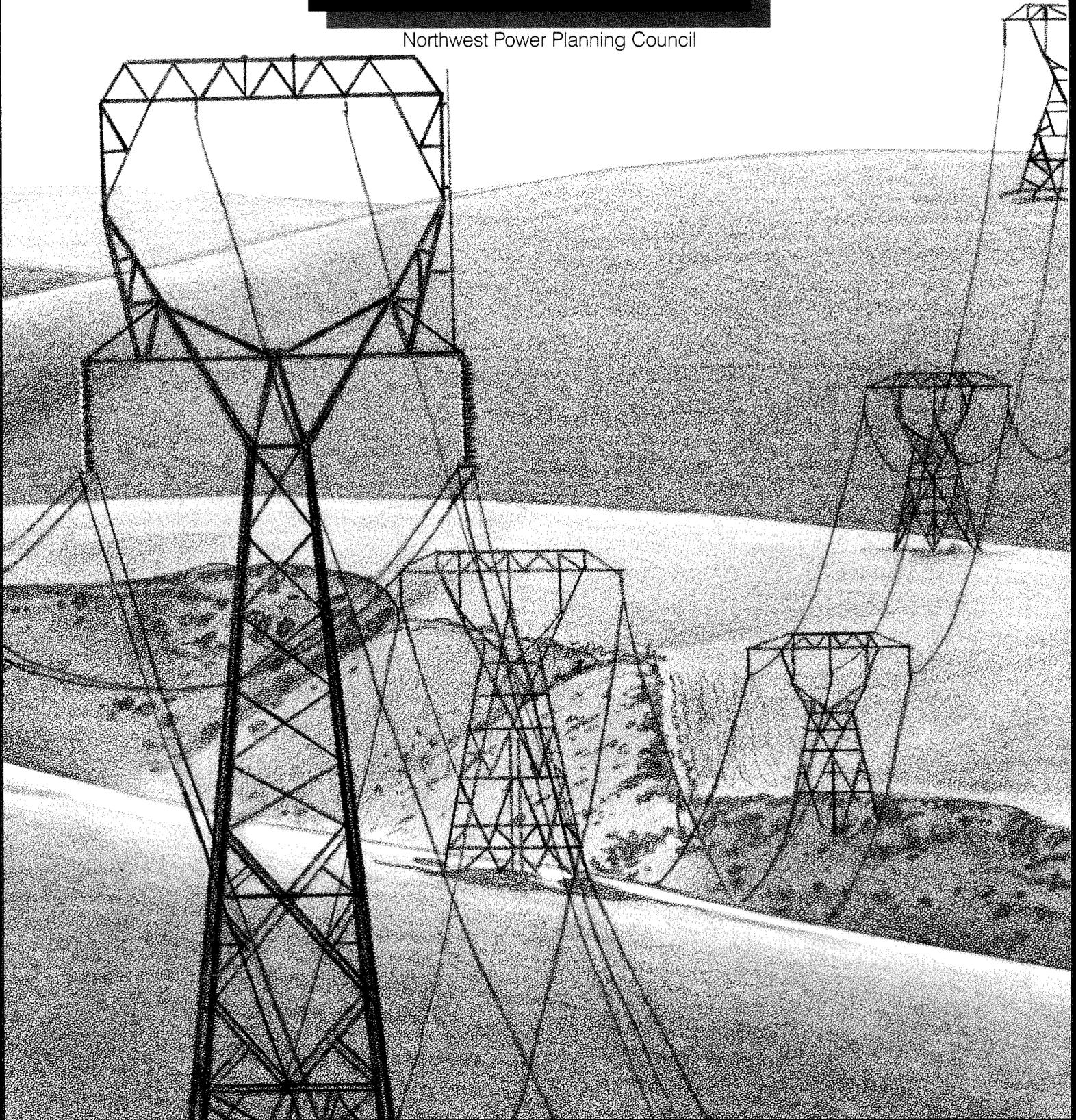


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Northwest Power Planning Council

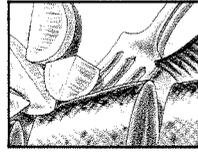


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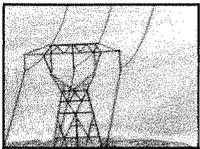
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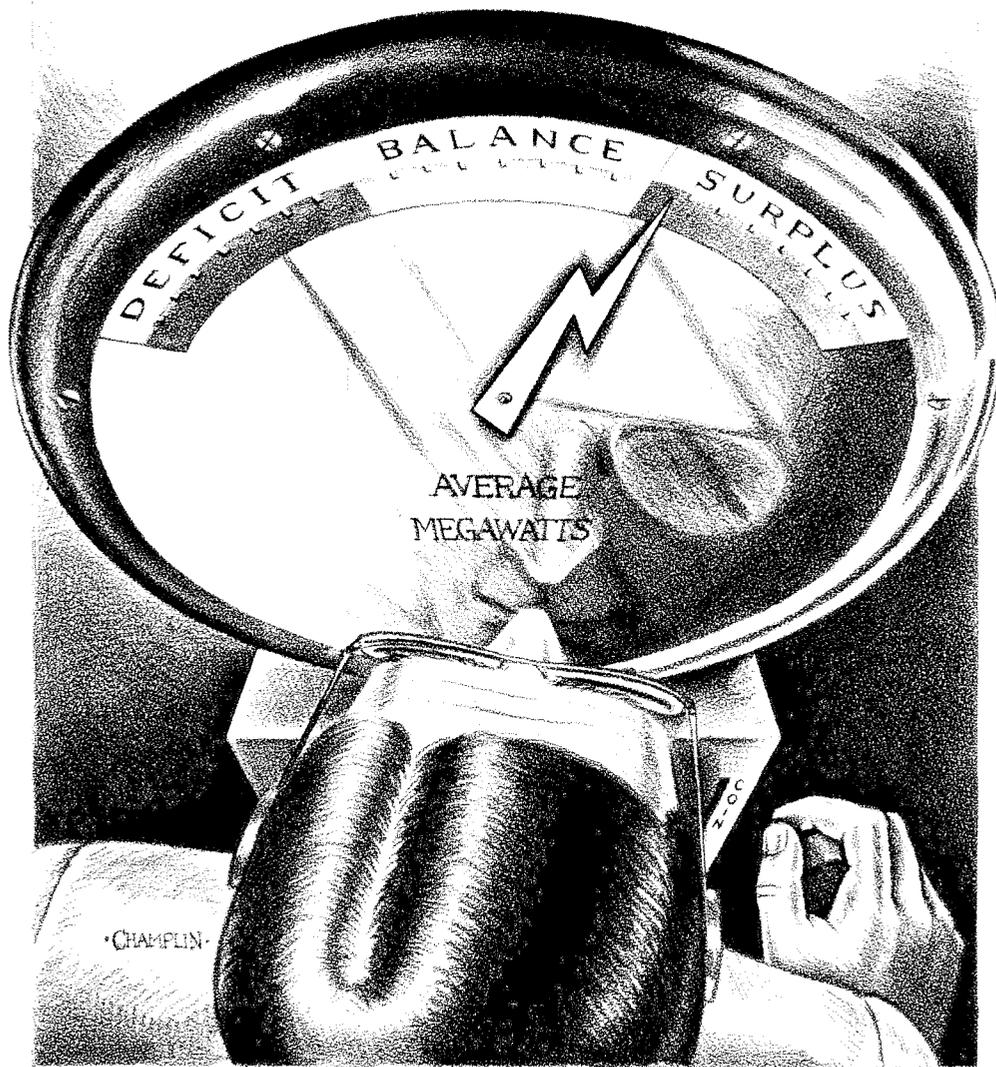
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That the Northwest has an electrical energy surplus is not news. The region has had excess electricity since 1937, when the first federal dam started operating.

SIZING THE SURPLUS

by Ruth L. Curtis

Electrical energy consumers may have come to regard the current surplus as a kind of security blanket, forgetting that less than a decade ago energy experts were predicting power brown-outs that could curtail the Northwest's economy. In fear of that future, some utility planners rushed to build huge expensive electrical generating plants. Much of the current surplus is composed of power from these plants, power that is very expensive, due to the high costs of building and operating the plants. Now it appears that the region's expensive security blanket of power

is shrinking, and already some voices are beginning to call for new plant construction. "The lesson to be remembered is that balancing power supply with power demand is a delicate process," explains Ed Sheets, executive director of the Northwest Power Planning Council. "While there is a danger of building too few resources, there is also a high cost associated with building too many resources. To keep electricity costs as low as possible, the region must avoid both large surpluses and shortages," he adds.

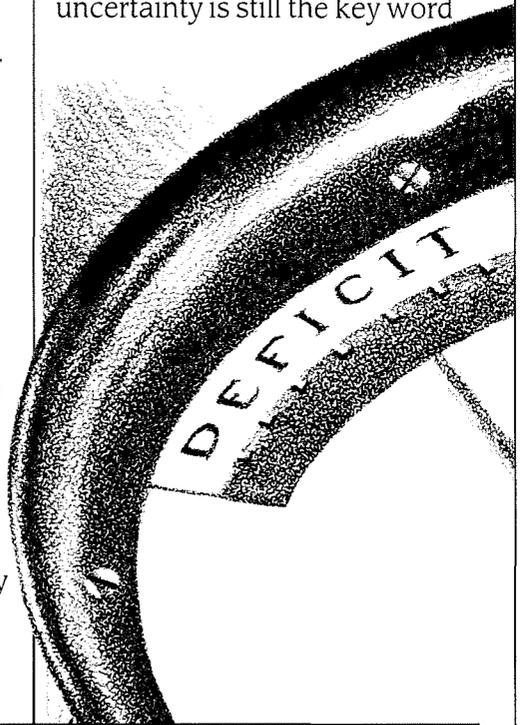
The balance between supply and demand for electricity is dynamic, moving with changes in fuel costs, new technologies, economic conditions, current electric rates and even the weather. Just how large the surplus is and how long it will last are critical factors in planning to meet the electrical needs of the region.

The Council examined the power surplus this winter and found that it has indeed decreased since it was last analyzed as part of the 1986 Power Plan. But this shrinking was anticipated in the plan. The current projection of the regional surplus has been refined, based on new information published since the power plan. For the 1988 operating year, the region's firm surplus ranges from a low of about 1,000 average megawatts to a high of 1,750. The midpoint falls at about 1,400 average megawatts (including firm, long-term export sales). By way of comparison, a city the size of Seattle uses about 1,000 megawatts.

In the 1986 Power Plan, the surplus was approximately 2,500 average megawatts excluding firm export sales. (It would likely have been 2,100 with export sales.) The 1986 forecast suggested that by 1988 the surplus could drop approximately 1,000 average megawatts. In other words, the surplus is declining on schedule.

Key reasons for the declining surplus include a pick-up in aluminum production in the Northwest (aluminum smelters use vast quantities of electricity), the emergence of the economy from its slump, and the closing of the Hanford nuclear reactor.

In spite of the apparent predictability of the declining surplus, uncertainty is still the key word



THE KINDS OF SURPLUS

There are three types of surplus electricity that can be produced by the Northwest's power system. They are:

Firm power: The amount of energy produced by the hydropower system can vary substantially from year to year due to weather-related fluctuations in the water supply. For planning purposes, the historically worst sequence of water conditions (critical water) is used to determine the amount of energy that can be guaranteed to be generated by the system. This is called firm power. Currently, the Northwest power system is overbuilt, meaning that it can produce more energy on a guaranteed basis than there is demand for the energy. This excess generation is surplus firm power, created by overbuilding new generating resources.

Nonfirm power: In most years, additional energy is generated by the region's dams. This is called nonfirm power because it is dependent on river flows and consequently cannot be guaranteed. Nonfirm power has been marketed primarily to California utilities. Due to the dry conditions this past year and continued lower than average precipitation in the Northwest, there will likely be little available nonfirm power for 1988.

Peaking capacity: Capacity is what is available from the power system at any given time. The Northwest's hydro-dominated system has a peak generating capacity that is relatively high compared to the system's energy generating capability. After taking into account operational constraints and reserve requirements, the Bonneville Power Administration has estimated that approximately 2,000 megawatts of peaking capacity may be available for sale outside the region.

— RLC

for when the surplus will end and the region will need to acquire new resources. If the region experiences high economic growth, with the aluminum plants continuing to operate at full strength, and new industries moving into the re-

gion, the surplus could be gone by 1991. However, if the Northwest has hard economic times with low growth, the surplus could last for more than 20 years.

Whenever the surplus ends, the Council's 1986 Power Plan contains actions designed to prepare the region. "Given that the surplus is decreasing," says

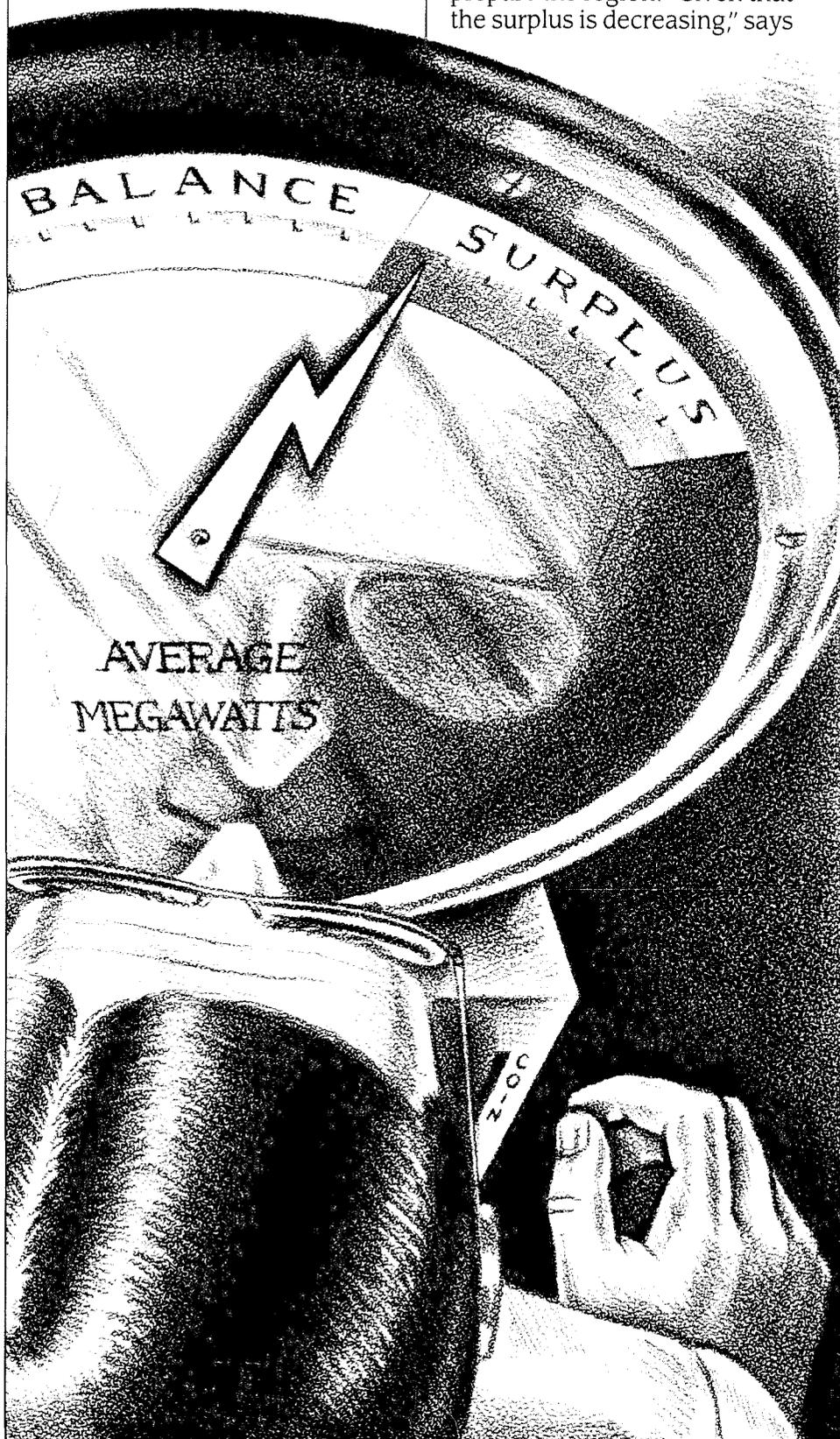
Sheets, "the Northwest needs to take actions now to ensure that we don't lose low-cost opportunities and that we prepare to acquire conservation and other resources when they are needed."

