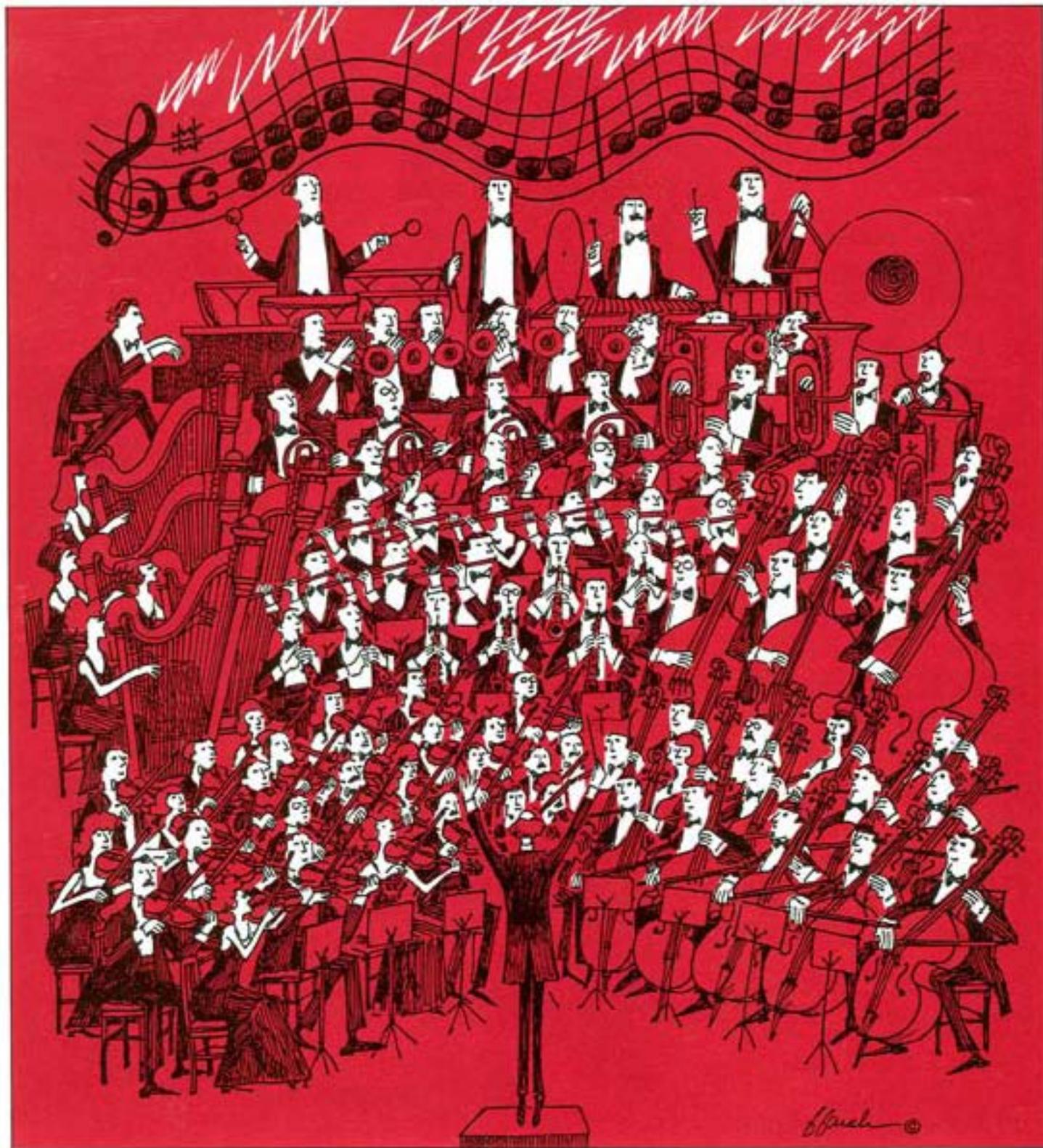


N O R T H W E S T ENERGY NEWS

Volume 5, No. 2

Northwest Power Planning Council

February/March 1986



INSIDE: NEW POWER PLAN ORCHESTRATES REGIONAL HARMONY

Idaho

Northwest Power Planning Council
Statehouse Mail
450 West State
Boise, Idaho 83720
Telephone: 208-334-2956
Council Members:
W. Larry Mills
Robert Saxvik, chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620
Telephone: 406-444-3952
Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
1400 SW Fifth Avenue
Portland, Oregon 97201
Telephone: 503-229-5171
Council Members:
Robert Duncan (nominated)
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101
Telephone: 206-464-6519
Council Members:
Kai Lee, vice chairman
Tom Trulove

Central

Northwest Power Planning Council
850 SW Broadway, Suite 1100
Portland, Oregon 97205
Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1 800 452 2324 in Oregon.)
Executive Director: Edward Sheets
Information Director: Duley Mahar

N O R T H W E S T ENERGY NEWS

is published bi-monthly by Northwest Power Planning Council, 850 SW Broadway, Suite 1100, Portland, Oregon 97205.

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

Executive Editor: Carlotta Collette
Art Director: Stephen Sasser
Assistant Editor: Steve Engel
Special Departments Editor: Ruth Curtis

Editor's Notes

On January 23, 1986, the Northwest Power Planning Council adopted a new Northwest Electric Power and Conservation Plan for the next 20 years. Last fall we ran a special issue of *Energy News* (Volume 4, No. 4) describing the draft of this plan. This issue presents an overview of the final plan, major changes from both the draft and the original 1983 plan, and a summary of key actions to be taken in the near future.

