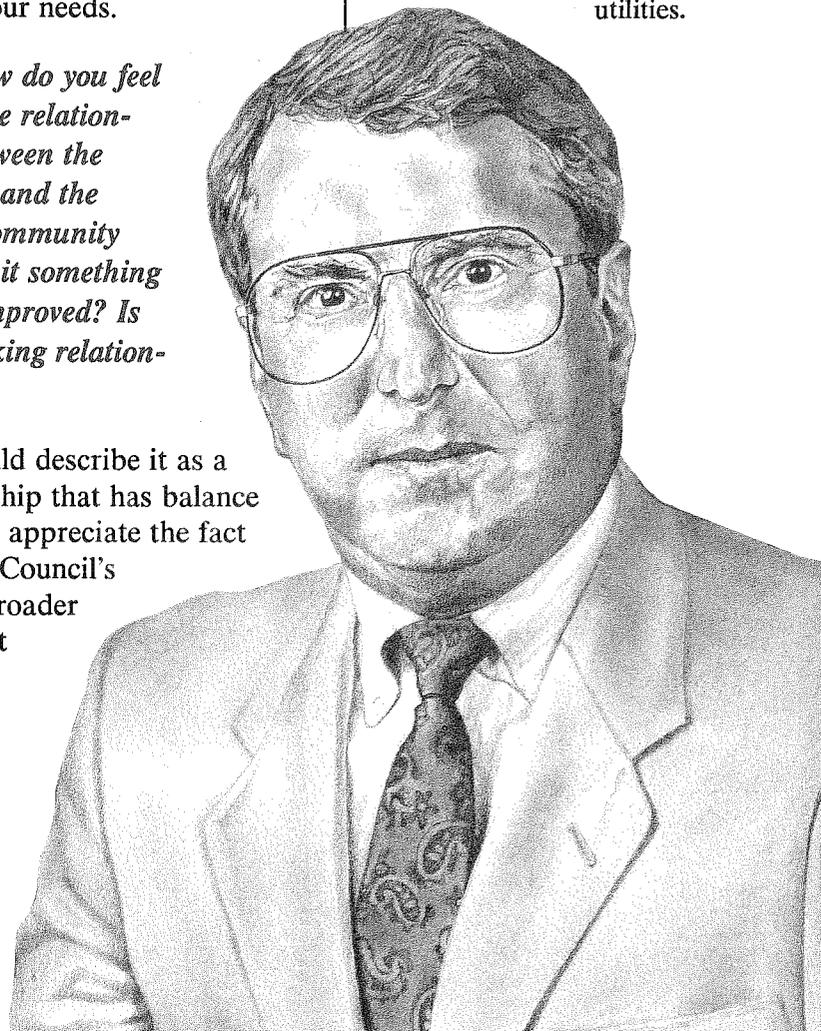
Q. How do you feel about the relationship between the Council and the utility community now? Is it something that's improved? Is it a working relationship?

I would describe it as a relationship that has balance to it. We appreciate the fact that the Council's role is broader than that of the

utilities. We think that our ultimate objectives are the same. But the Council has somewhat different constituencies to respond to than we do. In the case of my company, we have customers to respond to. Their interest is rates. We have shareholders to respond to. Their interest is earnings. We have employees to respond to, and their interest is a quality of life within the company.

We have the same objectives of providing a resource that is long term, that will provide low rates and will be there when we need it to cover our customers' requirements.

3. Oregon's Public Utility Commission also requires least-cost plans from investor-owned utilities.



But, both the Council and the company have different groups of people to respond to. We need to continue to have a lot of dialogue between the individual companies and the Council members so that we can better understand each other.

The development of this plan has been a positive movement in improving and building—and I'll use the word partnership again as we did with Bonneville—a partnership between the Council and the utilities. For the Council's plan to have impact, the utilities have to be supportive. I think that we are beginning to develop a positive relationship.

Obviously, the timing is important, because we've talked about a lot of things over the last several years, and now we're to the point where we're going to have to do something. I feel good about the relationship that we're developing. But we've got to keep

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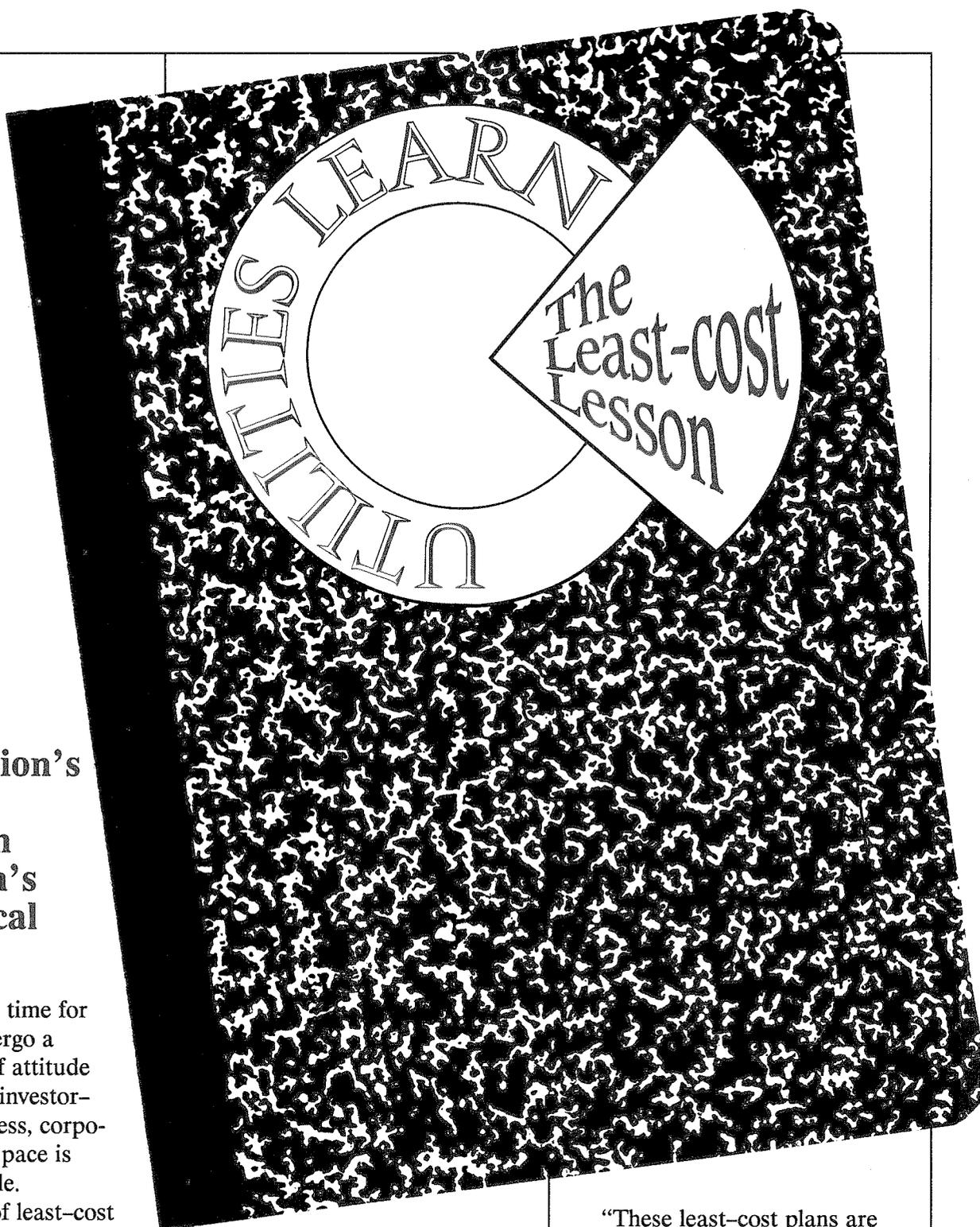
at it. It's just like a marriage; you have to continue to communicate. I can't emphasize enough the importance of having those communications at the highest level between the Council and the individual companies.