These measures deal with ensuring that the Northwest is not missing the opportunity to acquire inexpensive resources — such as energy-efficient new buildings — that will be lost if no action is taken. If new buildings are not constructed to be energy-efficient now, they will consume electricity inefficiently long after the current electricity surplus is over. But if they are made energy-efficient now, the Council estimates that, in homes alone, between 130 megawatts and 790 megawatts of electricity can be saved at costs lower than all of the other possible resources available to the Northwest. If these homes are retrofitted with energy-efficient measures after they are built, the cost will be considerably higher.

The Council's plan also aims to ensure that the Northwest has the capability to develop other cost-effective resources, including conservation, renewables and conventional resources, as they are needed. This involves resolving barriers to their development and developing an acquisition process so that the resources will be ready when their power is needed.

The load and resource situation of the Northwest is being reassessed during this summer's evaluation of the power plan. The accompanying box describes this evaluation process.

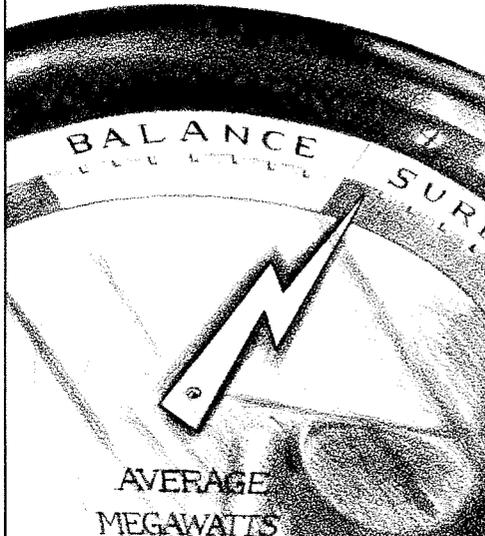
The Northwest is not the only region in the West with surplus electricity. Most of the West, except the California/southern Nevada area, has a surplus. In fact, California would not be able to meet its peak summer demands if it did not import power from both the Pacific Northwest and the Desert Southwest.



Since 1980, the Bonneville Power Administration has been successful in marketing some of the Northwest's surplus to California utilities via short-term contracts. Long-term contracted sales that are marketed at higher prices would seem more attractive because of the added revenue they produce, but there are risks. If too many long-term sales are made without provisions to call back the power, and the Northwest were to grow rapidly, the region might be forced to build expensive new generating resources much earlier than anticipated. Electricity rates would rise because even new conservation resources cost five times more than the existing hydropower, while new coal plants cost 11 times more.

"To keep rates down, the region must plan to use its surplus carefully," says Sheets. That is the lesson the Northwest's experience has taught utility planners. That is also the goal of the Council's power plan. Whether it is achieved or not, will be reflected in consumers' electric bills when the surplus does finally end.

"Given that the surplus is decreasing, the Northwest needs to take actions now."



SUPPLEMENT TO THE 1986 POWER PLAN

The Northwest Power Plan, adopted by the Northwest Power Planning Council in 1983 and updated in 1986, is designed to be a blueprint for a stable, electrical energy future in the Northwest. The plan forecasts regional electric needs and plans for developing appropriate energy resources as they are needed. The goal of this planning effort is to ensure that the Northwest has an adequate and reliable supply of electrical power over the next 20 years at the lowest cost to the region.

Because the future is uncertain and conditions are likely to change, this plan is not a static document. Flexibility is one of the underlying concepts built into the Council's planning strategy, and it has proved to be extremely important.

In the two years since the 1986 plan was adopted, the Pacific Northwest has not been stagnant. Several conditions affecting the region's electrical system have changed. The most spectacular example is the collapse of world oil prices in 1986. More subtle, but equally important, new information has become available on energy savings and construction techniques for energy-efficient homes. As part of an ongoing monitoring program, the effect of several changes has been evaluated and, in some cases, the plan has been amended.

The Council has decided that it is time to evaluate the cumulative effects of all changes that have occurred since the plan was developed. This spring and summer, the Council will conduct a technical analysis that will be the basis for a review of the 1986 Power Plan. The Council's review may suggest possible changes in the implementation

process or timing of activities called for by the plan.

As part of this technical analysis, the forecasts of electricity needs will be revised to reflect the most recent data on fuel prices, the region's economy, and the nation's economy.

The amount of energy that conservation can provide to the region will be examined. Additional information is also available on generating resources, such as hydropower, cogeneration, coal and natural gas. All of this information will be included in the analysis.

The target dates for this process are:

- In June, draft issue papers summarizing demand forecasts and the conservation and generating resource analysis will be presented to the Council and distributed for public comment.
- In July, a draft issue paper on the resource portfolio will be released for comment. The Council is expected to begin considering adopting the updated technical analysis. Public comment will be taken on this technical analysis through August.
- In September, after the public comment is reviewed and appropriate changes made in the analysis, a final updated technical analysis will be presented to the Council for its review.
- In October, the Council will make decisions regarding any amendments to the 1986 Power Plan that appear to be needed.

Call the Council's central office in Portland, Oregon to receive the issue papers relating to this process. (Toll-free numbers are listed on the inside back cover of this magazine.)

—RLC

CONSIDERED REVIEWED

PROPOSAL TO PROTECT NORTHWEST STREAMS FROM NEW HYDROPOWER DRAWS HUGE PUBLIC RESPONSE

Compiled by Judy Allender

Through the Northwest Power Act of 1980, Congress directed the Northwest Power Planning Council to develop a program to “protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat” in the Columbia River Basin. Because the program is funded by ratepayers, the Council was to address its efforts solely to the impacts of hydroelectric development.

As the Council developed the Columbia River Basin Fish and Wildlife Program, several parties, particularly fish and wildlife agencies and Indian tribes, urged the Council to protect fish and wildlife from future hydropower development as well as past and existing dams. The Council agreed that protecting certain areas was integral to the program goal of doubling salmon and steelhead runs in the basin. So, a

review of over 350,000 miles of year-round streams in the region was begun to determine their value for fish and wildlife populations.

Thus, the “protected areas” concept was born. The protected areas issue refers to designating certain Northwest streams as protected — that is, future hydroelectric development would be restricted — because of the poten-



Photograph by Ancil Nance

tial impacts on fish and wildlife in those areas. An estimated 35 percent of the anadromous (ocean-migrating) fish habitat in the Columbia River Basin has already been lost due to hydroelectric development. The U.S. Army Corps of Engineers and the Bureau of Reclamation continue to plan for future federal projects, and the Federal Energy Regulatory Commission (FERC), which licenses private and non-federal public hydropower projects, has at least 200 applications to build new dams pending throughout the Northwest.

The Council's staff compiled the information collected in its review of Northwest streams and released a Protected Areas Designation issue paper in October 1987. The Council is currently reviewing the comments it received on the staff issue paper and expects to make a decision in March or April on whether to enter rulemaking to amend the fish and wildlife program and the 1986 Power Plan.

This issue has received more response from the public than any other single issue the Council has dealt with. Over 470 organizations and individuals have commented on the issue paper. Below is a sampling of a few of the comments the Council received.

David Alden, President — Northwest Small Hydroelectric Association (NSHA)

The Northwest Small Hydroelectric Association is supportive of the protection of truly valuable or unique water resources. However, we are concerned about the proposed protected areas designation. We have numerous concerns such as protection out of the Columbia River Basin and the possible protection for non-fish and wildlife values. But we would like to focus on two *specific* concerns.

Our first concern is the overly broad criteria for protection. To evaluate the extent of the proposed program, we reviewed 18 recent small hydro projects in Oregon. We assumed that successful development through the current restrictive regulatory process indicated an acceptable site. However, we found that 16 of the 18 sites would be protected under the proposed program. Thus, the proposed program would preclude development at numerous reasonable sites.

Second, we talked with state staff in both Oregon and Washington regarding the accuracy of the data. In both states, it was estimated that perhaps 20 percent of the river reaches were incorrectly classified due to data errors. This level of inaccuracy is much too high to justify the program.

Rick George, Director — Oregon Rivers Council

The Oregon Rivers Council fully supports the [Northwest Power Planning] Council staff's recommendation to include in its protected areas designation all anadromous fish streams in the region as well as selected resident fish and wildlife sites. We believe it's critical that protected areas designation be included outside of the Columbia River Basin. We think that the program should be applied regionally in the same way that power planning and power sales are currently being applied by the Council. That is, the protected areas should also be regional in scope. We look at this as the first ever comprehensive effort of fish and wildlife and power planning. It's an historic step that *must* be taken. We also believe the data base that has been compiled is strong and accurate for fish and wildlife values and that it must be used and in that way strengthened.

**Gary Johnson,
Resource
Development
Manager — Tacoma
City Light**

“The purposes of the Pacific Northwest Electric Power Planning and Conservation Act [Act] include assuring the region of an adequate, economical and reliable supply of electric energy; encouraging the development of renewable resources; and protecting, mitigating and enhancing the fish and wildlife of the Columbia River Basin. The purposes of the Act also clearly state that Congress did not intend the Act to limit or restrict the ability of local utilities to plan, develop and operate resources. The Act is intended to provide a balance between developing new resources and fish and wildlife concerns. The proposed protected areas designation plan does not achieve this balance and does significantly restrict the ability of local utilities to develop resources.

Tacoma City Light recognizes the importance of environmental and fisheries issues and supports cost-effective, reasonable and effective fish and wildlife protection and enhancement programs. We also believe new

resources can co-exist with fishery and environmental programs. The existing FERC regulations, as supplemented by the Electric Consumer's Protection Act, provide ample safeguards for fishery and environmental protection. These regulations require developers to work very closely with fishery, wildlife and other environmental agencies and to perform detailed studies and evaluations of the site as part of the project licensing.

The suitability of a river for hydro development is very site specific. The suitability of a river for fish and wildlife for different species and different life cycles is also extremely site specific. The site specific data generated by these detailed studies enable FERC to maintain a balance between resource development and fish and wildlife concerns.

**Kent Martin,
Chairman of the
Board — Columbia
River Fishermen's
Protective Union**

“I feel very strongly that the Council's staff should recommend the protected areas paper be adhered to both in the basin and in the region at large. There should be no more hydro development in any stream that is currently used by anadromous fish or is potentially usable, because we must hang on to the natural habitat we have left as well as the natural and wild spawning stocks that that

habitat supports. Those stocks are critical to the genetic health and viability of not only our wild and natural stocks, but our hatchery stocks as well. I would like to point out that I am certainly not a wild-only advocate, but I do perceive the absolute necessity of keeping our wild stocks healthy for the sake of all user groups. I also feel very strongly that the dams are indeed another fishery and should be subject to some of the same kind of strictures and regulations as other fisheries.”

**Larry Peterman,
Bureau Chief for
Research and Special
Projects — Montana
Department of Fish,
Wildlife & Parks**

“Western Montana has important resident fish and wildlife resources. The damage to these resources from past hydroelectric development, however, has been substantial. The Council has been mandated by the [Northwest Power] Act to develop a program to balance hydropower development with protection, mitigation and enhancement of anadromous fish, resident fish and wildlife.

Streams which have been included in Montana's protected areas list constitute irreplaceable resources where hydroelectric development would have significant adverse effects on fish and/or wildlife. The Council's pro-

tected areas designation program in Montana would lend a level of protection not currently available in our state. It would work toward achieving a balance between hydropower and fish and wildlife.

In fact, we believe the program is vital to achieve that balance. We would like to commend the Council for including the protected areas concept in its fish and wildlife program and recommend the Council enter rulemaking to amend the fish and wildlife program to designate protected areas.

**Nancy Rockwell,
Administrator,
Resource
Development
Division — Oregon
Department of
Energy (ODOE)**

ODOE supports the Council designating protected areas. We want the Council to designate areas both inside and outside the basin so undue pressure isn't placed on the areas outside the basin. ODOE also supports protecting non-fish and wildlife values. Jointly developed criteria and a similar process for determining fish and wildlife values would be needed.

During the rulemaking process, we hope the Council will explain how the protected areas designation will affect agriculture, forestry and land

development. We also want to be sure all data bases are sound before designations occur.

**Michael Rossotto,
Research Associate —
Northwest office of
Friends of the Earth**

The Council staff's issue paper outlines a reasonable, logical and legally defensible approach to protecting critical habitat from new hydro development. We feel it is completely appropriate for the Council to request that FERC defer licensing new hydro projects in protected areas as long as there are less sensitive sites available.

The major concern we have at this point is the lack of protection for non-fish and wildlife values such as recreation and scenery. Efforts to whittle away the wildlife and resident [non-ocean migrating] fish protection will lessen the value of the program for potential developers. To the degree that the Council includes all resource values and all sensitive habitat, developers could realistically expect to develop sites not covered by protected areas designation with a minimum of conflict from the environmental community.

If, on the other hand, important areas are not designated protected, developers will still run the risk of being challenged when they try to develop in one of these non-designated areas. We also fully support the Bonneville Power Administration's

proposal to make intertie access dependent on compliance with the protected areas program. There's simply no reason to allow the California market to serve as an incentive for inappropriate hydro development in the Northwest.