With the adoption of the power plan, much of the activity at the Council will shift back to the Columbia River Basin Fish and Wildlife Program. On February 18, the Council closed the applications process for amendments to the

program. Copies of the proposed amendments will be available in the near future. Use the order form on the back cover of this issue to have a set (this is a multi-volume publication) sent to you.

The Council's staff will be reviewing all applications over the next several months. Public discussions of the proposed changes will be held in each of the four states in the region. The entire process, like that for the power plan, will take one year.

COVER ILLUSTRATION: Frank Farah, a frequent illustrator for this magazine, produced our cover drawing.



INTERVIEW:

Council Chairman Bob Saxvik

by Dulcy Mahar

ROBERT SAXVIK of Idaho, the Northwest Power Planning Council's chairman, is one of the Council's original members. Prior to joining the Council in 1981, Saxvik was chief of staff for Idaho Governor John Evans and vice president and general manager of KBAR radio in Burley, Idaho. Saxvik served three terms in the Idaho State Senate where he was assistant senate minority leader. He was legislative liaison with the governor from 1977 to 1978, and director of the Office of Aging in 1978.

Q. Now that the Council has a few years under its belt—as well as a new power plan—what changes do you see? What has been learned, by the Council and by the region?

We've got the '83 experience of developing the first plan behind us. The 1986 plan builds on that. We've had the advantage of time between the two plans to gain more understanding within the region of what the planning process is all about. I believe we've established a credible base with all the groups involved in that process. Working from that base, the Council will pick issues that we see as beneficial to the regional system.

Specifically, I'm thinking about such things as the West Coast Energy Study, where we sit down with other regions to talk about our mutual needs in power sales and exchanges, and the exploration of nonfirm power and renewables as resources of the future.

I expect the Council to be more focused on specific programs and issues rather than the broad playing field. People have a better idea now of what we mean by "resource development" or "flexible planning" or "optioning." We will have to take the lead in working with various interests to put these concepts into practice.

We have a lot of ideas on the table—options, renewables, non-firm power. Some have general acceptance; some are brand new

areas. But they're all approaches we have to explore. We have to work through these concepts.

Now that the plan is behind us, we'll have the breathing room to take a reasoned look at future resources. The surplus has given us a grace period, but the region will miss the point if it uses the surplus as an excuse not to do anything. We can't waste this time.



Photo by Steve Engel

“I expect the Council to be more focused on specific programs and issues rather than the broad playing field.”

Q. What do you see ahead of the Council in the immediate future?

This will be a major year for fish and wildlife. The fact that you haven't heard the Council talking much about that lately reflects our involvement in the 1986 energy plan. We've just ended a pretty intense year working on the new power plan, so that's obviously very

much on our minds and in our conversation. We are now embarking on an equally intense look at our fish and wildlife program. That topic will be foremost in our minds during this year.

I don't think the issues in fish and wildlife will be new so much as it will be a case of maturing of issues. The priorities are still to help juvenile fish make a safe passage

downstream to the ocean and to get them back upstream again to reproduce. Our new focus is an effort to define the losses, to the extent that's possible, of salmon and steelhead due to hydropower. From there, we'll be looking at goals and objectives that will set the rate-payers' responsibility for enhancing the resource and will define the actions the region needs to take. Later this year, we expect to see results from a study that will help us assess the impacts of potential hydropower development on the



Photos by Ralph Perry and Judith Rafferty

environment, and specifically on fish and wildlife. We expect to designate areas that should be protected from development as a result of this study.

Q. What are your specific priorities as Council chairman?

I think the Council has to take an active role through its public involvement—I know this is an overused word—outreach. It may sound trite, but I firmly believe we have to work in the vineyards. We view public involvement as a mandate. We have an obligation to involve people, and not just wait for them to come to us.

We'll have more time to do field work now. We'll be looking for organizations with committees or interests in fish and wildlife and energy, and we'll be actively trying to get on their agendas. I don't just mean the traditional players, but civic organizations and any groups of citizens who are interested, or who should be interested, in the issues we deal with.

I want to give more attention to private utilities and public utility commissions. By that, I don't mean giving less attention to other players. But the plan stresses the very great regional benefits of cooperation between both public and private utilities. The Action Plan in the first plan only focused on Bonneville and its public utility customers. We didn't pay much attention to some very important players in the region, such as the public utility commissioners or the private utilities. If the plan is going to achieve our goals, we've got to include these groups.

Q. As someone who's been on the Council since its inception, you have a unique perspective. How do you see the Council; what do you want it to be?

I want the Council to be a living, breathing and interacting body. I want it to live up to its public involvement commitment.

“I want the Council to be a living, breathing and interacting body. I want it to live up to its public involvement commitment.”

There's a tendency that when an organization ages, it withdraws into a smaller circle. We have to be alert to prevent this. We've got to keep our eyes and ears open to all sectors.

Providing a regional meeting table for airing a lot of tough issues has served this organization well. The Council has learned a lot from a wide variety of players in the region—utilities, environmentalists, and so on. We need to continue to learn from each other.

I think there's a growing, and possible grudging, recognition that we're open. A lack of communication is the bane of us all. We have inhouse expertise to give to others. There's no benefit to hiding our light under a bushel basket and congratulating ourselves. We have superb analytical work. Unless we can translate that to the region at large, we have no gain.

Q. You are a member of a National Governors Conference Committee that put a bill together to allow other parts of the country to enter into regional arrangements. Where do you see this headed?