We started out this interview recognizing that in the past there had been some degree of—maybe conflicts isn't the right word—

differences of opinion between the technical people within the utilities and the staff of the Council, as well as the management of the companies and the regional Council members. We made the commitment within PNUCC to work positively in the process to develop a plan. At the same time, the regional Power Council made that same commitment to us. I believe both of us have followed through on that commitment.

I can't say enough about the effort that has been given by Jim Litchfield and his people as well as the commitment that has been made by the individual utilities to try to make that happen. I think if you were to have asked Jim at the beginning of the process, he might have wondered if it was going to happen. I think it has. PNUCC, the staff of the Council and the PNUCC members have done just an outstanding job of working together in the development of the plan. ■■





by Gordon Lee

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Ten years is a short time for an industry to undergo a wholesale change of attitude and culture. In the investor-owned utility business, corporate change at that pace is almost inconceivable.

But as a result of least-cost planning, it only took 10 years for investor-owned utilities in the Pacific Northwest to reverse entrenched attitudes about conservation and to embrace it as the primary element in resource planning. Least-cost planning is the process by which utilities can identify ways to meet various levels of customer demand at the lowest total cost.

This new orientation means utilities may be able to postpone the day they'll have to turn to other, more costly resources to meet growing customer demand. This will keep the region's low electricity rates—vital to its competitive advantage—among the lowest in the country.

"These least-cost plans are good for the utilities, their rate-payers and the region," says Northwest Power Planning Council Chairman Tom Trulove of Washington. "They're a vital step in meeting the Northwest's growing energy needs in the 1990s and beyond."

A decade ago, most investor-owned utilities in the Pacific Northwest didn't look to conservation as a new resource. Conservation wasn't on their lists of energy sources they'd turn to for large, steady supplies of electricity when demand started to rise.

Rather, utilities much preferred to tie their resource planning to more tangible facilities that were familiar—hydropower

dams, coal plants or nuclear reactors. Conservation was a resource many people associated with back-to-nature, Earth Mama types, not with sober assessments of regional resource solutions.

But today, conservation is the resource of first choice at all investor-owned utilities in the Northwest. Rather than build new central generating facilities, which

may be costly and require lengthy development and construction periods, utilities in the region intend to turn first to conservation measures when they need new power. In contrast to traditional generating stations, those measures are comparatively inexpensive, easy to implement and their impact grows as energy demand rises.

Least-cost planning helped spur that change of heart. Utility regulators in Idaho, Oregon and Washington now require that utilities file least-cost plans and relate their rate cases and other actions to those plans. Each investor-owned utility in those states has completed or is about to finish a least-cost plan, in which it identifies how it intends to meet customers' electricity needs under a variety of economic conditions. That was an unknown exercise a decade ago. The accompanying boxes discuss plans at each utility.

Those least-cost plans should result in strategies to guide utility actions over the next 20 years. Least-cost plans identify how much power customers may need and ways utilities can meet those needs. Their goal? To keep utilities from overbuilding or underbuilding resources.

Least-cost planning is a multistage process. Identifying resource needs and options are just the preliminary steps. Plans display a timetable suggesting when utilities need to commit to new re-

Least-cost Lesson Plans... Puget Sound Power and Light Company...

Puget Power is the utility in the region most experienced with least-cost planning, having recently submitted its second plan to the Washington Utilities and Transportation Commission.

In its plan—dubbed DARE, for Demand and Resource Evaluation—the Bellevue, Washington, utility acknowledges it soon will need new sources of power. With 616,000 customers in nine western Washington counties, Puget Power is the region's fastest-growing utility. It already relies on outside sources to meet part of its energy demand. And as that demand grows, the utility's predicted deficit increases.

"We've done our second least-cost plan, and every resource we look at is an enigma," notes Corey Knutsen, Puget Power's director of strategic planning.

Puget Power's first plan, released in 1987, pointed to conservation and power purchases as sources to meet much of the company's near-term demand growth. Following that plan, Puget Power acquired 12 megawatts from new conservation efforts in the past two years, boosting the amount of electricity its conservation efforts capture to 85 megawatts, or 4 percent of its 2,000-megawatt demand today. It also signed 15- and 20-year contracts to buy 460 megawatts from the Bonneville Power Administration, other utilities, independent power producers and cogenerators.

Puget Power's energy needs don't stop there, however. Its most recent plan suggests that by the year 2010 its demand for power will climb another 720 megawatts to 3,650 megawatts. Conservation could supply up to 280 megawatts of that new need. Purchases of low-cost power from British Columbia Hydro and Power Authority (BC Hydro) and other domestic utilities and from independent suppliers through competitive bidding make up the utility's other top resource priorities. However, many of those purchases would require new or expanded transmission lines or greater access to Bonneville's transmission network.

sources. They also lay out a sequence according to which a utility could acquire new resources for the least cost. Those calculations reflect not only dollar costs, but also factor risks and environmental impacts associated with various resources.

The utilities' least-cost plans couldn't have come at a better time. They coincide with the Council's effort to draft a new power plan for the four Northwest states, its third regional plan since the Council was conceived by Congress in 1980. The least-cost plans crafted by investor-owned utilities—some of whose service territories are in the fastest-growing parts of the region—will help set the context in which the region will implement the Council's plan.

For utilities, the least-cost exercise is time consuming and intellectually challenging. "The thing we're struggling with the hardest is how much conservation is out there and at what cost," notes Joe Marshall, chief executive officer of Idaho Power Company. "The bulk of our spending today is on identifying and validating how much conservation is there. Once we validate, we'll treat it like any other resource."

State regulators add another level of challenge. They may apply different tests to least-cost efforts than the Council or investor-owned utilities. "The inter-

esting thing is that investor-owned utilities have to get things into rate base," Marshall adds. "It doesn't matter much what the Power Planning Council or the utilities say is least-cost, if our commissions don't let us put it into rate base."