**Mitch Sanchotena,
Executive
Coordinator — Idaho
Steelhead & Salmon
Unlimited (ISSU)**

The concept of protected areas designation preserving and protecting our remaining salmon and steelhead habitat deserves the support of everyone associated with anadromous fisheries in the state. The compromises already reached during the three years of planning that preceded this proposal are truly milestones in the battle between power and fish. They illustrate the potential for cooperative efforts between long-time adversaries.

The staff's issue paper affords excellent protection to the remaining anadromous fisheries of the basin. The proposal balances fish and energy while providing a means of protecting the region's substantial investment in both.

ISSU will place support of this proposal at the head of its list for action during the coming year. It's a keeper. We believe the Council and its staff deserve commendation for their ingenuity and commitment to

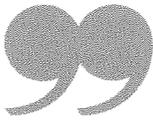
finding an equitable solution to the problem of fish versus power.



**Marc Sullivan,
Executive Director —
Northwest
Conservation Act
Coalition (NCAC)**

“ NCAC believes the designation of protected areas is absolutely essential to the success of both the Council’s fish and wildlife program and its power plan. If we are to have any hope of achieving the interim goal of doubling anadromous fish runs, we can’t afford to lose any more habitat.

Also, designation of protected areas, inside and outside of the Columbia Basin, meets the Council’s congressional mandate to consider environmental costs in evaluating the cost-effectiveness of new resources. By implementing this designation, we believe you would find that in the protected areas the environmental cost of hydropower development is so prohibitively high as to render proposed projects non-cost-effective.



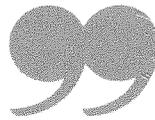
**Larry Wimer,
Fisheries Program
Coordinator — Idaho
Power Company**

“ Idaho Power Company supports the concept of identifying reaches of criti-

cal fish and wildlife habitat within currently undeveloped rivers wherein development of any kind would have adverse and irreversible impacts. We support this concept for basically three reasons. First, such designation would assist Idaho Power along with the Council and FERC in planning for the future. Second, identifying areas of critical anadromous fish habitat would enhance the Council’s effort in reaching its interim goal of doubling run sizes. And third, such designations could protect previous ratepayer investments for anadromous fish throughout the Northwest.

However, Idaho Power feels very strongly that the authority to develop such a policy is the prerogative of the individual state and recommends the Council not take any action on this issue until the river protection legislation currently being developed in the state of Idaho has been adopted.

One technical problem that we believe the Council must rectify is that of how the Council staff arrived at individual stream reaches identified within the staff proposal. Virtually all of our existing hydro projects fall within the staff-proposed protected areas. It was not the intention of the Idaho Department of Fish and Game to include existing projects in protected areas. This is an intolerable situation for Idaho Power for planning and relicensing purposes. We recommend that any list developed should exclude reaches that have existing projects on them.

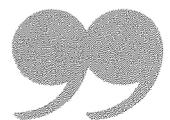


**Al Wright, Executive
Director — Pacific
Northwest Utilities
Conference
Committee (PNUCC)**

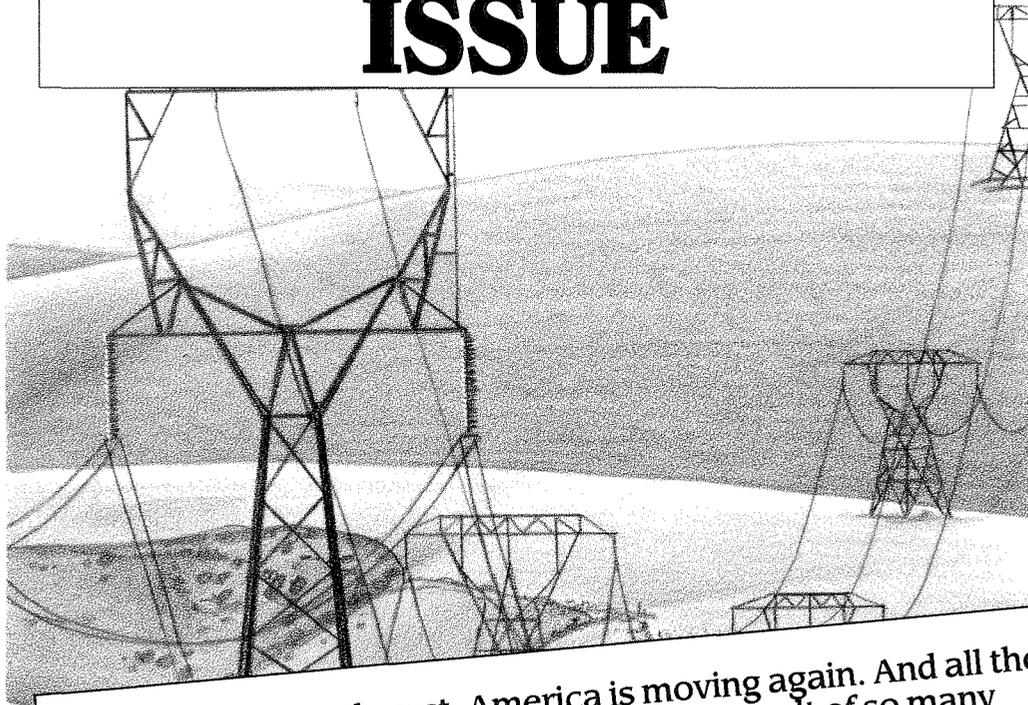
“ PNUCC believes that the protected areas program is not a good tool to do what the Council wants to do. We believe that the only way you can make a fair assessment of the benefits or detriments resulting from a hydro project is with a site-by-site analysis.

We have repeated time and time again that there was a time in the ’70s where everybody was enamored with the concept that small hydro development would bail us out of an energy crisis. The result of that was a lot of proposed legislation and everyone saying all hydro projects are good. That was a bad idea. And now we’re trying to take a broad brush approach to blanket prohibitions to hydro development, and *that’s* a bad idea. An overreaction either way is no way to do hydro planning or adequate fish protection.

We have tried to offer the Council some alternate approach that says it is reasonable, within the Council’s jurisdiction, to designate critical fish production areas that the Council wants to target to double the run size. Within those areas, the Council has a right to demand that any hydro development be beneficial to their goal of doubling the runs. The Council shouldn’t try to preempt FERC’s decision-making process.



THE INTERTIE ISSUE



“Here, in the Northwest, America is moving again. And all the world knows it. This intertie which is the result of so many brains and so much work, and such great efforts, is the most exciting transmission system in history. It makes us world leaders in direct current transmission. It will carry from the Peace River to the Mexican border enough power for five San Franciscos.”

*President Lyndon B. Johnson
Remarks in Portland, Oregon
September 17, 1964*

by Ruth L. Curtis

If the Western landscape dwarfs men, then the giant transmission towers of the Pacific Northwest/Pacific Southwest Intertie are right in scale as they march across the hills from the Columbia River to Los Angeles. These towers make up the system so highly praised by former President Lyndon B. Johnson.

The idea of such a transmission system was originally conceived in 1919 by Professor Carl Edward Magnusson of the University of Washington. But it wasn't until the 1960s that the

intertie system became a reality. The proposal to link the Northwest to the Southwest to transfer electricity made sense because of the differing electrical systems in the two regions.

In California, much of the electricity was and is produced with oil and gas generating units, while the Pacific Northwest produces cheaper hydropower. There has seldom been a year when the Northwest did not have more power than it needed to meet its contracted needs. The surplus non-guaranteed or

nonfirm power, was available for sale, and California was eager to buy what it could get.

However, it was actually Canadian power that provided the impetus to build the intertie. The Columbia River Treaty with Canada was signed to cooperatively develop the Columbia River and apportion the associated power and flood control benefits. The storage dams built under the treaty produced huge amounts of additional power at downstream dams in the United States. Half of this power belonged to Canada

under the terms of the treaty. But Canada didn't need this power and was very willing to sell it to California. This was firm power which California utilities badly wanted — electricity that could be guaranteed to be available even in years with low river flows.

The intertie was the solution — giving the Northwest and Canada access to California and other Southwestern markets. But there was concern about how to open up the Northwest's power to California markets without entitling California publicly-owned utilities to demand the firm power on the same priority basis as the Northwest public utilities. The Northwest did not want to become a power farm for other regions. Senators Henry Jackson and Warren Magnuson of Washington went on record saying, unless there was legislation guaranteeing the Northwest first rights to its own power, they would oppose the intertie.

These fears led to the Pacific Northwest Preference Act, which Congress passed in 1964. At the same time, Congress approved the construction of an intertie that would consist of four transmission lines — two alternating-current (AC) lines and two direct-current (DC) lines. The Bonneville Power Administration would own the DC lines and most of the AC lines in Oregon, while a collection of utilities that generated their own power and the Western Area Power Administration would own the southern portions of the lines. Bonneville would make the transmission capacity available to other utilities when it was not needed to transmit federal power. And finally, the Pacific Northwest was given first call on its own energy.

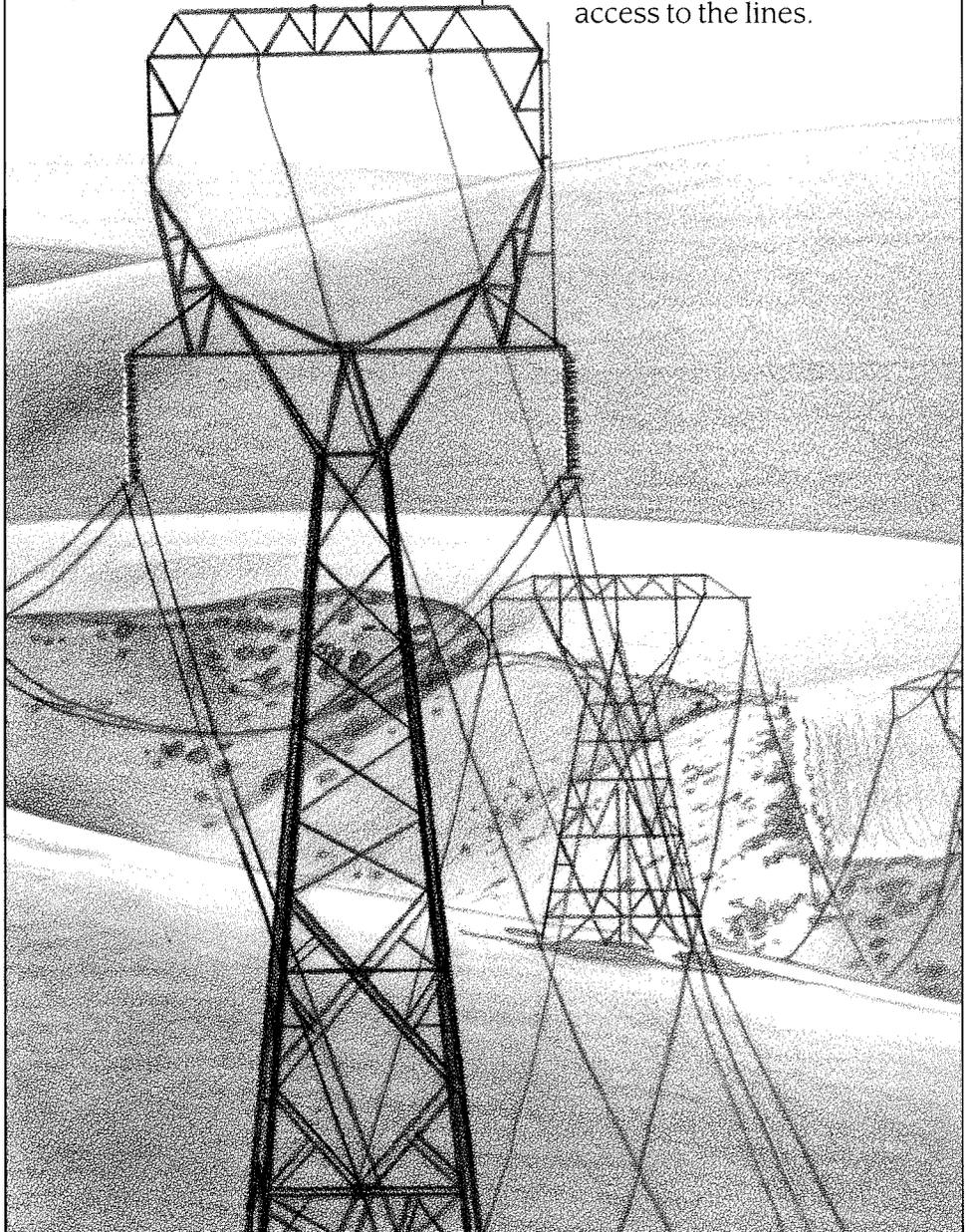
Begun in 1966 and completed in 1970, the intertie is the largest single transmission project ever undertaken in the United States. It is a system of two 500 kilovolt AC lines and one +/– 500

Begun in 1966 and completed in 1970, the intertie is the largest single transmission project ever undertaken in the United States.

kilovolt DC line. (The second D.C. line was never built.) The alternating-current lines allow deliveries to utilities along the way, while the direct-current line provides a direct shot all the way from the Columbia River to Los Angeles.

Just about everyone involved would agree that the intertie has been a success. The Northwest has been able to make money selling surplus electricity, over a billion dollars since 1970, and California utilities have been able to get cheaper power than that produced at their expensive generating plants.

In recent years, prompted by the success of the intertie and by another regional power surplus, utilities and planners in the Northwest began looking at ways to sell more power to the Southwest. At the same time, because there was such competition for space on the intertie, utilities asked Bonneville to provide them more dependable access to the lines.



To solve the first issue, Bonneville proposed upgrading the terminal facilities of the DC line and building a third AC line. This new line would have two parts, first a new 500 kilovolt line from the Oregon/California border to the Sacramento area, and second, reinforcing the AC intertie system in Oregon. A recent Bonneville draft study on the economic benefits of expansion of the tieline to California found that, considering the costs and benefits to British Columbia, California and the Pacific Northwest, the DC terminal expansion and the third AC line would show substantial benefits. That study is currently being revised and updated.

To broaden opportunities for utility access to the transmission system, Bonneville began to develop a near-term access policy in 1983, which would operate until a long-term policy could be developed. That near-term policy was first put in place in September 1984 and was finalized in June 1985. The long-term policy is currently being developed. The associated environmental impact statement incorporates evaluations of the environmental effects of the DC line upgrade and the third AC line proposal. A first draft was issued in 1986, a revised draft was released in December 1987, and the final

policy is expected to be completed this spring.

The intertie access policy would determine who will have access to the intertie, what kinds of resources can be sold over the intertie, and what types of sales will have priority. The Northwest Power Planning Council has been following the policy's development closely because it will have a major effect on the region's fish and wildlife, as well as on the Northwest's power system.