I predict that this type of legislation will come to pass. This may sound like pie in the sky, but I've always believed the Council has been a good national model for other regions to take a look at, whether it's energy or other shared resources. The regional concept is an excellent way to find out where common ground exists.

It's not only the Northwest, but the West as a whole, whose lifelines have been resources based in areas of forestry, agriculture, and mining. We have got to recognize limitations on growth in those areas. The West in general must speak as a unit, because it has characteristics that are different from the South and East. We don't need Wall Street telling the nation what the West is about. We need the West telling its own story.

The Council has been asked to serve as part of a network for an economic research center, along with representatives from the private sector, government, and education. It's operating under the aegis of the Western Governors Conference. I am proud that the Council will be serving in an important advisory capacity at the highest level. I believe the West must evaluate its resources and benefits and make a statement, and I believe the Council can make a contribution to that statement.

Q. The Council's relationship with the Bonneville Power Administration has been the subject of some speculation, both privately and in the media. How would you characterize this relationship?

I don't want to get flip and give Bonneville a six or seven on a scale of ten. What I really want to say, though, is that maybe we're past the “creative tension” syndrome. [A phrase Senator Dan Evans, first chairman of the Council, used to describe the relationship.] Human nature dictates that there was bound to be a testing period with anything as dynamic as a four-state Council. We had to shake out the role playing aspect. In the beginning there was a lot of punching in the dark, and it wasted time for both parties.

The questions of how much authority or power the Council has or whether it should be a regulatory body all pass into the dust, if we establish credibility with our product. In both the fish and wildlife and power areas we have made great strides to do just that. The Council tries to keep in mind what's in the best interests of the regional (power) load. The bottom line is the consumer, whether he or she is on the end of a power line or a fishing line.

If Bonneville has the same bottom line, we're going to get along. To the degree that Bonneville has a different agenda, then there is likely to be friction.

My gut feeling is that the relationships have improved over time. But I still see some bumps along the way. It's a classic case of defining a state and federal relationship, and we're still making that definition. Like anything else, there's a human element involved. Still, the relationship between the Council and Bonneville on the rhetoric level is not the same as the day-to-day working relationship between the two, and the latter is the more positive relationship.

Q. What do you see as the future role of the Council?

One cannot forget that our reason for being here was the expressed desire of four Northwest governors to give the Northwest a buy-in to the federal power system. The uniqueness of it is that the Northwest Power Act defined the Council's role. The governors also bought off on that part of the Act—that there was a definite role for the Council.

I never want to see the day that the Council is viewed as a rubber stamp for Bonneville, or anyone else for that matter. Instead, we must continue to give policy direction for energy and fish and wildlife in the Northwest, not only to Bonneville but to the direct service industries, the utilities and, ultimately, the consumers.

Q. What do you consider the Council's major achievements?

I would say the quality and level of information the Council has developed for decision making is one of the biggest contributions it has made to the region. The Council has revolutionized demand forecasting with its range of uncertainty and its unique way of looking at the future and accepting that it is unpredictable. That has given us a realistic basis for dealing with uncertainty. You aren't going to have flexibility in planning if you don't first accept this basic premise that the future is indeed uncertain.

The other equally important contribution the Council has made is its ability to get a lot of people with all sorts of different interests to sit down and talk to each other in an open process. We have taken major decision making out of the board rooms and brought it out into the daylight.

Q. What are your feelings about the proposed buy-out of the Bonneville Power Administration?

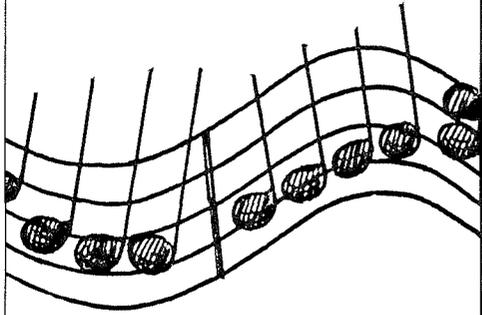
There are two issues here. One is the motivation of the sellers to accelerate the Bonneville repayment schedule to help the federal deficit. On the other hand, from the Northwest point of view, the motivation is to have a say in determining our own energy destiny and keeping electricity rates down. If it is possible that both objectives can be served, then the idea is worth looking at.

At this stage there are a lot more questions than answers. But asking questions isn't necessarily a bad thing. It is always positive to look for ways we in the Northwest can better control our destiny. If this is a vehicle for that sort of discussion, that's positive, regardless of the final determination. I anticipate the Council will be participating in the discussion.

Q. How do you feel about the new Council appointments?

I think the two gubernatorial appointments that are coming on board are very promising. Of course there's an institutional loss [with Roy Hemmingway and Chuck Collins leaving], but I'm encouraged and very heartened by the quality of the new appointments. Both Tom Trulove and Bob Duncan are very publicly oriented, and they have excellent records of service in the public arena. I see this as a real opportunity for institutional growth.

“One cannot forget that our reason for being here was the expressed desire of four Northwest governors to give the Northwest a buy-in to the federal power system.”