In the Northwest, interest in conservation isn't surprising or new. It's been part of the region's

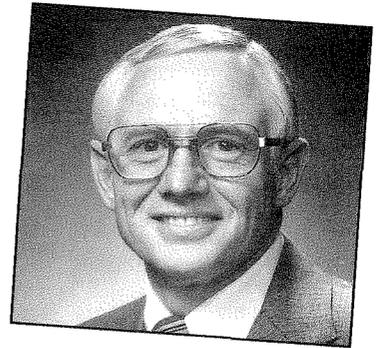
energy picture for years. But never before have investor-owned utilities widely and formally placed conservation on equal footing with other resources.

The shift in attitude is partly institutional. Conservation is the resource of choice in the Northwest Power Act, the 1980 law that resulted in creation of the Council. The Act requires that the Council give priority to conserva-

...Idaho Power Company...

"The thing we're struggling with the hardest is how much conservation is out there and at what cost."

—Joe Marshall
Idaho Power Company



Its least-cost plan won't go to state regulators until 1991, but early evaluations suggest that Idaho Power will be able to turn to conservation when it needs new resources.

The utility predicts that the amount of power its customers consume may climb 514 megawatts to 831 megawatts by the year 2008, depending on how fast the economy in its service territory grows. Currently, its 245,000 customers in Idaho and eastern Washington consume some 1,454 megawatts.

Idaho Power executives say the company's current array of resources will be able to handle the most likely levels of increased demand throughout the 1990s. Only at the turn of the century will the company need to look to new sources of power.

Conservation tops the list of new resources that Idaho Power may turn to, says John Willmorth, manager of resource planning. The company's initial least-cost analyses also suggest that new hydropower projects may be another source of additional low-cost power. The company could add more generators at some existing dams, and it may be able to produce power in irrigation canals that crisscross its service territory, Willmorth notes.

...Pacific Power and Light Company...

In its 1989 least-cost plan, Pacific Power and Light forecasts that its power demand could climb 550 megawatts to 3,000 megawatts by the year 2008, depending upon economic growth in the region. That amounts to a growth in demand ranging from 11 percent to 61 percent, compared with the utility's 4,900-megawatt load today.

Pacific, which merged with Utah Power in 1989, serves 1.2 million customers in California, Idaho, Montana, Oregon, Utah, Washington and Wyoming. It expects that energy-efficiency programs can meet 360 megawatts to 600 megawatts of its system's new energy demand over the next 20 years. It also predicts that improvements made to its existing plants, dams and transmission equipment will yield 100 megawatts during the same period. More efficient management and operation of its existing system may yield another 300 megawatts.

The utility also points outside for as much as 700 megawatts. Under specific contractual rights, Pacific could obtain a little more than half that total from Bonneville and Southern California Edison. The balance would come from other sources.

"We're not betting the company on purchasing power from outside," says David Enberg, who heads Pacific's least-cost planning efforts. "But when we started thinking of purchases, we strategically started thinking about where the cheapest sources are. Right now, that's in the desert Southwest and Rocky Mountain regions. And we're very well connected with most of those entities through our Utah division."

tion when it assesses new resources. The Act also considers conservation a wise investment even if it costs 10 percent more than the next most-competitive new resource because of its environmental acceptability and ease of implementation.

Conservation was the dominant theme of the Council's 1983 and 1986 regional power plans.

And it's likely to loom just as large in the next one, as the region's energy surplus disappears and as environmental fears and global warming considerations surrounding other resources become more pronounced.

Conservation in this context means using energy wisely, being energy smart and energy-

efficient. It means employing the latest high-tech solutions to energy problems. It means stretching out a given unit of energy, making it do more. It does not mean doing with less. It doesn't mean heavy sweaters, long underwear or sweltering summertime indoor temperatures.

Congress also mandated least-cost planning when it authorized the Council. In the Northwest Power Act, it directed the Council to engage in planning that gives priority to cost-effective resources. That means resources that will be reliable and available when needed, ones supplying power as cheaply or cheaper than the least-costly, similarly reliable, available and environmentally acceptable alternative or combination of alternatives.

The Council's least-cost planning weighs the need for resources, their relative cost, reliability and availability. It suggests that the region buy only resources it needs, and calculate their price by counting all known and anticipated costs on a consistent basis.

Over the past eight years, the Council has become a national and international model for least-cost planning. Its plans have become the springboard for investor-owned utility planning efforts in the region.

Some of those utility plans are ambitious. Others are conservative.

But Council officials generally applaud the direction investor-owned utilities have taken and the common theme of conservation that each stresses.

"We've been reviewing all the least-cost plans," says Trulove.

"While some are better than others, what's really important is that each investor-owned utility has set up a process— involving many elements of the company, including top management—that's extremely positive for the companies themselves and the region."

Council analysts sound one note of caution, however. In addition to obtaining power from conservation, most utilities intend to meet new energy demand by buying power from other utilities in and outside the region. To the degree utilities

...Washington Water Power Company...

In its year-old least-cost plan, the Spokane-based utility forecasts that its new power needs could range from zero to 393 megawatts, under low and high economic growth conditions, respectively.

That would be as much as a 39-percent jump in the company's 1,000-megawatt current load, which goes to 243,000 electricity customers in eastern Washington and northern Idaho.

To meet that new demand, "conservation was considered as the number one option due to price and availability," the plan says. The utility figures it could obtain up to 35 megawatts from a variety of conservation measures. Douglas Young, the company's contracts and resource administrator, says that most of the conservation potential is in the industrial and commercial sectors of its service territory.

Another 156 megawatts may be available from independent, non-utility sources. The company has for several years held discussions with BC Hydro about a new cross-border transmission link that would give it access to an undisclosed amount of Canadian export energy.

point to different sellers, that strategy fits with the goals of least-cost planning, notes Jim Litchfield, director of the Council's power planning division. But if they expect to tap the same sources, the amount of power on the market may not satisfy their needs, nor will its cost be the

least-expensive alternative. "We want to make sure they're not double-counting," Litchfield says.

Fundamentally, least-cost planning helps companies better understand their goals and operations. It helps clarify relationships among different elements in the corporation.

"A planning process can aid decision-making by providing a consistent framework of assumptions and analyses," says Portland-based Pacific Power and Light Company in its least-cost plan. "A plan document is the compilation of the most current planning information, and a statement of the strategies or

principals that will guide supply and demand decisions in the future. The primary accomplishment of the planning process is in the process itself—the understanding, insights, and information it generates—rather than in any specific set of actions identified." ■■

...Portland General Electric.

The utility that serves 552,000 customers in and around the largest municipality in Oregon plans to file a least-cost plan with the Oregon Public Utilities Commission in June 1990. As a result, it still is studying which resources might be the least costly to bring on line when it needs new sources of power.

Nevertheless, the utility clearly favors conservation and other efficiency measures. "Conservation will be at the top of the list as our first resource option," notes Mike Mikoliatas, general manager of load and resource planning. Also high on the company's least-cost agenda: improving the efficiency of existing generation and transmission equipment and buying power from cogeneration and transmission projects.

"The energy-efficiency theme goes right through our resource planning," Mikoliatas adds.