A carefully designed policy will encourage regional cooperation. But, if the policy is badly designed, it could encourage the development of new, non-cost-effective or unnecessary resources. In addition, the expansion of the intertie could result in significant changes in the operation of the region's hydroelectric system — changed river flows, changes in the characteristics of the reservoirs, and reductions in the amount of water spilled at the mainstem dams.

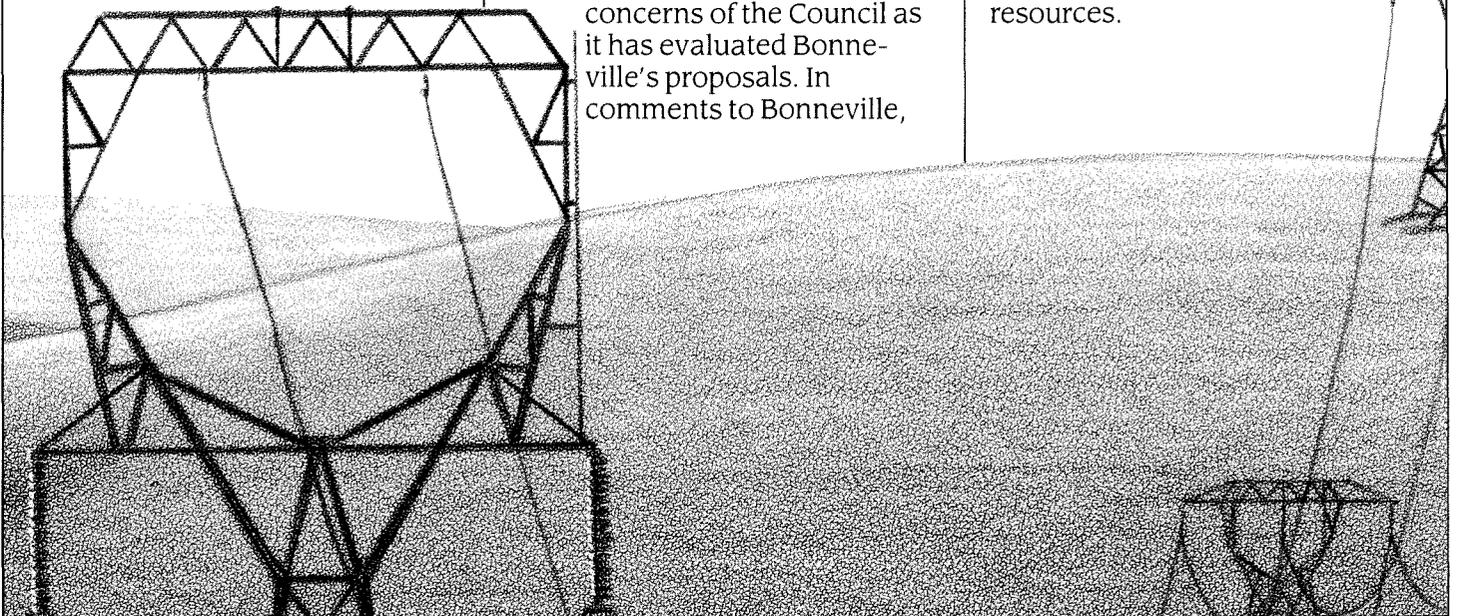
These changes could adversely affect fish and wildlife, destroying the work that has been done to rebuild those populations already seriously damaged by the hydroelectric system. A flawed policy could also encourage the development of new power generating projects without regard to the harm they might do fish and wildlife.

All of these have been concerns of the Council as it has evaluated Bonneville's proposals. In comments to Bonneville,

the Council cautioned that generating resources not consistent with the fish and wildlife measures of the 1986 Northwest Power Plan and the Columbia River Basin Fish and Wildlife Program should be denied access to the intertie on the basis of their impact on fish and wildlife.

The Council also supported two provisions of Bonneville's proposed policy that affect resource development. One provision provides access to the intertie for seasonal exchanges of power. This was widely sought by Northwest utilities and should aid in promoting regional cooperation and reduce the construction of new resources in both the Northwest and California. The second provision is a "Waiver of BPA Service Obligation." Such a waiver should help the Northwest avoid a situation where Bonneville must acquire new resources to serve loads that would have been served by existing resources if the power had not been sold outside the region.

The intertie lines between the Northwest and California have provided tremendous benefits to both regions over the past 18 years. The challenge today is to ensure that the power lines continue to provide long-term savings by reducing the need for generating resources in both regions while protecting the Northwest's fish and wildlife resources.



MAKING UP FOR LOST LAND

by Carlotta Collette



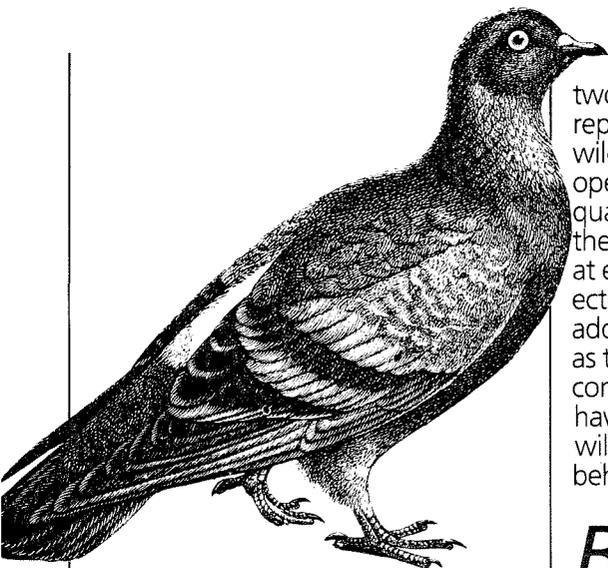
Awash behind the wall of Grand Coulee Dam lie 70,000 acres of forests and grasslands, dry steppes and shrub-covered savannas. Before 5-million acre feet of water (about 10 percent of the Columbia River's average annual flow) drowned them out, there were grain fields and a few orchards. Along the old channel of the Columbia and the inundated mouths of the Spokane, Sanpoil, Colville and Kettle rivers, there were fertile shorelines that drew herds of deer and flocks of waterfowl hungry in the spring to

forage early on the first green grasses.

All of this is gone now, flooded out in 1942 when the cold water of the Columbia piled up a lake 385 feet deep, 151 miles long and 4,650 feet wide on average. The mass of concrete (reportedly enough to build a 40-foot wide highway across America), whose innards generate enough electricity for six cities the size of Seattle, cut off salmon and steelhead runs at the dam face and eliminated home ground, grazing land or migratory resting areas for approximately 350 species of

wildlife. And regular operations of the dam routinely raise and lower the new shoreline, scouring away the tenuous vegetation attempting to take hold and grow.

Because the Northwest Power Act called for reparations for both fish and wildlife lost as a result of hydropower development in the Columbia Basin, a plan of recovery for the damaged habitat and consequent loss of animals is currently before the Northwest Power Planning Council. Along with the plan to mitigate losses due to Grand Coulee, the Council is reviewing



With status reports in hand, step two in the process draws together representatives from fish and wildlife agencies, the tribes, dam operators and others to attempt to quantify net wildlife losses that are the result of hydropower operations at each facility. In some cases, project developers have already addressed wildlife concerns such as the loss of habitat due to dam construction. In a few cases, there have been positive effects on wildlife created by the reservoirs behind dams.

proposals regarding eight dams in the Willamette River Basin, the Palisades Project on the Snake River, and three dams in western Idaho on the Boise and Payette rivers.

In 1987, when the Council amended its Columbia River Basin Fish and Wildlife Program, it incorporated projects developed by the state of Montana to recover flooded habitat for deer, bear, bighorn sheep, waterfowl and small furbearers. The work in Montana is the first approved by the Council to rebuild wildlife populations. It was the result of productive negotiations between the state of Montana and Montana utilities.

As with the Montana plans, the new set of proposals are the third step in a lengthy process designed to quantify the impacts of hydroelectric dams on various species of wildlife. The first step involves information gathering and the development of status reports for each hydroelectric project in the Columbia River Basin. All past, present and planned wildlife recovery programs at dam sites are studied to determine whether new planning and repair efforts are needed. Status reports for all Columbia Basin projects were completed by fish and wildlife agencies and basin Indian tribes in 1984.

Because of the enormous scale of the Grand Coulee project, the Council requested that interested parties skip step two and instead negotiate a plan of recovery immediately, rather than spend endless time and money debating the extent of the losses.

The plan proposed for protecting and rebuilding wildlife populations at Grand Coulee Dam is similar to those developed as step three in the planning process for each hydroelectric facility. The proposal has three parts:

1. Acquire approximately 73,000 acres of land or management rights to land to be used as wildlife habitat;
2. Improve and manage the land to perpetuate its use for wildlife;
3. Protect habitat identified as bald eagle territories and plant trees to be used as nesting sites.

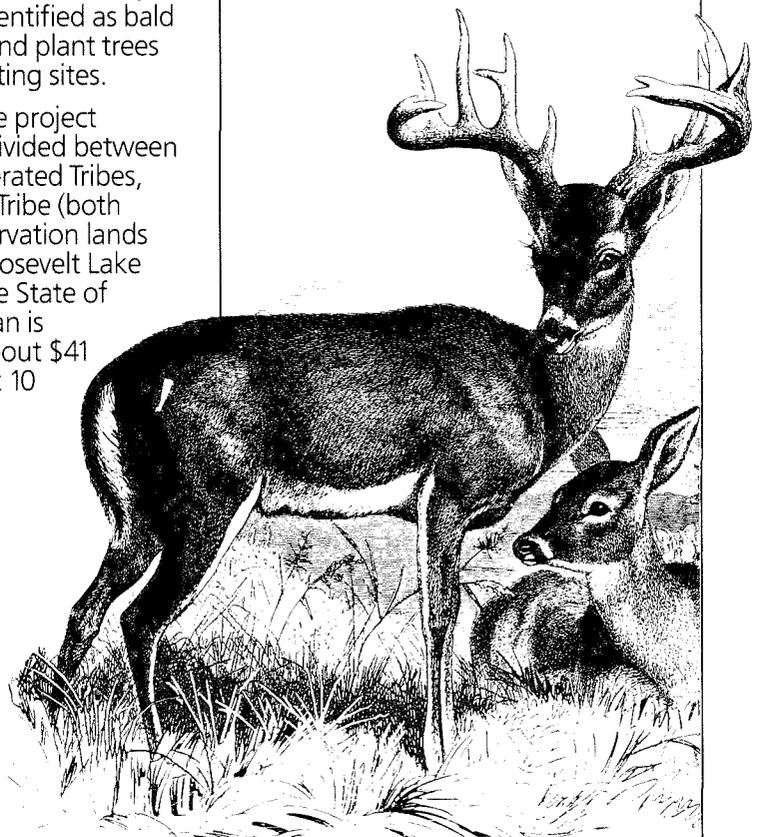
The Grand Coulee project benefits would be divided between the Colville Confederated Tribes, the Spokane Indian Tribe (both tribes lost huge reservation lands when Franklin D. Roosevelt Lake was created) and the State of Washington. The plan is estimated to cost about \$41 million over the next 10

years, plus annual maintenance costs of about \$1.5 million.

Drafts of the proposal were distributed among concerned parties, and the final plan incorporates the comment received and responses to that comment.

Once final mitigation plans are produced, they are submitted to the Council for review and approval. In public meetings, the plans are described and discussion of the merits and weaknesses of each plan are encouraged. Before the plans are implemented the Council will open the fish and wildlife program so it can be amended to incorporate the new measures.

In the case of the plans currently before the Council, Council staff is recommending that they be consolidated into one briefing paper to be reviewed in a single fish and wildlife program amendment process. It is expected that the issue paper will address the pending mitigation plans and the question of whether a wildlife mitigation policy may be needed to guide decisions on these and future plans. This issue paper is expected to be released in the summer with a Council decision regarding the amendment procedure expected in the fall.



RALPH CAVANAGH

In the public interest field, where the strength of one's argument must frequently overcome a lack of funding, the articulate Ralph Cavanagh stands out. As senior staff attorney and Northwest Energy Project director for the Natural Resources Defense Council (NRDC), he is considered the undisputed leading voice of the environmentalist position in Northwest energy circles.

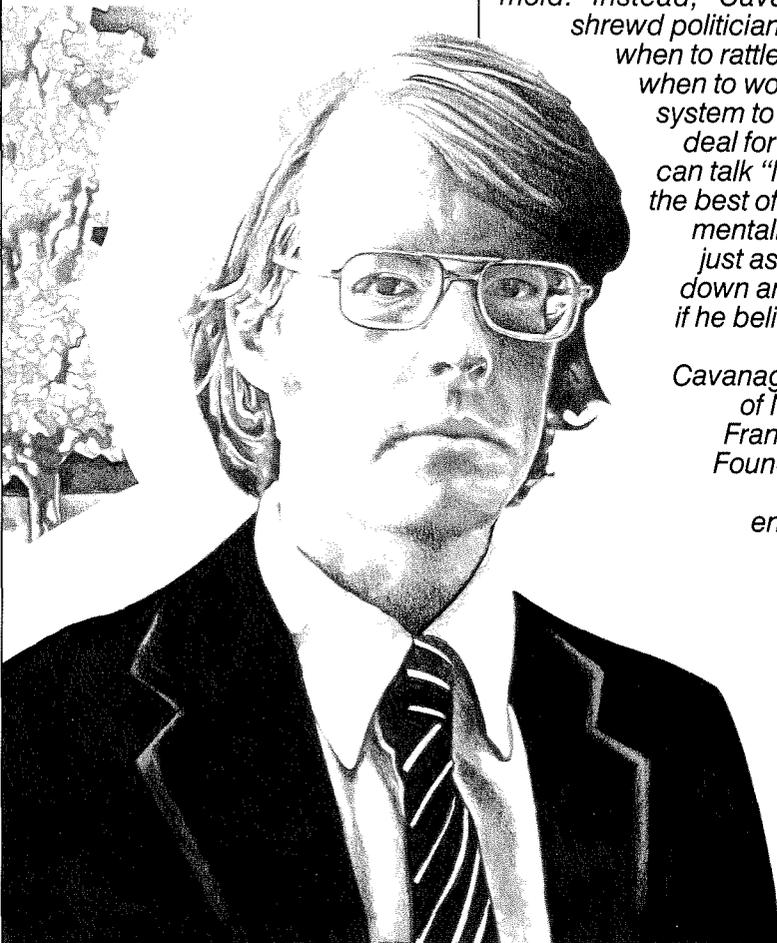
Cavanagh appears equally comfortable and respected—though perhaps not equally embraced—whether talking with fellow environmentalists or with utility executives. One secret of Cavanagh's bilateral acceptance is his ability to compromise—although he might call it “building a consensus.” Despite a tendency to collar-length hair, he is no radical do-or-die crusader in the “Sixties” mold. Instead, Cavanagh is a shrewd politician who knows when to rattle sabers and when to work within the system to get the best deal for his side. He can talk “lawsuit” with the best of the environmentalists, but he's just as willing to sit down and negotiate if he believes he can get results. Cavanagh works out of NRDC's San Francisco office. Founded in 1970, this national environmental

organization also has offices in New York and Washington, D.C. Approximately 4,000 of NRDC's 77,000 members and contributors live in the Northwest, and the Northwest Energy Project is the organization's oldest regional project. Cavanagh suspects the region has loomed disproportionately large in NRDC's “institutional consciousness” because four of the original founders were Oregonians.