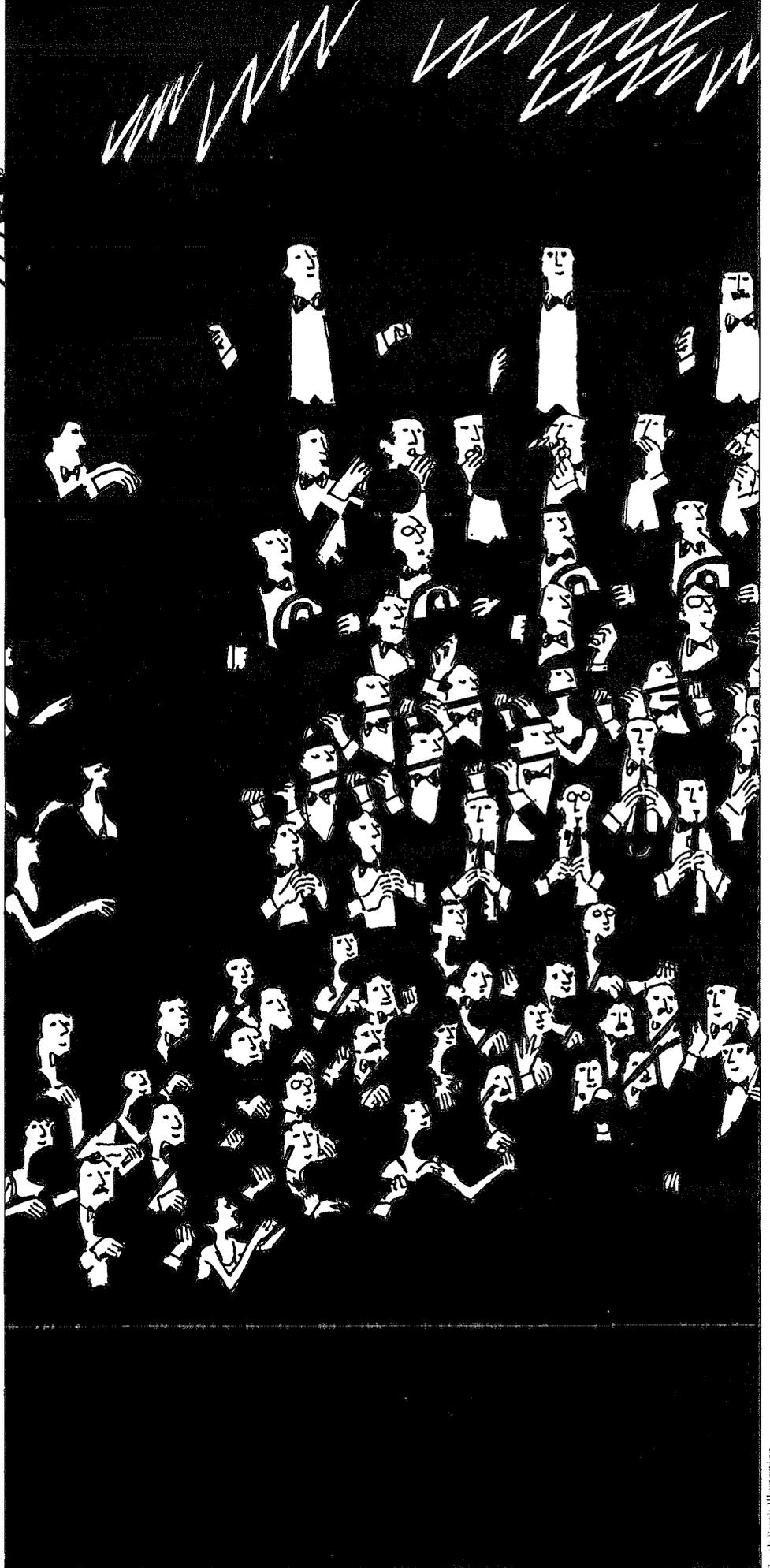


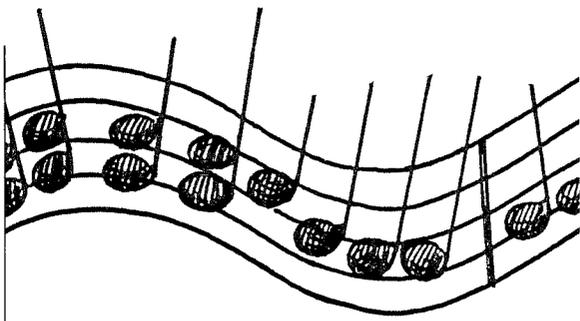
New Power Plan

Orchestrates Regional Harmony

by Dulcy Mahar

Will the Pacific Northwest have enough electrical power over the next 20 years to support a growing economy? And are there ways to ensure that the Northwest's electrical power needs can be met at the lowest cost to the region? The answers depend on what actions the Northwest takes in the very near future, according to the Northwest Power Planning Council. After a year-long public involvement process, the Council adopted its new 1986 Northwest Power Plan on Thursday, January 23.





The plan states, "The status quo is leading the region in a direction that will benefit neither the Northwest's ratepayers nor the Northwest economy. This plan points to a better future, one in which all the region's power institutions cooperate to develop and share the lowest cost resources for the entire Pacific Northwest."

A key theme throughout the plan is cooperation. The new plan calls for an unprecedented level of cooperation among utilities — both publicly and privately-owned — that involves sharing and developing new resources on a regional basis. The Council identifies a \$2.2 billion benefit to the Northwest for such cooperation (see Figure 1). The value of these regional power savings is expected to have a major impact on the Northwest economy in that it will minimize and stabilize future rate increases. The goal is to protect and maintain the Northwest's low-cost electricity, a resource that has drawn business and industry to the region despite the fact that the Northwest is far from major markets.