Preliminary estimates—which may change before Portland General Electric releases its plan—suggest that the utility's demand for power over the next 20 years could climb 350 megawatts to 1,350 megawatts, depending on economic growth. That would amount to a 19-percent to 73-percent jump from today's demand of 1,850 megawatts. The company hasn't yet calculated how much of that demand growth conservation may be able to meet.

COLUMBIA RIVER

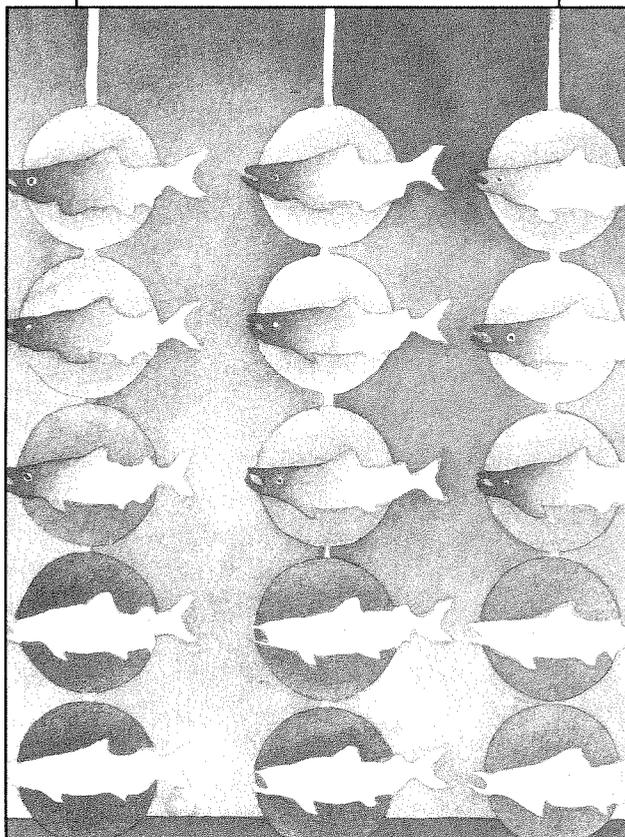
by Carlotta Collette

Salmon and steelhead counts rise and fall like the tide.

By most measures, 1984 was a vintage year for strong, young fall chinook in the Columbia River Basin. Steve King, a harvest biologist with the Oregon Department of Fish and Wildlife, calls the chinook born that year the "power brood." "They were outstanding ocean survivors," he adds, explaining that these are the sturdy salmon that climbed back up into the upper Columbia in impressive numbers beginning in 1986 and breaking records in 1987 and 1988.

These 1984 babies were blessed with heavy runoffs and a new "water budget" that helped wash them out to sea past the ominous barriers of the river's great dams. The water budget had been devised as part of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. It was a break from historical river operations in which the spring thaw would be held in the dams until power was needed later in the year.

With the water budget, some of the stored water is released during the major portion of the salmon and steelhead outmigration from April 15 through June 15. It decreases the travel time of tiny fish through the system.



CENSUS

So the power brood of 1984 returned as the record-breaking upriver runs of 1986, 1987 and 1988. Their ocean survival had been aided by the negotiation in 1985 (after more than 20 years' discussion) of the Pacific Salmon Interception Treaty between the United States and Canada. The treaty called for increased production and decreased ocean harvests of several stocks, among them many from the Columbia.

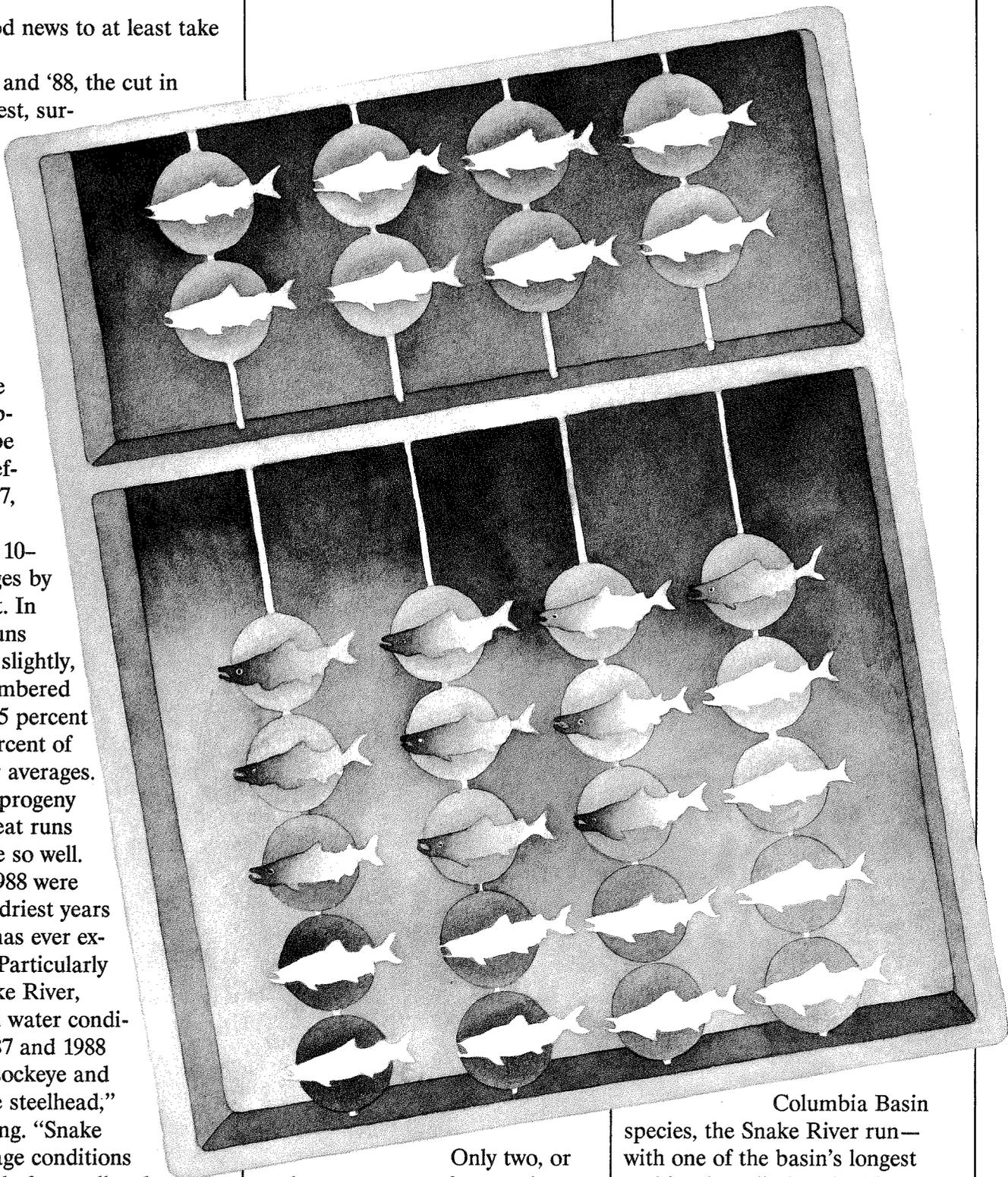
It looked as though the basin's runs were beginning to recuperate from a half-century nose dive. Few experts were willing to declare that the basin's increasing salmon and steelhead populations signaled an absolute reversal in the downward trend. But at the same time, there was

enough good news to at least take heart.