A New Englander by birth (New Hampshire), Cavanagh attended Yale as both an undergraduate and graduate student, receiving a law degree in 1977. After a stint with the U.S. Department of Justice, he joined the NRDC staff in 1979. He has taught energy law at both the Harvard and Stanford law schools, and is a member of the Energy Engineering Board of the National Academy of Sciences. He is married to a Stanford Law School professor, which explains, he says, why he doesn't live in the Northwest.

Q. As the Northwest Power Act was being developed, the environmentalists' coalition was the only group really opposed to it. Why was that and what happened to change that opposition, assuming that attitude did change?

The opposition of the environmental coalition reflected a concern that the primary impact of the Act would be to break down barriers to the construction of



more large-scale coal and nuclear plants in the Northwest. I will freely acknowledge that in the final analysis those concerns proved to be misplaced. The concerns were very real at the time.

It's important to remember that at the time the Act was being debated, the Northwest was in the middle of a nuclear power construction program unrivaled in North America. It was also building a number of coal-fired plants, and there's no question that the agenda of many of those who supported the bill included what they perceived as the opportunity to speed up construction of such facilities.

Now, the parts of the Act that speak to that agenda have never been used. But they accounted for much of the opposition of the environmental community.

Many of those who supported the Act saw the conservation provisions as lip-service that would never amount to very much.

Q. Is the concern at rest now because the electricity surplus has put a hold on acquisition?

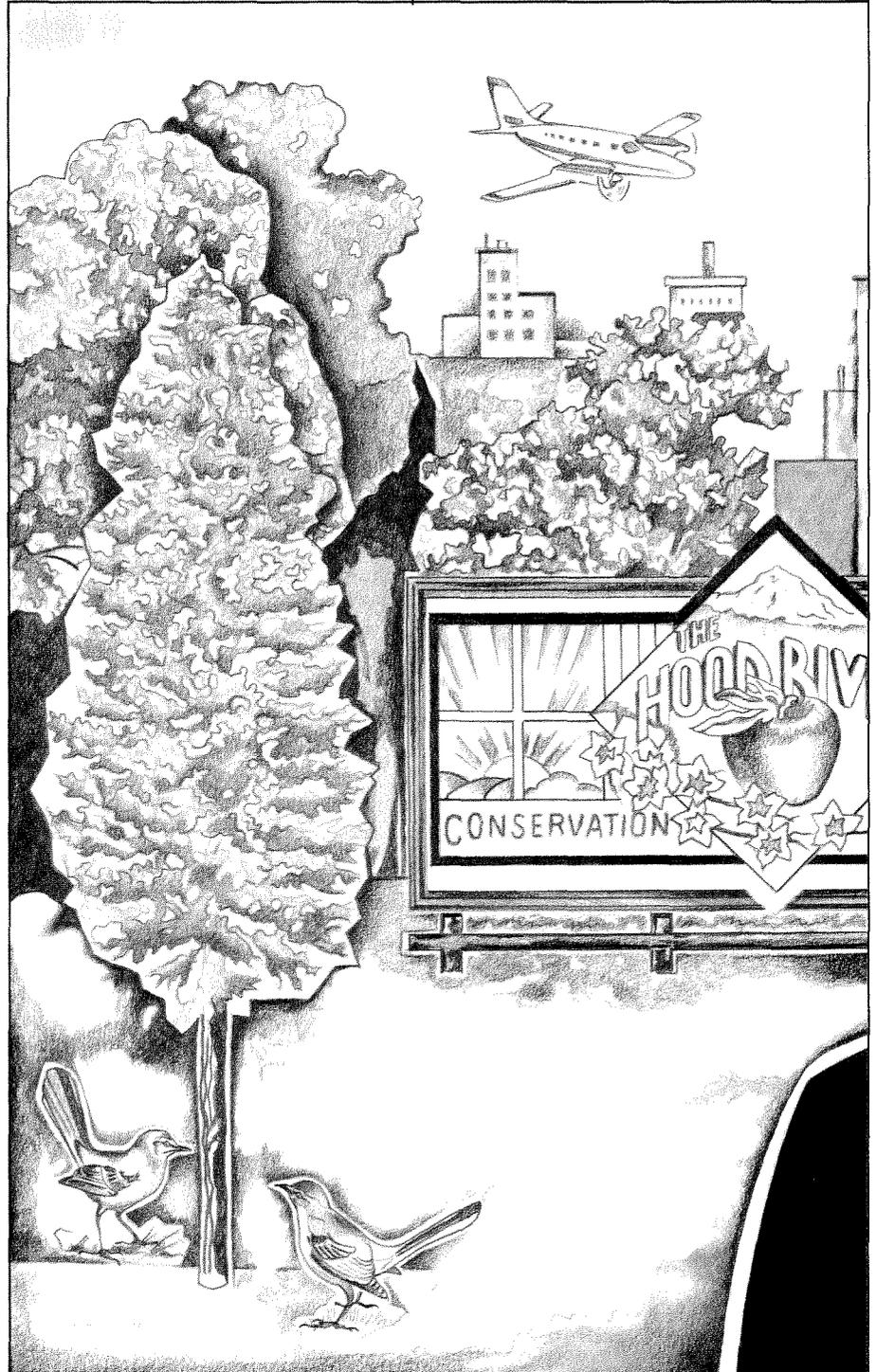
That's not the primary reason. Environmental groups feared initially that the Council would be captured by the Northwest utility community and would be turned into an instrument of that utility community's power plant construction agenda. Since the Act was passed, the Northwest utility community has changed, and the Council has proved to be a very independent and creative force in the Northwest. Environmental groups couldn't be sure of this development before the Council even existed, but it has been a very pleasant surprise for all of us.

The reason that the region didn't embark on a power plant construction binge wasn't so much because of the surplus, which only became evident several

years after the Act was passed. I think it was rather that the Council quickly came to appreciate and understand the case for cost-effective conservation as an alternative to power plants. The Act helped put a number of mechanisms in place that really got conservation going. Again, the reason we didn't expect that at the beginning was that most of those who supported the Act dismissed conservation as a contributor to the Northwest's energy

future. I think it's fair to say that many of those who supported the Act saw the Act's conservation provisions essentially as lip-service that would never amount to very much. They probably have been as surprised as anyone with what's happened.

Q. You've been an observer throughout of the Council's tenure. How has the Council changed, and have the new personalities coming into the Council changed it, either in quality, flavor or direction?



There obviously has been a transition from a body whose major focus was creating the regional energy plan to a body whose focus is making it work. We've gone from creation to implementation. The challenges facing the Council have changed, even over the course of such a brief lifetime. You can look back at the initial years when you were coming to grips with the analytical question of how do you create a 20-year, least-cost power plan. That was an enormous challenge.

The Council was really the first body in North America that confronted and solved that problem convincingly. Everyone else has benefited from the agonizing work that the Council and its staff did over that time. That's a period that tracks roughly from 1981 to 1983.

Then, to some extent, there's a transition from 1983 to 1985, between the first and second plans, where there's still a lot of that creative agony, but also the beginning of a move into implementation. Now, I think you're firmly in a pos-

ture of implementation, working things out with Bonneville [Power Administration] and the region's utility community.

Q. Where do you feel that the Council has been the most successful and the least successful?

Well, the plan itself is a triumph in terms of taking these least-cost principles and making them work convincingly and comprehensively and understandably in a document that really has become a model for utilities and planners all over North America. It still has plenty of weaknesses. There are still areas that are incomplete. The Council has done a much better job, for instance, on residential sector conservation than it has on commercial sector conservation. But there have been some major analytic achievements that led me and a number of others to nominate the Council for the Tyler Prize, which is the closest thing to a Nobel Prize in the environmental and energy arena.

I think the Council has found it more difficult — as we all have — to move the plan into the field and marshal the dollars for it and get the institutional actors behind it. In part, the Council has been a victim of developments over which it had no possible control, including Bonneville's fiscal crisis, which struck just as a number of the Council's programs were really beginning to work. There's no question that the Bonneville fiscal crisis has been the largest single impediment to getting the Council's work done in a timely and effective manner, but I'm confident that we will overcome that problem.

That's on the energy side. On the fish side, the scorecard won't be complete until we're through the protected areas struggle, which may be the most important decision the Council has yet had to make on fish and wildlife. If the Council can come through that process with a result that accomplishes the goals of the initial proposal without convulsing the region, we'll have achieved something on the fish and wildlife side comparable, I think, to what's been done already on the energy side.



Q. From your perspective, have you seen changes in Bonneville in the last seven years?

Yes, there have been some very positive changes. I have seen the evolution of Bonneville into what I regard as the nation's most accessible public agency. Bonneville has opened up. I think that Bonneville, and in part this is a reflection of interactions with the Council, has become much more open to the principles of least-cost planning, the priority and the promise of conservation.

While the recent fiscal problems have slowed some of that down, I don't think that they've in any way destroyed the very real changes in attitudes and practice over at Bonneville that are some of the most hopeful things that have come out of the last seven years.

The Council gets some of the credit for that. There's no question that Bonneville has learned a lot just in struggling with the Council to refine these concepts and put them into practice.

There's no question that the Bonneville fiscal crisis has been the largest single impediment to getting the Council's work done in a timely and effective manner.

Q. You said earlier that the Northwest utility community isn't the same community it was when the Act passed.

At the time the Act was passed, the Northwest utility community was basically a construction community whose interest was in financing and building large generators. That was the primary focus of management, and that was where most of the opportunities for advancement lay. I think that's largely gone. The typical Northwest utility executive today has no interest whatever in financing or constructing a large-scale power plant.

From my perspective, the shift hasn't been altogether positive in that now the obsession with building large power plants has been replaced with an obsession for marketing and promoting additional electricity consumption. There are certainly some very dangerous aspects of that. But I'm also seeing some hopeful signs in the Northwest utility community in terms of people realizing that, in order to meet their marketing objectives, they're going to have to give conservation and efficiency a very substantial role. I think one of the best illustrations is the agreement NRDC reached with the Pacific Power and Light Company about how to accommodate Pacific's marketing objectives with the Council's plan and the whole thrust toward efficiency and minimizing future resource needs.

Q. You are in touch with energy planners throughout the rest of the nation. How does the Northwest compare, for example, in least-cost planning?

The Northwest is the model. The Northwest is the starting place for all of those discussions. For somebody who has watched this process evolve now over almost nine years, that's really extraordinary. Nine years ago the Northwest would have ranked near the bottom of any list on all those issues you're capturing with the phrase "least-cost planning." The Northwest has vaulted to the head of the class, in very substantial measure due to the Council.

Q. What other areas of the country are looking at least-cost energy planning?

Right now the stakes are highest in New England. For anyone with some historical memory, that region looks a lot like the Northwest did back in 1978 and 1979.

New England perceives itself on the verge of major supply problems. They've had several days recently where they've had to seek voluntary curtailment. They are casting about desperately for ways to provide substantial power supply and, quite frankly, compared to the Northwest their conservation policies are relatively undeveloped.

The typical Northwest utility executive today has no interest whatever in financing or constructing a large-scale power plant.

A counterpart to the Northwest Conservation Act Coalition (NCAC), called the New England Energy Policy Council, has sprung up and is now working to try and apply the Northwest lessons in New England. What they tried initially was a sort of blueprint for a Northwest-style least-cost plan for New England.

Unfortunately, New England has not produced a multi-state agency comparable to the Council, which can look at electricity problems from a regional perspective. You've still got six narrow state perspectives, each viewing a different part of the same elephant and quite understandably not coming up with a very coherent image of the whole. But I'm hopeful that that will change.

More broadly, there are now some 37 states involved in least-cost planning activities that are analogous to what the Council has pioneered. I can assure you that almost everywhere that's going on, the Northwest Power Planning Council's plan is being referred to for guidance on how to proceed. There's no question the Council has created a model and now has the responsibility of making sure that it is kept in good repair.

Q. What do you feel are the key Council-related issues facing the Northwest?

For fish, it's protected areas. For energy, it's Bonneville's long-term intertie access policy [see related story on page 12], which needs to incorporate both environmental and resource planning safeguards. There is at least some progress in that direction, which we must hold and sustain. Also, there's the whole challenge of how to handle the new marketing em-

phasis within the utility sector. How do you integrate that with the Council's plan and objectives?

We need to make a great deal more progress in working with the state utility commissions. The Council's agenda and the utility commissions' agendas are simply not together to the extent that they need to be. I think that WPPSS [Washington Public Power Supply System nuclear plant construction program] is now largely behind us, which is good news because, in its extraordinarily long and messy death, it has used up a lot of the best managerial talent within the regional utility sector. There's more than enough for those people to do now that they can focus on some new challenges.

Q. What is your association's stand on the protected areas issue?

Protected areas is a vehicle for trying to ensure that hydropower development doesn't go on in places where it doesn't belong. It's the first and most promising such classification effort for this region. We've been anticipating this from the Council for years now. The concept emerged soon after the Council's creation, and it's taken us a long time.

My organization's perspective is that once you've dammed a river, you've done something with essentially permanent consequences. At a time when the Northwest itself clearly does not need additional hydropower, one should be erring on the side of caution, if one has to err at all. The longer we wait to establish this classification scheme and to give some clear direction to the Federal Energy Regulatory Commission [which licenses non-federal dams], the greater risk we run that the Council will lose critical fish and wildlife habitat that is essential to meeting the goals that Congress gave you. So, our immediate priority is to get the protected areas program adopted as envisioned in the October 1987 proposal, which encompassed both the Columbia Basin and the out-of-basin areas that have been identified as needing protection. That will be a major priority.

Q. Are we being Pollyannaish about regional cooperation? Can the Northwest's utilities really work together with Bonneville?

You have to keep fighting for it. There are plenty of forces trying to pull the region apart. But, there's some powerful glue that often gets overlooked. For anyone who looks at it objectively, Bonneville is easily the cheapest and most reliable long-term supplier of power available to the region. Utilities are constantly making noises about finding other sources, or going it alone, or breaking away from the region, but that's just a good bargaining ploy for people trying to get Bonneville to make the best deals possible. To anyone who's really taking a hard and responsible look at long-term supply, the Bonneville competitive advantage is palpable and undeniable.