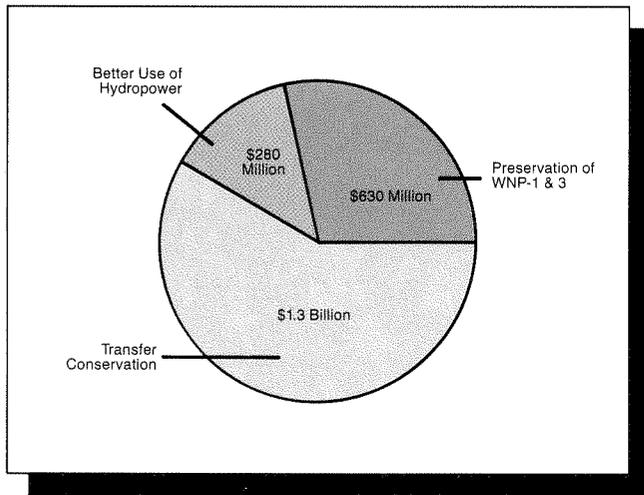


Figure 1
Benefits of Regional Cooperation

Congress requires the Council to review and change its power plan, where necessary, at least every five years. Under the Northwest Power Act, the Bonneville Power Administration is to develop resources in a manner consistent with the Council's plan. The Council adopted its first power plan in April 1983, but decided to develop a new 1986 plan because of major changes in the Northwest in the past three years. These changes, as well as highlights of the plan, are outlined in the following summary. Copies of the entire plan, printed and bound, will be available in March. (See order form on back cover.)

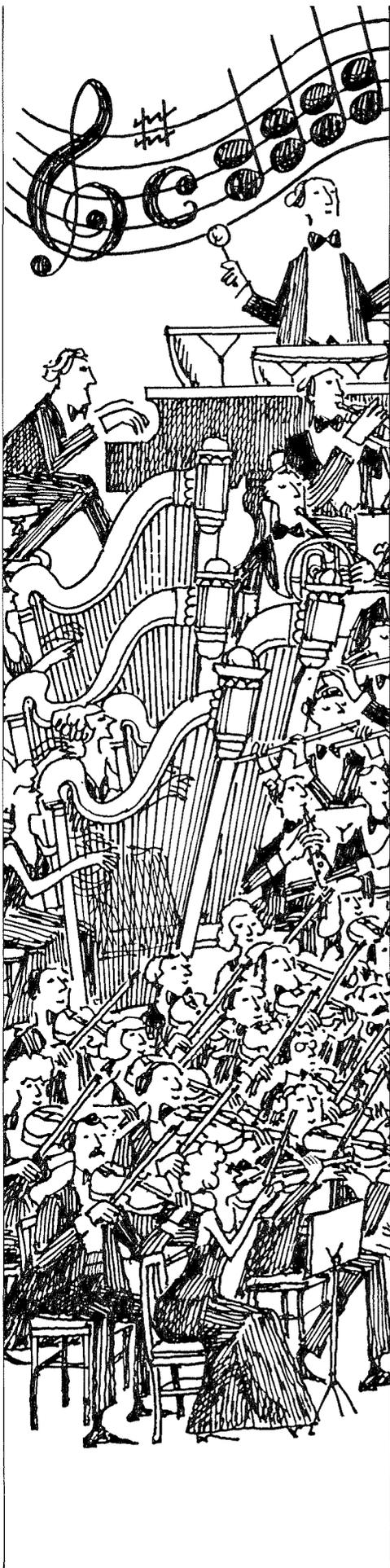
Major changes in the Northwest's electrical power picture

The current surplus of electricity has turned out to be far more expensive than previously anticipated. In the past, any surplus was inexpensive hydropower, which could be sold relatively easily for a profit. Now, the region's surplus electricity includes power from expensive coal and nuclear plants, which is at least 11 times as expensive as electricity from the existing hydropower system. This makes it difficult for the Northwest to recover the costs of producing the surplus. Northwest ratepayers end up paying part or all of the tab for electricity they do not need.

"The status quo is leading the region in a direction that will benefit neither the Northwest's ratepayers nor the Northwest economy."

—1986 Power Plan





Further complicating the picture is the fact that the surplus is not evenly shared. The bulk of it belongs to the publicly-owned utilities served by the Bonneville Power Administration. However, the highest growth areas in the Northwest are in the suburbs surrounding Seattle, Washington, and Portland, Oregon, areas served largely by investor-owned utilities.

If the region remains divided, it faces the prospect of developing far more expensive resources than would be necessary if utilities were to take a cooperative approach. The "worst scenario," the Council notes, is one in which low-cost conservation remains undeveloped in utility areas with surplus electricity, while other utilities turn to much more costly thermal resources.

The \$2.2 billion savings that the Council has identified would accrue over the next 20 years if the region develops resources cooperatively. This involves transferring conservation savings from utilities with surplus power to those with growing power needs, strategies for better use of the existing hydro-power system (see "resource portfolio," below), and a regional effort to preserve two unfinished nuclear plants as potential options that could be used in the event new demand for power grows at a rapid rate.

Adding to the present uncertainty about future electrical energy needs is the fact that the surplus is unpredictable and could dry up quickly if the Northwest were to experience high economic growth. Two specific developments that have particularly increased the uncertainty in the Northwest power picture since the 1983 Power Plan involve the Northwest's aluminum industry and two unfinished nuclear plants in Washington.