By 1987 and '88, the cut in ocean harvest, survival of the "power brood" and safer passage down the Columbia as a result of the fish and wildlife program appeared to be having an effect. In 1987, many runs topped the 10-year averages by 138 percent. In 1988, the runs were down slightly, but still numbered between 115 percent and 120 percent of the 10-year averages.

But the progeny of those great runs did not fare so well. 1987 and 1988 were among the driest years this basin has ever experienced. Particularly on the Snake River, where "bad water conditions in 1987 and 1988 nailed the sockeye and some of the steelhead," explains King. "Snake River passage conditions were horrible for steelhead and for spring chinook," he adds.

Those fish faced more stress heading out of the basin to the sea, and that stress may be one of the conditions that has led to reduced returns last year and projected continued declines for 1990.



Only two, or by some counts four, sockeye salmon made their way back up the Snake River in 1989. A fish that was once the favorite dried winter staple of the Nez Perce and other Idaho tribes is now considered "functionally" extinct. While sockeye runs tend to fluctuate more broadly than do other

Columbia Basin species, the Snake River run—with one of the basin's longest and hardest climbs—had been down for more than a decade. Two years with low runoff and eight major dams to migrate past provided the one-two punch that appears to have knocked that run into history.

The Columbia's remaining sockeye runs are projected to be

down this year, too, along with coho and all of the fall chinook runs. Only the Columbia River spring chinook runs look promising. "The spring runs are the bright spot in our projections," says King. The spring chinook run up the Willamette River in western Oregon is expected to break all previous records with an estimated count approaching 128,000. The upper river spring chinook runs also look as though they'll approach record highs.

But anglers after winter steelhead were more often than not disappointed. And King predicts that even fall chinook that originate below Bonneville Dam, the closest dam to the river's mouth, will make a depressing showing. In fact, one fall chinook population, known as the lower river tules, are expected to come in in record low numbers this year—only 68,500. Biologists figure they need 70,000 of these fish just to meet hatchery needs, so sport and commercial harvests both in the ocean and in the river are likely to be trimmed to protect the remaining numbers. The wild run of lower river falls, a chinook that makes its home mostly in the Lewis River in Washington, is at its lowest level since 1985.

For nearly half a century, fisheries biologists and others have blamed the dams first as the runs began to decline. The Council figured that roughly 75 percent of the Columbia's lost salmon bounty can trace its demise to the hydropower system. But the dams are not the likely culprit this year; many of the reduced runs are in the lower basin below or just above Bonneville Dam.

**A fish that
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extinct.**

"The reduced upriver runs in 1989 and 1990 could be partly the result of those dry years in '87 and '88," theorizes King, "but the lower river drops have to be an ocean problem, because these fish weren't in the river that much. They didn't have to deal with a lot of dams."

At first, many experts blamed high-seas squid harvesters who spread what are known as "drift nets" over thousands of miles of ocean. These nets measure about 30 miles across. In addition to squid, they haul in everything that swims within reach—dolphins, salmon, even sea birds. Limited monitoring of this fishery suggests that Columbia River salmon and steelhead are among the millions of fish captured along with the squid.

But the drift-net harvesters do not appear to be at fault for this year's suffering salmon runs, as far as King is concerned. He argues that few Columbia Basin salmon travel far enough from shore to be taken in the massive nets.

The problem is more likely one of food availability in the ocean, King suggests. The various stocks feed in different parts of the ocean before returning to the mouth of the Columbia. That could account for the unevenness of the run's performance.

Jim Martin, Oregon Department of Fish and Wildlife's fisheries chief warned fisheries managers of the coming drop in returns last fall, when he reported on the status of the runs at the Council's "Salmon and Steelhead Round Table." The round table provides managers the opportunity to reflect on the region's progress toward increasing the salmon and steelhead runs. "As a whole," Martin said to the gathered fisheries managers, "we have slightly more fish [than in 1980]." He suggested that the runs had risen from 2.5 million to about 2.8 million by 1989.

Martin voiced concern, however, that even that slight increase was largely driven by hatchery stocks, and "all those stocks are showing sequential drops over the last three years." Martin had no more answers last fall than does King, this spring.

But Karen Pratt, who with Dr. Don Chapman reviewed the status of the runs for the Pacific Northwest Utilities Conference Committee, offered more optimism to the round table participants last fall. Pratt and Chapman's analysis looked at three-year trends rather than just annual dam counts of fish. In

The runs had risen from 2.5 million to about 2.8 million by 1989.

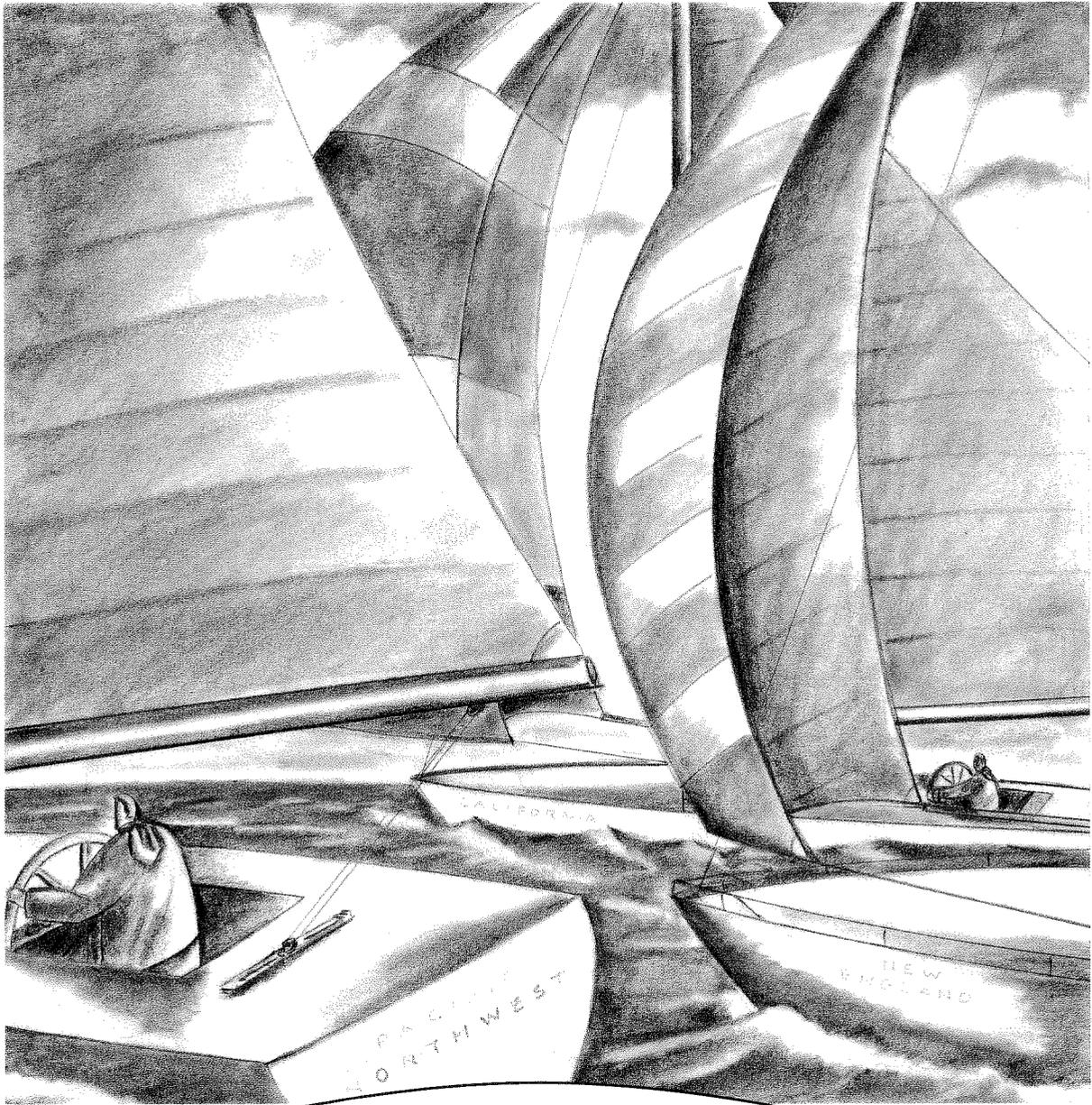
their study, the runs looked less precarious than the Oregon Department's perspective might suggest. "Even though there's a dip now, similar to in 1982," noted Pratt, "it may average out to overall increases." ■■