I think that advantage has been buttressed by the Council's own efforts, and here again the state utility commissions can also be invaluable. The fundamentals are there to hold the region together. Certainly we still have an inte-

grated power system; we still have an interconnected set of utilities that have every interest and potential advantage in working together. Our challenge is simply to make them act on that advantage. We are not simply preaching here, we are working within a system that is contoured to favor the goal of the environmental community and the Council, which is regional cooperation and planning to ensure that the regional interest is always paramount.

Q. Bonneville's post-1988 payments for model conservation standards (MCS) for new energy-efficient construction have been controversial. There is talk that Bonneville has a revenue problem and needs to get out of the business of funding the incentives indefinitely. Is this legitimate?

I don't think so. First of all, when people talk about the MCS, they always talk in total dollar terms. Ten or 15 million dollars has been the total annual cost of the program. The critics of these payments seldom look at the cost per



kilowatt-hour saved. I would submit that for someone who is trying to decide whether a resource acquisition program is worth it, and that's what we're talking about here, the cost per kilowatt-hour is critical. Remember, we're dealing with a lost-opportunity resource. Everyone concedes that.

The question then becomes; how much is Bonneville paying to preserve that resource. The answer, by the Council's calculation, is between 7 and 11 mills per kilowatt-hour. Now the notion that this is in any sense an exorbitant price to pay comes hard to me when I see utilities pursuing projects like Cowlitz Falls, at far higher costs per kilowatt-hour, on the argument that, because it's a lost-opportunity resource, it's worth paying more. I agree with that logic, but the MCS is clearly the best deal available at the moment.

Now, as far as Bonneville is concerned, the other question that gets raised is equity. The concern is that Bonneville, in some instances, is helping defray the cost of MCS houses in service territories that aren't buying power from Bonneville. But, if you're not buying power from Bonneville, the maximum amount of reimbursement you get under the current system is 25 percent of your cost. If you divide 7 to 11 mills by four and come up with what Bonneville is actually paying for that part of the region's lost-opportunity resource, we're talking about 2 or 3 mills per kilowatt-hour, and we're talking about paying for that in utility service territories that are legally entitled to demand that the region buy them resources when the surplus disappears. So, looked at in the context of what you're getting and what you're paying, as a Bonneville customer investing in MCS somewhere else, these equity issues largely vanish.

We ought to be focusing on what that resource means to the region and what it's going to cost all of us to replace it if we don't have it. Those numbers dwarf the ones we're talking about here. The additional point I would make on the MCS is that some measure of flexibility is essential, because the amount you need to pay depends in large measure on how well you're doing. Once building prac-

tice is changed and once a substantial number of builders are routinely constructing MCS houses, the cost of compliance will tend towards zero and may even go negative. The need for incentives will be very much less. Conversely, if we're not doing very well and if participation remains something like the current level of 20 percent or so, we're going to need higher incentive payments in order to meet the Council's overall participation goals.

What I think we are craving for is an entity capable of recognizing the need for that flexibility and finding a way to sustain it. I don't know exactly how much we will need to spend on MCS in 1991. We may need a great deal, we may not need anything. What I'm pleading for is the flexibility to be able to go up or down as needed.

I recognize that in advocating that I also need to find ways to help Bonneville increase the flexibility of its budgetary process. Indeed, we have made proposals in that direction, involving, for example, either contingency funds or short-term borrowing authority that would allow Bonneville to unshackle itself from sudden swings in oil and gas prices or aluminum prices, which have had devastating short-term impacts on Bonneville budgets.

We need a way to level those swings out, and, at the present time, Bonneville doesn't have enough flexibility in that regard. Assuming that we can make some progress in that direction, the watchword for MCS funding should be flexibility. Utilities that don't like Bonneville spending so much money on MCS should concentrate on making sure that more of these houses get built, so Bonneville doesn't need to spend as much inducing people to build them.

Q. If you could, how would you change the plan or the program?

I would concentrate, in the plan, on upgrading the model conservation standards for commercial buildings, which lag woefully behind the state-of-the-art. The Council is now in the process of upgrading those commercial standards, so I'm hopeful there. But the

weakest part of the current plan, in terms of capturing all of the cost-effective conservation resources that are out there, is clearly the commercial sector standards. I would also be working to try to get a better understanding of the industrial sector conservation resource, which, I think the Council staff would agree, is still largely a mystery to planners.

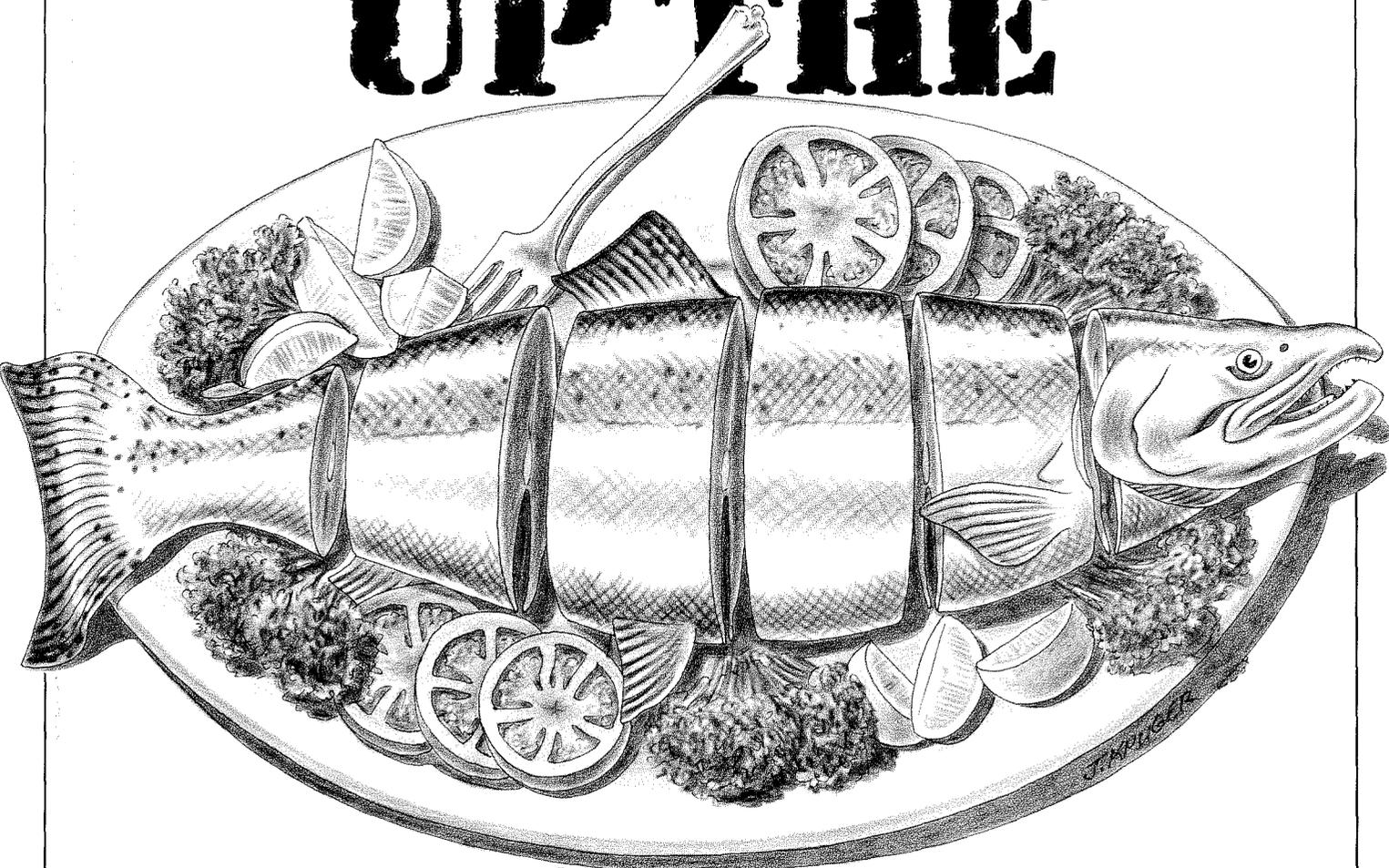
The final thing that I would want to do is attune the plan and the program more to the issues of intertie access and interregional power transfers. The Council has yet to take on many of the new challenges created by the fact that the real geographical boundaries of the Northwest region — for electric power purposes — now encompass the state of California.

Q. Is there something I haven't asked that you would like to speak to?

I think the Council's budget is woefully inadequate. I pointed out last year that the Council is allotted about one-sixth of the California Energy Commission's budget, to do a job which is at least as demanding and difficult as that of the Commission.

I'd offer one final point about what I regard as one of this institution's unique strengths. I generally have the greatest admiration and respect for the Council membership, but the relatively high turnover in recent years could have created substantial problems. A cohesive and enduring force, which I think has made an enormous difference to the Council's contribution, has been the staff of the organization. The Council's staff has developed skills that are immensely valuable to the entire utility industry of North America, and the Council is to be commended for assembling and holding a group that the entire industry years to raid. The achievements of that staff, in terms of the plan and program and their international influence, really are extraordinary and speak for themselves. I want to close by acknowledging as much.

CARVING UP FISH



CATCH

by Carlotta Collette

Commercial fishing for salmon and steelhead in the Pacific Northwest isn't what it used to be, according to the "old timers." "When I was a kid, you could make a living just fishing in the Columbia," says gillnetter Kent Martin. "Now most of us have to go up to Alaska to fish for summer and spring runs we used to catch in the river."

Ocean trollers have a similar problem. "North of Cape Falcon

[on the Oregon Coast] we were restricted to seven days' fishing in May and two in July last year," complains Bob Haindel, who makes his living trolling for coho and chinook. Haindel and many of his colleagues head south to California to reap their harvests in the open-season fisheries that run from May 1 through September 31.

Sport fishing's suffering, too. Despite record chinook catches

in 1987, there are still severe limits on some seasons and how many fish can be taken by any individual angler.

Some people blame the Indians, who have taken to court their treaty-based claims to an equal share of the fish — and won. Some trollers accuse the well-organized sport fishing community of gaining the advantage over the merchant fishers. Even between gillnetters and

trollers there are verbal skirmishes that testify to the frustration on all sides. And in the middle of the dispute there are the fishery managers, representatives from the states and the Indian tribes, who must set the seasons that limit the catch of the Northwest's famed salmon and steelhead.

No one seems to envy the regulators. They must balance the practical day-to-day need for the fish as a valuable commodity — reportedly worth hundreds of millions of dollars in the region — with the longer-term necessity of rebuilding declining fish runs. Their job is made all the more difficult by the fact that several strains of salmon and steelhead school together in the ocean and return in overlapping shifts to the Columbia to migrate upriver and spawn.

This blending of fish with different heritages — some raised in hatcheries and others that are considered more or less wild — makes for what is called a "mixed-stock" fishery. The mixed-stock fishery confounds efforts to protect certain runs of fish that may have genetic characteristics scientists believe must be preserved if salmon and steelhead runs are to endure for future generations. Even when runs of some stronger stocks are excellent, the smaller runs of certain stocks among them must be guarded. So fisheries managers limit the overall number of fish that can be taken, and seasons are closed when quotas of the most precarious stocks are met.

Haindel calls it "an almost impossible situation. They are trying to meet all the various needs in a very complex fishery."

Martin agrees. To make his gillnet operation pay, he has to fish spring and summer runs in Bristol Bay, Alaska. "We've been sitting on the beach for years to protect the Columbia's spring runs," he says. But he acknowledges the need to curtail harvests

"We need to shape the fishery now in order to provide a diversity of stocks and runs for the future."

of less numerous stocks in order to preserve the genetic diversity of the total runs. "Diseases wipe out hatchery stocks from time to time," he says. "We won't have any wild stocks left if we don't protect what we have," he reasons, "and there's no future for anyone's fishery without them."

The Columbia River fishery has a history of harvest controls designed to protect the river's legendary runs. Since 1918, fishing seasons in the river have been cooperatively set by the states of Oregon and Washington through an agreement called the Columbia River Compact. But inriver harvest management alone has not prevented the decline of these runs.

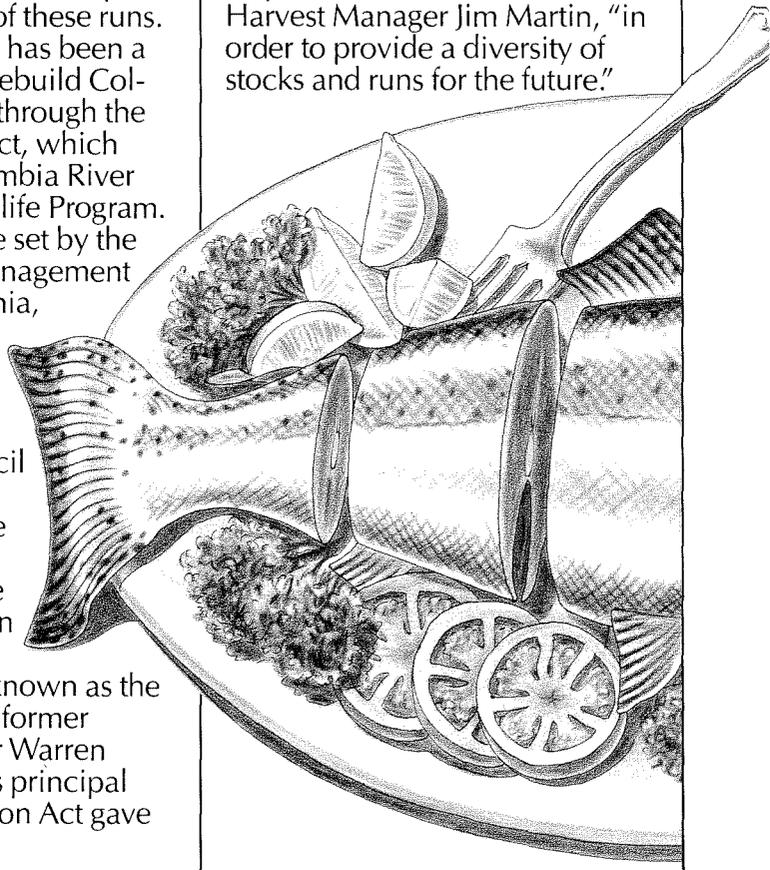
Since 1980, there has been a concerted effort to rebuild Columbia River stocks through the Northwest Power Act, which mandated the Columbia River Basin Fish and Wildlife Program.

Seasons at sea are set by the Pacific Fisheries Management Council (off California, Oregon and Washington) and the North Pacific Fisheries Management Council (off Alaska). Both of these councils came into being after Congress passed the Fishery Conservation and Management Act of 1976, better known as the Magnuson Act after former Washington Senator Warren Magnuson, the Act's principal author. The Magnuson Act gave

the federal government responsibility for managing the ocean fishery between three and 200 miles off the U.S. coastline. Ocean fishing seasons have been cut almost in half by these two regulatory councils. Each state manages its own inshore fishery.