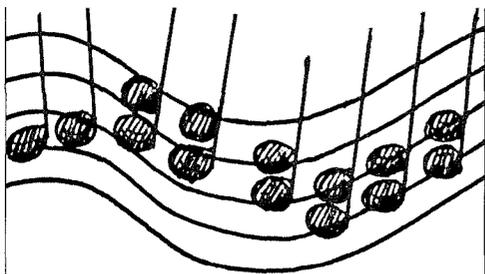
The aluminum industry uses nearly 15 percent of the Northwest's electricity, but because of a depressed market and increased competition from aluminum producers in other parts of the world, some Northwest smelters have shut down or reduced production. How much of the region's aluminum industry will be around in the next 20 years is a major question. The Council has recognized this uncertainty in its planning process.

In addition, construction remains suspended at the Washington Public Power Supply System Nuclear Projects 1 and 3, which the 1983 Power Plan assumed would be completed. While the Council did identify an average value of \$630 million to the region if the plants can be preserved to meet high energy growth, there are questions about whether the litigation and possible difficulties with financing these plants can be resolved so that they can be preserved and completed when needed. Another issue surrounding the plants is the allocation of costs to preserve them. Publicly-owned utilities, which currently bear most of the costs, by and large will not need their power, while investor-owned utilities may. The Council examines these and other issues related to the plants in its new plan. (See story on how the plants are treated in the plan on page 17.)

Priorities of the new power plan

The new plan emphasizes the following priorities. Specific activities to achieve these objectives are outlined in the plan's Action Plan (see page 18).

- **Securing "lost opportunity" resources.** These are cost-effective resources that, if not developed now, could be lost forever to the region. The most prominent example is model conservation standards for new buildings. If buildings are not constructed to be energy efficient now, they will continue to use electricity inefficiently long after the surplus is over.
- **Promoting a stronger regional role for the Bonneville Power Administration.** The Council is calling on Bonneville to take a more aggressive role in forging regional cooperation. The Council particularly points to the need for Bonneville to develop a predictable rate for new resources so that investor-owned utilities will have an incentive to turn to Bonneville for power as an alternative to developing more expensive resources on their own.
- **Developing conservation on a regional basis.** This involves sharing of conservation costs and benefits among utilities.
- **Strategies to make better use of the hydropower system** (see "resource portfolio").
- **Building conservation capability in all sectors.** While there is a current surplus of power, the Council wants conservation programs to be developed and tested so that they can come on line when they are needed.



- Demonstrating the cost effectiveness of renewable resources (wind, geothermal, solar) so they will be available before the region has to build new thermal generating resources.
- Allocating costs of two unfinished nuclear plants and removing barriers to their preservation and completion.
- Studying electrical power sales and purchases between regions.

The Council's planning strategy

The plan includes a forecast range of future electrical power needs in the next 20 years (see Figure 2) and a portfolio of new electrical energy resources to meet those needs. The portfolio of new resources details the types and amounts of resources that will be needed, and provides a schedule for bringing those resources into service to meet the Northwest's growth.

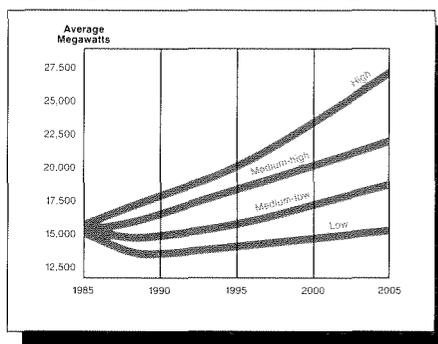


Figure 2
Demand Uncertainty

To minimize the risk of either under- or overbuilding resources, the Council uses a range of forecasts from low to high growth, rather than a single forecast. Because the resources selected are flexible, they can be developed in increments and brought into service at different times, depending on where growth falls within the forecast range. Under the Council's plan, the region should be prepared to meet any change in electrical use over the next 20 years.

At the low end of the forecast range (annual demand growth rate of 0.2 percent, see Figure 3), the region would continue with a power surplus over the next 20 years, and conservation could meet all the region's new electrical energy needs. At the high end of the range (annual demand growth rate of 2.7 percent), the region would consume the surplus by 1990, when it would need new resources.

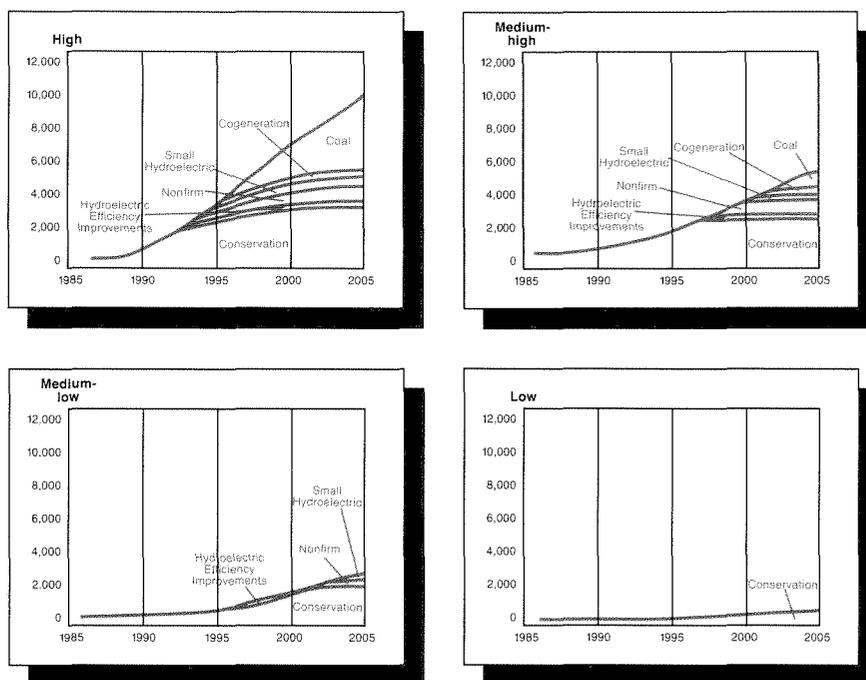


Figure 3
Regional Resource Schedule

The Council is calling on Bonneville to take a more aggressive role in forging regional cooperation.