Columbia River Fall Chinook Salmon

Stock	1990*	1989	1988	1987
Lower Columbia hatchery	68,500	127,900	309,900	344,200
Lower Columbia wild	23,700	37,600	41,700	37,900
Bonneville Pool hatchery	27,300	29,200	12,300	9,100
Upriver brights	127,200	259,900	339,900	419,400
Mid-Columbia brights	69,500	94,600	78,200	56,700
Totals	316,200	547,300	782,000	867,300

* Forecast

Source: Oregon and Washington departments of fisheries



CALIFORNIA
RE-ENTERS
the
**CONSERVATION
CHALLENGE**

Illustration by Jud Guitteau

by Carlotta Collette

ONETIME ADVERSARIES CHART THE STATE'S ENERGY WATERS

CALIFORNIANS

take an almost perverse pride in being out ahead of the rest of the nation. It might have something to do with being at the western edge, as far across the frontier as the wagons could go. Where the land ended, some Californians built new frontiers, new social patterns, new ideals and new ethics. The state's early lead in bringing out the best and the most energy-efficiency legislation and innovations was one example.

For years, California utilities led the world with their remarkable investments that made it clear they considered conserved energy to be as good a resource as any generating plant. The California Energy Commission, for example, determined that "the state's ability to outperform the nation in energy productivity saved Californians some \$23 billion from 1973-1985."

Then the conservation spending subsided. A statewide surplus in generating capability combined with lower gas and oil prices were used as reason enough to cut back on conservation spending. Energy savings were seen as lost revenues for the utilities. Arguments justifying conservation programs as long-term investments

in keeping utility system costs down lost out to near-term economic decisions.

Between 1984 and 1987, utility spending for conservation in California dropped 55 percent, from \$164 million per year to less than \$75 million, according to Michael Messenger, senior economist with the California Energy Commission. "If the conservation numbers kept declining at that rate, by 1992 the utilities would be spending zero dollars on conservation," he says.

Other states and regions began to pull ahead of the Golden State, running conservation programs that seemed to dwarf California's. In the Pacific Northwest, the Midwest and most recently in

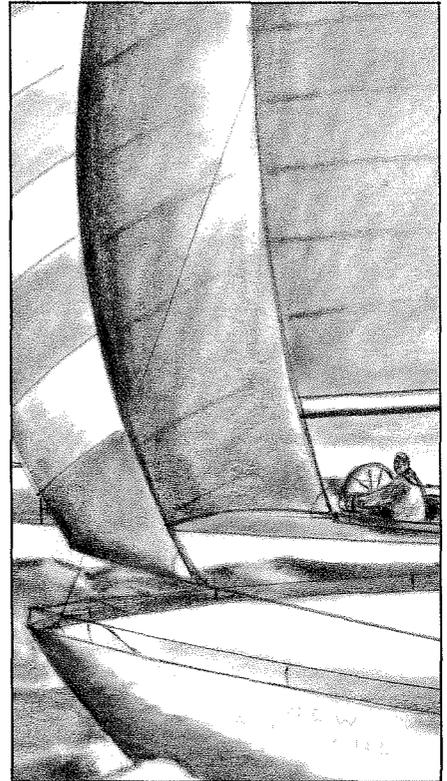
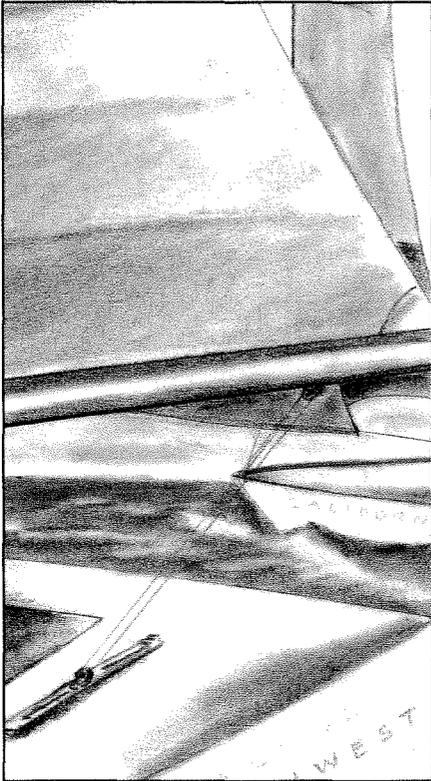
**Between 1984
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New England, the conservation ethic caught on.

In the Northwest, thanks to the Northwest Power Act of 1980, the whole region was moving toward a more efficient future. "Least-cost planning," a process pioneered by the Northwest Power Planning Council through which utilities purchase new power based on the relative cost-effectiveness of resources, is now being practiced in more than 30 states. California was clearly out of the conservation headlines.

Such a state of events was deemed untenable by California's conservation advocates. On July 6, 1989, the Natural Resources Defense Council published a report that documented, in the words of the report's author, Ralph Cavanagh, "this dramatic drop in utility expenditures for and commitment to energy efficiency." Two weeks later, the report was reviewed by the California Public Utilities Commission.