Further control of the harvests was the goal and the result of the 1985 signing of the U.S./Canada Pacific Salmon Treaty. Through this treaty, specific limits are set on the number of Columbia River salmon and steelhead that can be caught in Alaskan and Canadian waters.

While planning for the coming fishing season is year-round, it is especially intense from December until the decisions are made, usually only days or weeks before the actual opening of the season. The complexity comes into play when all of the regulating bodies and the needs of each of the benefiting groups are weighed against the short-term and long-term plans for the fishery. "We need to shape the fishery now," says Oregon Department of Fish and Wildlife Harvest Manager Jim Martin, "in order to provide a diversity of stocks and runs for the future."



Martin's 20-years' experience in fishery management serves him well as he reviews reports on the previous season's catches and the number of salmon and steelhead that made it back up the Columbia to spawn (called the "escapement"). These post-season reports are compared with the coming year's pre-season expectations and reports documenting the many activities aimed at enhancing the fisheries and increasing salmon and steelhead populations.

By pulling together last year's counts and the coming year's estimates of the numbers of fish, managers have a numerical base for their planning efforts. Then they must begin to balance the number of fish they will allow to be harvested with the number they must let "escape" back up the river to replenish the runs. The escapement figure is key to determining the size of the catch to be divided up.

Because of the need to preserve certain weakened stocks, escapement levels are based on the most threatened but still valuable runs. This trade-off may mean that abundant stocks are underharvested in this generation in order to permit the recovery of other runs for

The outcome of all this apportioning is always a tough compromise, so the process of setting the seasons is done in public meetings.

future generations.

With escapement goals set, the managers begin the arduous task of divvying up the harvestable fish among tribal and non-tribal fishers, commercial enterprises and sport anglers. Indian fishers hold court-approved treaty rights to share half the harvestable fish. Regulators must first take into account the Indian ceremonial or ritual use of the salmon, then the tribal subsistence fishery. The remaining harvestable fish are then allocated to Indian and non-Indian commercial and sport harvests.

The fishery is also divided into an Alaskan/Canadian harvest; Oregon and Washington coastal harvests; and an inriver or terminal harvest. The outcome of all this apportioning is always a tough compromise, so the process of setting the seasons is done in public meetings. There is a strong emphasis on this openness to provide checks and balances to the process.

Nonetheless, the discussions can heat up, and dissatisfied participants may turn to the court system as final arbitrator.

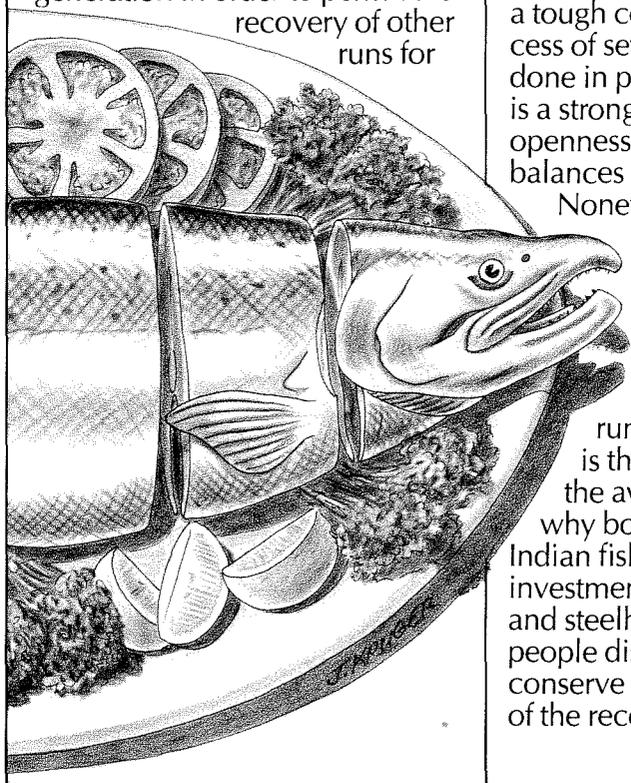
The smaller the total run size, the more volatile is the process of carving up the available catch. That's why both Indian and non-Indian fishers have an enormous investment in rebuilding salmon and steelhead populations. Few people disagree with the need to conserve certain stocks as part of the recovery. But gillnetter

Martin points out that the bigger problem is that some of the runs have been "turbined out of existence" by Columbia River Basin dams. Limiting harvests alone will not enable the Columbia Basin fisheries to recover, he argues.

Despite the fact that the Northwest Power Planning Council does not regulate harvests, the Council does support careful harvest management. But the Council's fish and wildlife program also urges that increased salmon and steelhead production and improved fish survival past hydroelectric dams will be required if salmon and steelhead runs are to be doubled.

Given the need for action in all three areas, the fish and wildlife program outlines a schedule for improving fish bypass facilities at each mainstem Columbia dam. Already, newly installed screens to prevent young fish being drawn into dam turbines have improved the chances of survival at some projects. In addition, a spring release of water from the dams, called the water budget, and timed spills of fish-laden water over the dams help hasten the young salmon and steelhead on their journey — further reducing fish mortalities in the system. On the production side, the Council has established a comprehensive planning effort to determine how runs might be doubled.

The outlook for Columbia River salmon and steelhead has perhaps not been better since the dams went in. But the work of balancing a multitude of interests continues to be extremely delicate. Nonetheless, these cooperative efforts of the states, nations, tribes and organizations, and the many individuals who share an interest in the Pacific salmon fishery are beginning to pay off.



FAST FOOD TAKES

CONSERVATION IN RESTAURANT DESIGN

by Jim Erickson
Washington State Energy Office

In the town of North Bend, Washington, where snow-capped peaks of the Cascade Mountain Range are the community's only skyscrapers, the golden arches of a McDonald's restaurant shine forth like a beacon. This new establishment (number 10,000-plus in McDonald's inter-

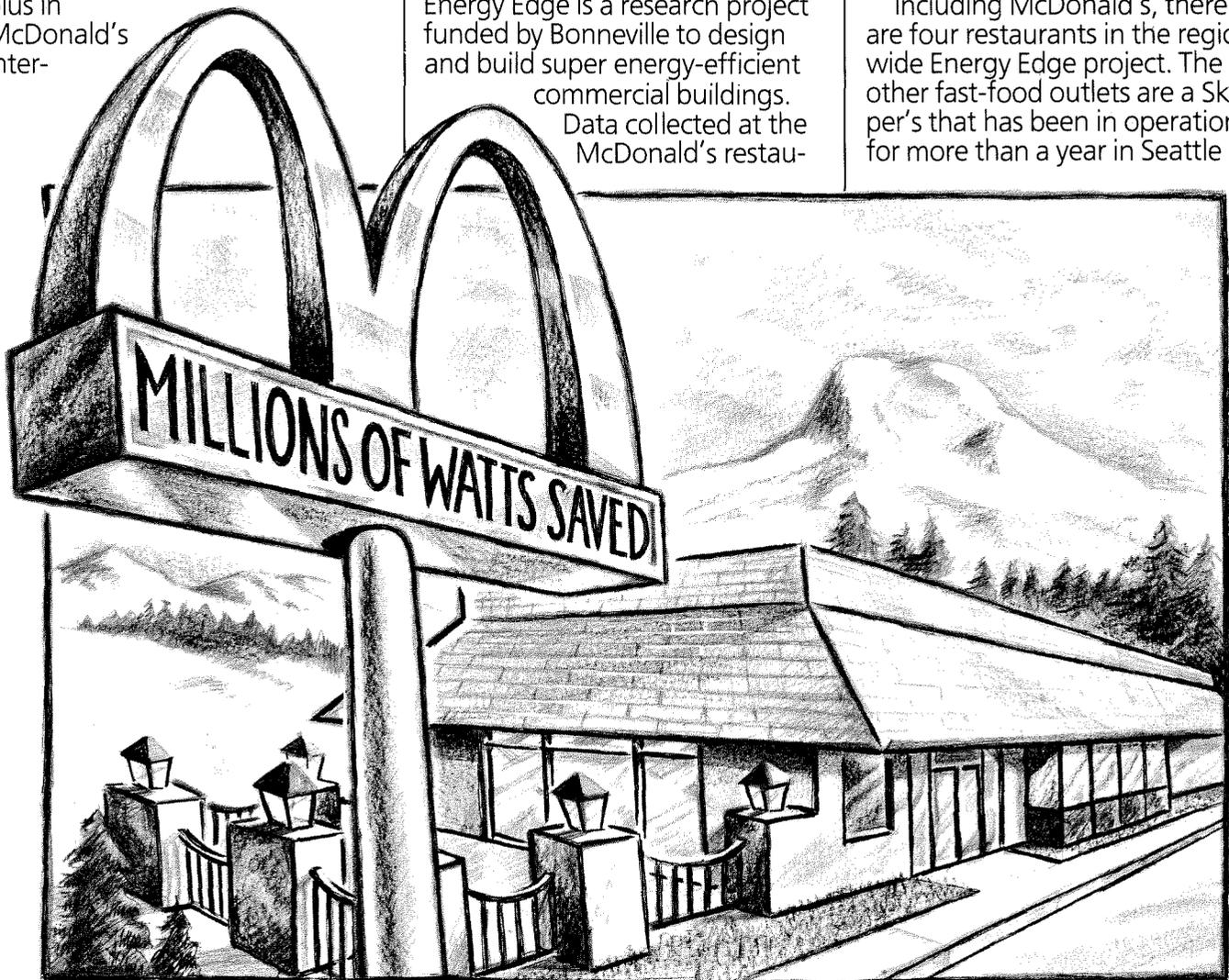
national chain), will help shed light on the virtues of energy efficiency.

Awarded the Energy Edge by the Washington State Energy Office and the Bonneville Power Administration, this restaurant opened in late 1987 as the most energy-efficient of all McDonald's restaurants. The Energy Edge is a research project funded by Bonneville to design and build super energy-efficient commercial buildings.

Data collected at the McDonald's restau-

rant and at 28 other Energy Edge buildings in the Northwest will be used by Bonneville and the Northwest Power Planning Council to learn more about the costs and benefits of construction that is at least 30 percent more efficient than buildings built to meet model conservation standards set by the Council.

Including McDonald's, there are four restaurants in the region-wide Energy Edge project. The other fast-food outlets are a Skipper's that has been in operation for more than a year in Seattle



SHORTS

Thirty-seven states are either studying or conducting least-cost electrical energy planning, according to a report by the Energy Conservation Coalition. The report, "A Brighter Future: State Actions in Least-Cost Electrical Planning," is intended for use by utility regulators, legislators and electrical consumers. It explores the problems as well as the benefits of counting energy efficiency as a resource, when planning for future electrical energy needs. (For copies: Energy Conservation Coalition, 1525 New Hampshire Ave. N.W., Washington, D.C. 20036, 202-745-4874.)

Winners of a national energy design competition saved \$2 billion in energy costs in a single year, according to the award's sponsors, the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE). Projects ranged from ones that reduced electricity consumption to those that improved generating efficiency. (For more information: ASHRAE, Ann Taylor Boutwell, 1791 Tullie Circle N.E., Atlanta, Georgia 30329, 404-636-8400.)

Genes from wild Norwegian salmon are being stored in the world's first salmon sperm bank, to preserve the genetic diversity of salmon populations in Norway. Concerns that renegades from the country's extensive salmon farming operations are endangering the wild stocks, both by spreading diseases and by inter-breeding, led to the creation of the sperm bank. (Source: *Pacific Fishing*, 1515 N.W. 51st Street, Seattle, Washington 98107.)

An amendment to the U.S. Constitution guaranteeing environmental quality is being proposed by the National Wildlife Federation, the nation's largest conservation organization. The proposed amendment's draft language calls for "clean and healthy air and water, abundant fish and wildlife resources, conservation of our productive soils, and vigilant stewardship of our public lands." Similar guarantees are already part of the constitutions of eight other countries plus the European Economic Community. (For more information: National Wildlife Federation, 1412 16th Street N.W., Washington, D.C. 20036, 202-637-3742.)

Salmon burgers are "the greatest thing to hit the European market since sliced bread and zip-lock fasteners," according to one United Kingdom-based seafood company representative attending the 1987 world's largest seafood show in West Germany. West Coast U.S. salmon was the hottest selling item at the show, in part because of reductions in Norwegian salmon harvests and in part because of the weakened dollar. West Coast chum salmon is the main ingredient in the burgers. (Source: *Pacific Fishing*, 1515 N.W. 51st Street, Seattle, Washington 98107.)



A Super Good Cents home in Tacoma, Washington, was named "house of the year," by *Country Living* magazine, a Hearst publication. The Carpenter Gothic cottage, a cooperative project of the American Plywood Association, the City of Tacoma Energy Office, and numerous product suppliers, features 19th-century detailing coupled with 20th-century energy efficiency. House plans for the home are available for \$95 from: Country Living Houses, Princeton Plans Press, Box 1735, Sandusky, Ohio 44870, 419-626-9320.

"Efficiency ... now displaces \$250 billion worth of oil, gas, coal, and nuclear power annually in industrial market countries," concludes the "1988 State of the World" report of the Worldwatch Institute. Continuing this energy efficiency may be the only way to resolve some of the major problems facing the world today — war in the Persian Gulf, acid rain, rising carbon dioxide levels and economic crisis — argues the report. "Energy [use] fell ... about 6 percent in Australia and Canada [since 1973] ... 23 percent in the United States ... and 31 percent in Japan," the report noted. (Copies of the report, "State of the World 1988" are available for \$9.95 from: Worldwatch Institute, 1776 Massachusetts Ave. N.W., Washington, D.C. 20036, 202-452-1999.)

U.S. Anglers spent about \$18 billion dollars pursuing their catch in 1985, according to the Sport Fishing Institute. Fifty-nine million Americans spent 988 million days fishing in the same year. Each angler spends an average of \$600 on the hobby every year, reports the Institute. Fishing license sales are also increasing while hunting license sales drop. (Source: *The Tributary*, newsletter of the Western Division of the American Fisheries Society, Box 428, Corvallis, Oregon 97339.)

within two years. Not only is this Skipper's using far less energy than other Skipper's restaurants in the region, but the improved energy efficiency means a reduced need for heating and cooling equipment. For Skipper's management, this means that future restaurants, built similar to the Energy Edge Skipper's, will actually cost less to build.

Skipper's — with more than 200 restaurants in 14 western states and British Columbia — is using this newest site as a prototype for future facilities.