With extreme high growth, the region could need as many as 12 new coal plants at the end of the 20-year planning period. Where the region falls between these two extremes will depend largely on its economic growth. The range represents an 11,000 megawatt spread between the two extremes. (The city of Seattle uses 1,000 megawatts.)

The Council's power plan places heavy emphasis on managing risk in order to protect the Northwest's energy supply and to reduce the costs to ratepayers. On one extreme, the risk is an inadequate supply of electricity. The risk on the other end of the spectrum is overbuilding thermal resources (coal and nuclear plants) so that ratepayers are paying for expensive electricity they do not need.

The Council's power plan emphasizes energy conservation, flexible resources, and resource "options" to minimize risk. For example, resources that can be developed in increments or resources with shorter lead times to build are preferred because they can match electrical energy needs more closely. The options concept gives energy planners two decision points before they commit huge sums of money to construct a new resource. A resource can be taken through the relatively inexpensive but time-consuming stages of design, siting and licensing, then held in reserve as an option until the need for it is established. When it is needed, construction can begin. If it is not needed, it can be delayed or terminated.

The resource portfolio

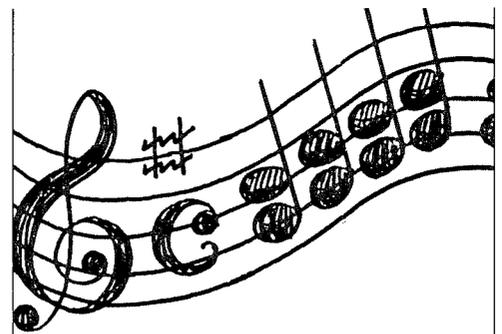
To be included in the portfolio, a resource must be available, reliable, and its environmental impacts must be controllable and acceptable. New resources are brought on line in a specific sequence as the region's power demand grows. The most cost effective are used first and are listed in that order. The megawatt figures following each resource indicate the total amount of that resource the Council has identified as available and reliable in the highest power demand forecast. Lesser amounts of the resource would be used for lower growth in demand.

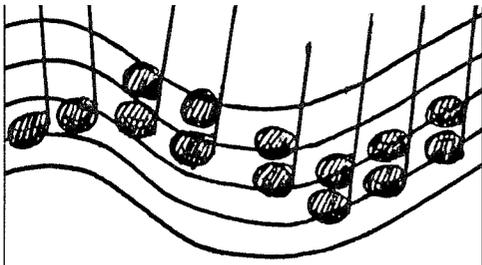
Conservation: 3,900 megawatts — The Council treats conservation as the equivalent of a generating resource because each megawatt of energy saved is a megawatt that need not be produced to serve Northwest electrical power needs. Less conservation is available with lower growth because fewer new buildings are constructed. Conservation is called for in all sectors: residential, commercial, governmental, industrial and agricultural. The model conservation standards for new buildings, if adopted regionwide, would take care of all the region's new electrical power needs if growth falls along the low end of the forecast range.

Better use of the existing hydropower system: 700 megawatts — Energy planners estimate the amount of hydropower available based on an historic low water year (called the critical water standard). The hydropower produced up to the critical water standard is called firm power because it can be counted on. But an average water year produces a third more power, and good water years can nearly double the hydropower available. This additional hydropower is called nonfirm power because it depends on the weather. Currently it is sold, but the income is less than it will cost to build new thermal plants when the Northwest needs more power.

The Council has identified a portion of nonfirm power (700 megawatts) that could be cost effectively "firmed up" (backed up with other power sources) to meet the Northwest's firm power needs. Because the surplus provides time to plan, the Council is calling on the region to explore strategies to expand the use of the Northwest's existing hydropower system, which produces electricity at a fraction of the cost of electricity generated at new thermal plants.

While the Council is not recommending a particular strategy at this time, possibilities include using combustion turbines, short-term power purchases from Canada or other parts of the U.S., or load-management policies to more closely match the region's power loads with the output of the hydropower system.