Expert witnesses from around the country reiterated the virtues of efficiency and proclaimed California's proximity to being an also-ran in the national conservation community. Little or no argument was heard from the Commission members. Even the utilities, Cavanagh asserts, con-



In the Northwest, the whole region was moving toward a more efficient future.

curred substantially with the report's findings.

Bruised pride and prudent economics won the day. California took up the challenge. The state's largest gas and electric utilities, including the two largest investor-owned utilities in North

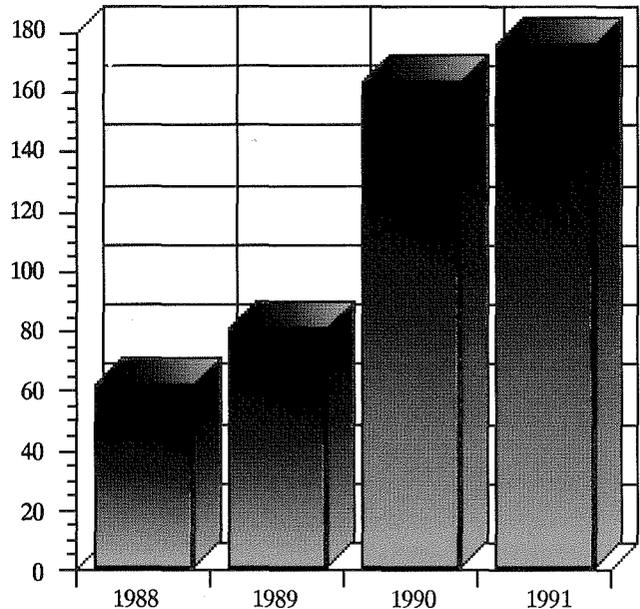
America and the largest gas-distributing utility, went to work with California's major conservation groups. Energy consumers in all sectors—residential, commercial, industrial and agricultural—were represented. The California Energy Commission, Public Utilities Commission, the Independent Energy Producers Association, the Association of California Water Agencies, the state's Department of General Services and others joined in.

They set a six-month agenda and produced on schedule *An Energy Efficiency Blueprint for California*. "It was our way of saying, California is back!" explains Cavanagh. The blueprint called for a doubling of conservation spending from the 1988 levels. The goal is to spend \$147 million

Projected Trends in Electricity Savings*

From Expanded Pacific Gas and Electric, San Diego Gas and Electric, and Southern California Edison Efficiency Programs (average megawatts)

* Note: Estimates for gas savings are not complete at this time.



Charts by Stephen Sasser and Judy Gibson

more each year on conservation programs by 1991, or "as fast as we can responsibly ramp up," Cavanagh adds.

The key to utility cooperation is a set of proposed reforms in the regulatory process. In the early 1980s, California utility regulators decoupled utilities' earnings from the amount of profit they were allowed to earn. They adopted a policy of adjusting allowable power rates to compensate for conservation-induced revenue shortfalls. But this involved complicated calculations to factor out variables such as the weather.

The proposed regulatory changes would go beyond this. "If we want utilities to concentrate on efficiency," reasons G. Mitchell Wilk, president of the California Public Utilities Commission, "we have to make it pay. Fundamental economic principles dictate that companies set goals according to their pocketbooks."

Consequently, under the new regulations, utilities that succeed in meeting or exceeding efficiency

Utilities that succeed in meeting or exceeding efficiency goals could be granted a higher overall profit margin.

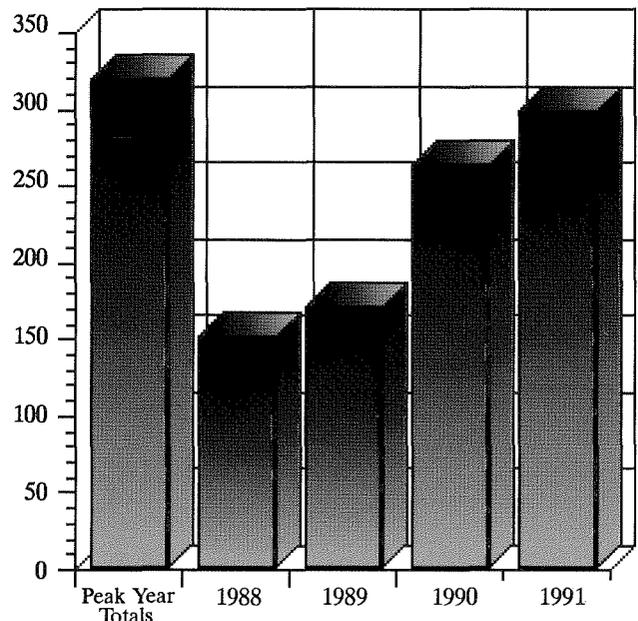
goals could be granted a higher overall profit margin. Conversely, utilities that fail to meet or exceed the state's efficiency goals can lose some of their granted profit margin. "They can either lose money by doing badly, or make money by doing well," says Cavanagh.

To "do well," each of the collaborating utilities is exploring which incentives will best support increased conservation spending. Pacific Gas and Electric, for example, is looking at a "shared savings" system that would give the utility's shareholders a percent of the estimated dollar savings from energy-efficiency programs.

The utilities also are planning specific research and energy saving programs they will operate. Members of the collaborative and outside consultants are participating in this process. Each of the utilities is gearing up to run or expand programs that will save energy in every sector of the state. This includes efficiency improvements in the residential, commercial, industrial and agricultural sectors. Since California's economy is the sixth largest in the world, savings in the state are expected to be substantial.

To further refine California's focus on its commerce, industries and agriculture, Pacific Gas and Electric is underwriting several

California Efficiency-Program Spending Trends* (nominal \$ million)



* These totals refer to program spending by California's four largest utilities: Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric and Southern California Gas.

substantial research endeavors. Modeled after the Seattle Lighting Laboratory, the utility is planning to open its own Lighting Technology Center in 1990. The center will aid architects, builders and business leaders in choosing the most efficient means of lighting their facilities.

Pacific Gas and Electric is also considering a Food and Agricultural Technical Center for Northern California. The center would study efficiency in both food production and food processing—two of California's major industries.

A third research project may have even broader implications. The utility has brought together the Rocky Mountain Institute (Amory Lovins' Colorado resource conservation research facility), Lawrence Berkeley Laboratory and the Natural Resources Defense Council to conduct a multiyear investigation of advanced lighting, building design, electric motor and other efficiency technologies. Their goal is to determine actual performance and cost characteristics of these technologies in residential, commercial, industrial and agricultural applications.

Information from each of these innovative research projects will help California utilities design better energy saving programs. But the blueprint is only the first step in the process. The utilities are drafting their plans as applications to the California Public Utilities Commission. The commission then decides whether the proposals are worthy of further action.

Commission President Wilk suggests that "the collaborative proposals mark a new era for energy utilities and for this commission. Utilities today should be selling energy efficiency not just energy. In the 1990s," he adds, "we want to add value to every kilowatt or gas molecule used in California by making sure we minimize waste in energy production and energy consumption."

The commission is on record declaring: "In an era of increasing domestic and international competition, California's outstanding economic strength and environmental protection rest, at least in part, on a foundation of energy efficiency."