When the Boardwalk Building is finished later this spring on Percival Landing in Olympia, it will include a J. B. Steamers restaurant that will feature three energy-conserving strategies. These are an air-to-air heat recovery system to use waste heat to preheat fresh air for the dining room and lounge areas, a heat pump using Puget Sound as a heat source and heat sink, and devices called "economizers,"

"It's a real step forward when you can utilize energy conservation concepts without sacrificing your commitment to provide customers with a pleasant dining experience."

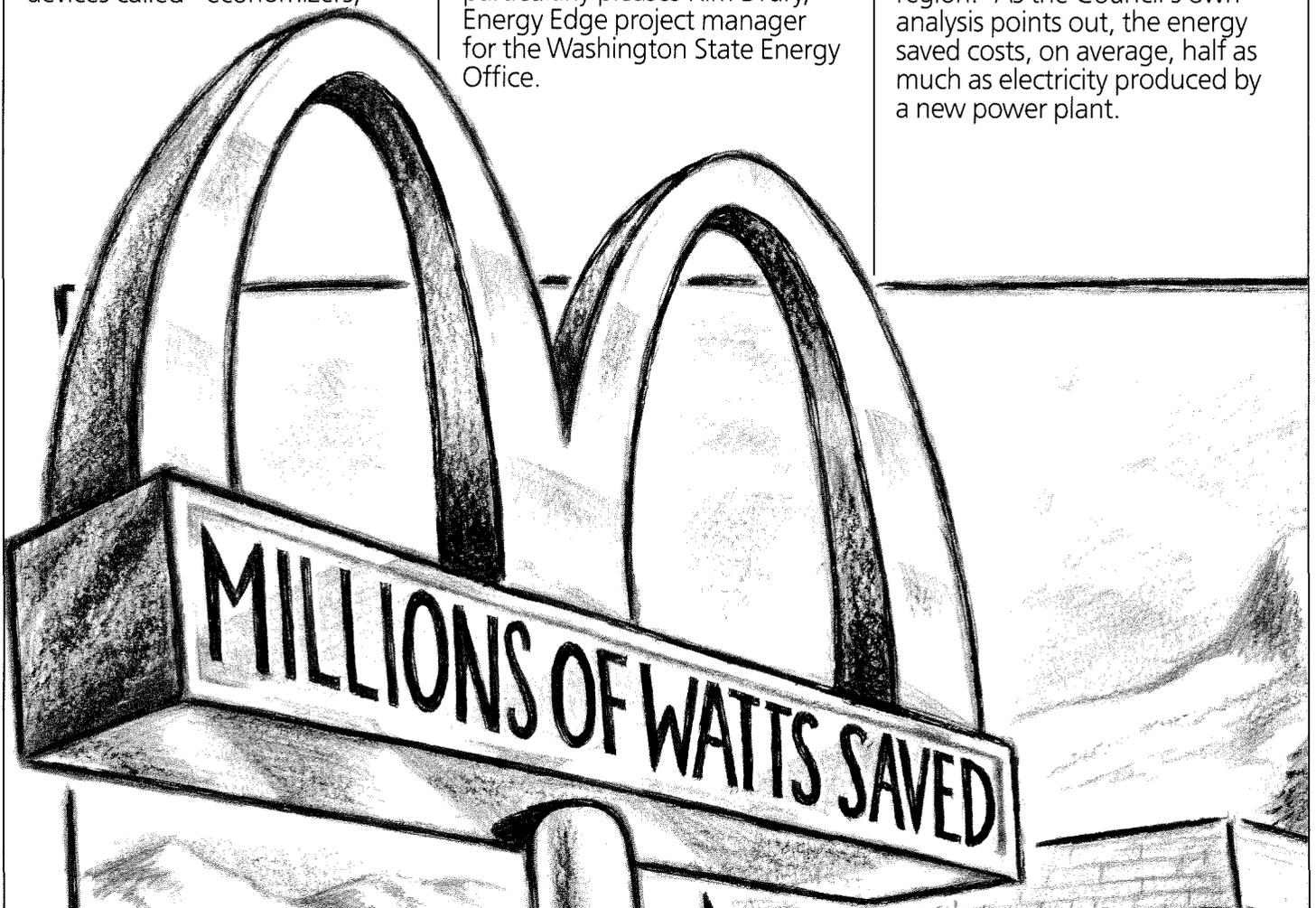
which allow fresh air for cooling during the summer.

The combined efficiency measures will result in estimated energy savings of 120,000 kilowatt-hours a year and a cost savings of \$5,300.

With the fast-food restaurants, results on the buildings' performances come reasonably fast. That's one thing that particularly pleases Kim Drury, Energy Edge project manager for the Washington State Energy Office.

"So many fast-food restaurants are built over the course of a year," says Drury. "With energy efficiency being incorporated in both new and existing buildings, there is a great opportunity to learn how these energy conservation strategies work when applied to real operating conditions. In addition, since fast-food restaurants are also constructed "fast," there is an opportunity to obtain this information sooner than in the standard lengthy design/construction process typical for other types of commercial buildings."

Finally, while energy efficiency proves to be a good deal to building owners, it also pays off for the Northwest's other electricity users. As Tom White, Bonneville's Energy Edge manager, explains, "lower energy costs always make sense to building owners. But energy conservation also allows utilities to better predict electricity loads for all consumers in the region." As the Council's own analysis points out, the energy saved costs, on average, half as much as electricity produced by a new power plant.



Just ask Joseph W. Angel, president of Restaurant Management Northwest, Inc., the Portland-based company that is the largest Burger King franchise west of the Mississippi River, with 26 restaurants in the Portland area and southwest Washington. Burger King operates 6,000 restaurants worldwide.

Angel sees energy management as an essential tool to guarantee significant cost savings and reduced maintenance. He notes that computers can be used to maintain room temperatures and equipment.

"We're very enthusiastic about being in Energy Edge," says Angel. "It's a real step forward when you can utilize energy conservation concepts without sacrificing your commitment to provide customers with a pleasant dining experience." If the results are as expected at the Vancouver

Burger King, he says, the chain is interested in incorporating the design nationwide in the construction of new restaurants and for retrofits of existing stores.

Nancy Benner, project manager from the sponsoring agency, Portland Energy Conservation, Inc., says the energy measures at the planned Burger King store will save an estimated 72,221 kilowatt-hours of energy a year and \$3,611 in annual energy cost savings.

The strategies for this building will primarily cover the building's shell, lighting, and heating, ventilating and air-conditioning system. That is where computer modeling indicated there would be the greatest potential for electric savings at the least cost. The proposed building envelope improvements, for instance, include wall and roof insulation, and construction of entry ves-

tibule to reduce air infiltration. Construction on the Burger King facility began in late January.

At Skipper's Aurora Village restaurant in Seattle, the annual savings of electricity is 74,500 kilowatt-hours and the yearly total energy cost savings amounts to \$3,550. Both figures are close to computer modeled estimates taken prior to the restaurant opening a year ago.

All of the equipment the chain had tested in different restaurants since 1984 was put into this one store, including gas infrared fryers, a heat recovery system that recycles waste heat, and all-fluorescent lighting that allows the restaurant to cut 1.4 watts per square foot of electricity use without affecting intensity of illumination.

The energy-efficient measures installed in this Skipper's will be paid back in energy savings

PAYING FOR CONSERVATION

The Bonneville Power Administration has announced plans to continue payments for both the Super Good Cents and Early Adopter energy conservation programs. These are utility marketing and code adoption programs that help local jurisdictions and utilities meet the requirements of the Council's model conservation standards. The standards set energy-efficiency levels for new electrically heated homes and all new commercial buildings.

The idea behind the standards is that if new buildings are not constructed to be energy efficient now, they will consume electricity inefficiently long after the current electricity surplus is over. But if they are built to be energy efficient, the Council estimates that, with homes alone, depending on future economic growth, 130 megawatts to 790 megawatts of electricity can be saved at costs lower than all of the other possible resources available to the Northwest. If these homes are retrofitted with energy-efficient measures after they are built, the cost will be considerably higher.

To encourage the construction of energy-efficient buildings, the Council and Bonneville have sought the cooperation of utilities, builders, and state and local governments. In some areas the model conservation standards are being adopted in the form of building codes by local governments. Electrical utilities are also promoting them through marketing programs.

Bonneville provides financial assistance to support the Super Good Cents and Early Adopter programs. The agency assumed that these programs would secure 85 percent of the potential savings of the model standards by the end of 1988, and that payments could then end. While there has been great progress, the region has not yet achieved the targeted energy savings goal.

Consequently, Bonneville has announced that in 1989, payment levels will be about the same as they are in 1988, with the possible exception of climate zone 1 (western Oregon and Washington), where payments may be reduced to 80 percent if data indicate that the cost of constructing a house to the standards has been reduced. In future years, payment levels will be tied to market penetration rates. For every 10-percent improvement in the rate the standards are becoming accepted in building practice, payment levels will be reduced by 10 percent.

Bonneville reports it will also continue to maintain a strong emphasis on statewide building codes as the most effective way to achieve the valuable savings of the model standards.

Beginning in 1989, Bonneville will institute cost-sharing for model conservation standards payments in early adopter service territories. Bonneville and the Council will work with utilities, state utility commissions and local governments to facilitate a smooth transition to cost-sharing.

—RLC

AN ENERGY EDGE

and a planned Burger King in Vancouver, Washington. The other is a full-service restaurant, J. B. Steamers, which is under construction as part of Olympia's Boardwalk Building. All except Burger King are projects of the Washington State Energy Office. The Burger King building project is managed by Portland Energy Conservation, Inc.

Energy-efficient restaurants seem to be a prevailing focus throughout the national restaurant industry. As Bob Harrington, assistant director of technical services for the National Restaurant Association, explains, "There's still a lot of interest in energy efficiency, and there are efforts going on to achieve uniform standards for building envelopes and equipment." Furthermore, Jack Gordon, general manager and executive vice president of the Restaurant Association of the state of Washington, asserts, "Restaurant operators are aware of the advantages of power conservation and supportive of energy-efficient measures. They're saving power for tomorrow's generation as well as for operational costs now. And that makes sense."

But the four Energy Edge restaurants go well beyond the industry norm. In McDonald's case, some might suggest the restaurant chain is responding in such a manner because it takes its advertising jingle seriously, "You deserve a break today at McDonald's. We do it all for you."

When the North Bend McDonald's opened, there was a considerable amount of excitement generated throughout McDonald's corporate echelon. That was due partly to the chain's objective of using successes from this state-of-the-art building in the design of future McDonald's restaurants.

At the opening, Washington State Energy Office Director Dick Watson observed, "It was clear from the start that, to McDonald's, energy efficiency means a lot more than keeping the hot side hot and the cold side cold."

Following Watson, Ken Clement, regional vice president for McDonald's, offered his thoughts, "If it's claim to fame we're looking for in North Bend, it's to achieve the energy reduction that we're shooting for, and we're talking about 30 to 40 percent."

Of special interest to McDonald's is the building's performance as a result of the energy-efficient measures. The design of future restaurants depends on the results at the North Bend McDonald's, according to Franklin Tseng, regional construction engineer for the fast-food chain.

"We're the leader in the fast-food industry," Tseng says about the corporation. "We've been working on energy programs for a long time and have analyzed what we've learned. Until this [North Bend restaurant], we never had the chance to test all

of our proven energy strategies in one building. We're very enthusiastic about this project. I hope the results show what the computer modeling showed."

The computer modeling, performed by North American Energy Services of Bellevue, Washington, indicated that the energy saving measures installed at the 4,300-square-foot North Bend restaurant would result in an annual energy savings of 110,000 kilowatt-hours, or an approximate \$4,200 in annual cost savings. Those efficiency measures include a super ventilator for kitchen cooling, an innovative skylight and fluorescent lighting design, photo cells to control exterior lights, improved wall and ceiling insulation, and a heat pump hot water heater.

Doug Medley, engineering services manager for North American Energy Services, is impressed with McDonald's. "The corporation is very energy conscious," insists Medley. "They're sophisticated. They're organized. They not only investigate potential energy conservation for new buildings or retrofits, but they install conservation measures as pilots. Then, they take the end-use field data to determine if there were savings or not. After all that, they approve and implement measures for all their stores."

The other three restaurants in Energy Edge take energy conservation seriously, too.

CALENDAR

April 5-6 — "Hydro Spring Seminar: Environmental Strategies and Planning Techniques" in Seattle, Washington. Sponsored by the Northwest Small Hydroelectric Association with the cooperation of the Northwest Power Planning Council and other organizations. For more information: Northwest Small Hydroelectric Association, P.O. Box 7528, Bend, Oregon 97708.

April 10-14 — The "Solar Energy Conference" in Denver, Colorado. Sponsored by the American Society of Mechanical Engineers. For more information: ASME Meetings Department, 345 E. 47th Street, New York, New York 10017, 212-705-7793.

April 13-14 — Northwest Power Planning Council meeting at the Sheraton Hotel in Missoula, Montana.

May 11-12 — Northwest Power Planning Council meeting in Washington.

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

June 15-17 — "National Low Income Energy Conference and Symposium" at the Hyatt Regency in Milwaukee, Wisconsin. Sponsored by a consortium of utilities, state and local energy assistance programs and non-profit institutions. For more information: Nलिए Conference, 3103 South Street, N.W., Washington, D.C. 20007, 202-337-0858.

June 20-24 — "13th Annual Passive Solar Conference" at Massachusetts Institute of Technology, Cambridge, Massachusetts. For more information: American Solar Energy Society, 2400 Central, Boulder, Colorado 80301, 303-443-3130.

June 27-29 — American Public Power Association's 1988 National Conference in Seattle, Washington. For more information: American Public Power Association, 2301 M Street, N.W., Washington, D.C. 20037, 202-775-8300.

June 29-30 — Northwest Power Planning Council's first annual salmon and steelhead roundtable at the Rippling River Resort near Portland, Oregon.

July 13-14 — Northwest Power Planning Council meeting in Sandpoint, Idaho.

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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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

- 1987 Columbia River Basin Fish and Wildlife Program
- 1986 Northwest Power Plan
- 1987 Northwest Power Planning Council Annual Report
- Staff Issue Paper: Surplus Power In The Pacific Northwest
- Staff Issue Paper: Plans for a Technical Update to the 1986 Power Plan
- Issue Paper on Grand Coulee, Willamette Basin, Palisades, Black Canyon and Anderson Ranch Wildlife Mitigation Plans
- Western Electricity Study briefing papers:
 - Western System Overview
 - Electricity Use in the Western U.S. and Canada
 - Interregional Transactions
 - Existing Generating Resources (draft)
 - Future Resources (draft)
 - Load/Resource Balances (draft)
- Issue Paper on Model Conservation Standards for New Commercial Buildings
- Power Planning Division Work Plan
- Fish and Wildlife Division Work Plan

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- Update!* (public involvement newsletter mailed with the Council meeting agenda)

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