In a recent two-page advertisement in a national business publication, Pacific Gas and Electric seemed to concur: "It's no secret that much of the future performance of American business and industry depends on the efficient use of energy," the advertisement stated.

The Californians who met and worked together to build that state's blueprint for energy efficiency have written, "We believe that the process that produced this report will make possible the single biggest leap forward for energy efficiency in California since utility demand-side management programs were first introduced."

**"Much of
the future
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use of
energy."**

*— Pacific Gas
and Electric*

Commissioner Wilk adds, "The collaborative applications give us a chance to prove that everyone can be a winner; consumers can save money on their gas and electric bills, and utilities can make money on conservation through carefully planned incentive programs."

Heads up to the rest of the pack; California is trimming its sails and moving into the lead once again. ■■

SHORTS

Oregon will pay \$1 for each adult squawfish caught in the reservoir behind the John Day Dam on the Columbia River. The Oregon Department of Fish and Wildlife made the offer in the hope that the bounty will help slash the number of squawfish, which it blames for eating 14 percent of the ocean-bound juvenile salmon and steelhead at the dam last year. [Source: *The (Portland) Oregonian*, 2/26/90.]

New compact fuel cells using hydrogen and air to produce electricity could one day replace conventional lead-acid batteries.

That's the prediction of scientists at Bell Communications Research in New Jersey, who developed the cells. The new devices—smaller, lighter and more efficient than current-technology batteries—may power anything from automobiles to telephones, the scientists said in announcing the invention.

Fuel cells generate electricity through chemical reactions among gases or other chemicals. They don't need to be recharged with electricity when they run down, unlike conventional batteries. Instead, recharging them only requires new doses of gas or chemicals.

These experimental Bell cells, still only small laboratory prototypes, contain a thin, gas-permeable membrane of aluminum oxide sandwiched between two layers of platinum. When a mixture of gas and hydrogen circulates through the film, the resulting chemical reaction combines hydrogen and oxygen into water, releasing electricity.

If mass produced, the cells could be built for \$1,000 a kilowatt, compared with \$3,000 to \$5,000 a kilowatt for existing fuel cells, the Bell scientists said. [Source: *Nature*, 2/8/90.]

Dan Evans has been elected to the board of directors of Puget Sound Power and Light Company in Bellevue, Washington.

The former United States Senator and governor of Washington, and the first chairman of the Northwest Power Planning Council, became a Puget Power director in March 1990. A member of numerous boards and civic organizations, Evans currently serves as chairman of the National Academy of Sciences commission on policy options for global warming. [Source: Puget Sound Power and Light Company, 3/90.]

The U.S. Bureau of Land Management and the Nature Conservancy have agreed to combine efforts to preserve wildlife populations and habitat.

The agreement, signed in March by the private, non-profit Nature Conservancy and the bureau, establishes a public/private partnership to save endangered and rare animals and plants on 40 percent of the country's public lands. The bureau oversees 270 million acres, equal to one-eighth of the land mass of the continental United States.

The agreement gives the green light to local bureau officials to work with the Nature Conservancy on strategies to protect threatened species and ecosystems. Started 36 years ago, the Nature Conservancy acquires private lands to keep as wilderness preserves. It owns and manages some 900 nature preserves on more than 5 million acres in the United States and Latin America. [Source: *The (Portland) Oregonian*, 3/24/90.]

Oregon received the second-highest number of people who immigrated from California between mid-1988 and mid-1989, a recent nationwide study reveals. Washington ranked ninth in the nation. Some 21,000 Californians moved to Oregon during the period; 8,600 moved to the Evergreen State. Arizona ranked first, absorbing 23,000 new residents from California during the period. [Source: *American Demographics*, 1/90.]

Puget Sound Power and Light Company has chosen eight outside, non-utility sources to supply it with 137 megawatts of electricity within two years. In Washington state's first competitive bidding process, Puget last fall called for proposals from outside developers to supply it with electricity. A gas-fired cogeneration facility in Bellingham, Washington; a geothermal plant in Surprise Valley, California; a municipal solid waste facility in Pierce County, Washington; and five conservation programs were the proposals Puget chose from among 40 submitted by 29 developers. They'll begin to supply power—5 percent to 7 percent of Puget's expected demand—in 1993. [Source: *Clearing Up*, 3/2/90.]

—Compiled by Gordon Lee

CALENDAR

May 9-10—Northwest Power Planning Council meeting at the Shilo Inn in Idaho Falls, Idaho.

June 13-14—Northwest Power Planning Council meeting at the Westcoast Ridpath Hotel in Spokane, Washington.

July 11-12—Northwest Power Planning Council meeting at the Outlaw Inn in Kalispell, Montana.

July 29-August 3—"Indoor Air '90: The Fifth International Conference on Indoor Air Quality and Climate" in Toronto, Canada. Sponsored by the Building Owners and Managers Association International, the Center for Indoor Air Research, U.S. Department of Energy and others. For more information: Indoor Air '90,

c/o Canada Mortgage and Housing Corporation, 682 Montreal Road, Ottawa, Ontario, Canada K1A 0P7, 613-748-2714 or 748-2715.

August 8-9—Northwest Power Planning Council meeting in Oregon.

August 17-19—Midwest Renewable Energy Fair in Amherst, Wisconsin. For more information: Midwest Renewable Energy Fair, 286 Wilson Street, Amherst, Wisconsin 54406, 715-592-4458.

August 26-September 1—"1990 Summer Study on Energy Efficiency in Buildings" at the Asilomar Conference Center in Pacific Grove, California. Sponsored by the American Council for an Energy-Efficient Economy. For more infor-

mation: Lawrence Berkeley Laboratory, ACEEE 1990 Summer Study Office, Building 90H, Berkeley, California 94720, 415-486-7478.

September 23-28—"World Renewable Energy Conference" in Reading, United Kingdom. Sponsored by the University of Reading. For more information: Professor A.A.M. Sayigh, Congress Chairman, Department of Engineering, University of Reading, Whiteknights, P.O. Box 225, Reading Berkshire, RG6 2AY, UK.

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

Compiled by Ruth L. Curtis

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NORTHWEST
ENERGY
NEWS

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The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan emphasizing cost-effective conservation and renewable resources.

Executive Editor: Carlotta Collette
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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

- Draft Power Plan (available midsummer)
- 1986 Northwest Power Plan
- 89-1 1989 Supplement to the 1986 Northwest Power Plan
- 1987 Columbia River Basin Fish and Wildlife Program
- 90-1 Staff Issue Paper: New Resources: Supply Curves and Environmental Effects
- 90-6 Staff Issue Paper: Volunteer and Educational Fisheries Activities
- 90-7 Staff Briefing Paper: Salmon and Steelhead System Planning Status Report

Mailing Lists

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

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

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(Or call Judi Hertz at the Council's central office, 503-222-5161, toll free 1-800-222-3355 in Idaho, Montana and Washington, or 1-800-452-2324 in Oregon.)