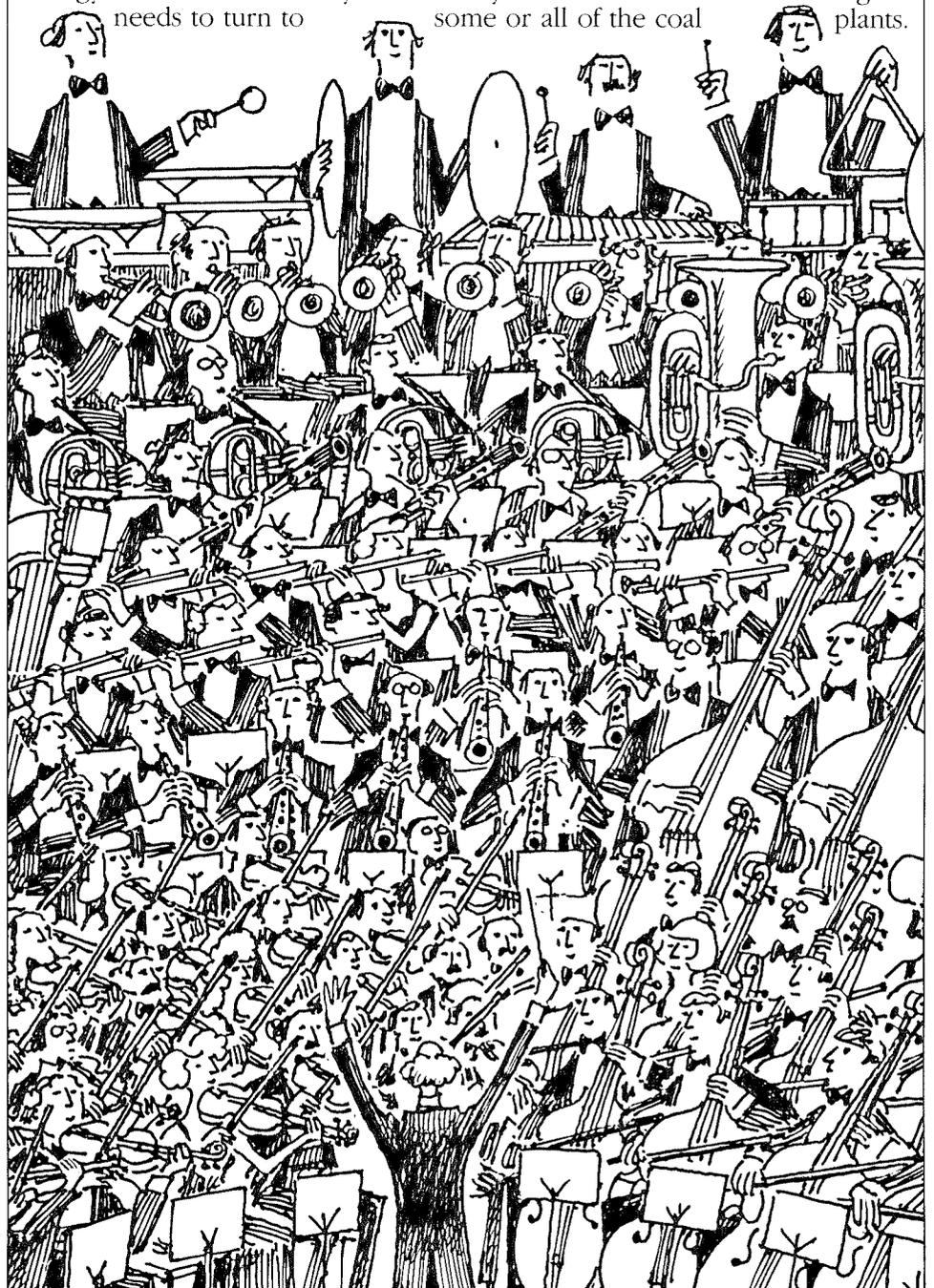




Hydropower: 200 megawatts — The Council has included only new hydropower available through improvements and upgrades at existing hydropower sites. No new sites will be included until the Council completes a detailed study to identify potential hydropower sites and rank their impact on the environment. This study will be used to designate areas that should be protected.

Cogeneration: 320 megawatts — Cogeneration is the simultaneous production of electricity and other useful heat energy from a fuel source. Often, it involves the recovery of “waste” energy from various industrial and commercial applications. This energy is typically used for industrial processes or space heating applications. There is considerable uncertainty over the amount and cost of the cogeneration potential in the region, and the Council based its estimate on a survey of Northwest industrial companies conducted by the Pacific Northwest Utilities Conference Committee.

Coal: 5,425 megawatts (12 plants) — This is the last and most expensive resource to come on line and would be used only if high growth made it necessary. (Using all 12 plants would require unprecedented high growth.) In its plan, the Council calls for intensified research and testing of renewable energy resources so that they can be ready and cost effective before the region needs to turn to some or all of the coal plants.



Changes from the Draft Plan

by Steve Engel

The Council made a number of changes in the 1986 Power Plan as a result of public comment received on the draft plan.

Says Ed Sheets, executive director of the Council, "We've made some valuable discoveries in the course of publicly examining the draft plan. Several numbers changed when we took another look at our assumptions."

Most significant changes from the draft plan concern the cost effectiveness and availability of electrical generating resources. The changes are due primarily to the use of more recent information. Briefly, these changes are as follows:

- Coal-generated electricity is projected to be 20 percent cheaper in the final plan.
- Preserving two nuclear plants has half as much—though still considerable—expected value. This reduction is tied to the lower cost of coal-fired power (see explanation below).
- Only one-third as much nonfirm hydropower can be cost effectively converted to firm power—700 megawatts in the final plan versus 2,000 megawatts in the draft. The new coal price had an impact on the use of combustion turbines in this strategy. (Nonfirm hydropower is energy in excess of guaranteed service and reservoir refill; the amount available varies with rainfall and snowpack. Combustion turbines are small facilities that burn oil or gas to turn electricity-generating turbines.)
- The final plan calls for less new hydropower, recognizing that about 55 megawatts cited in the draft have already been developed.
- Public comment pointed out that less cogeneration will be available if lower economic growth slows industrial activity. Cogeneration uses waste heat from industrial processes to generate or replace electrical energy. The Council has now planned for varying amounts of this resource.

"Good, sound information from the public definitely helped improve the plan."

- The Action Plan (see related story) now specifies expanded efforts to research, develop and demonstrate promising renewable resources. One such action is increased funding by the Bonneville Power Administration to confirm a 100-megawatt geothermal resource.
- The Council raised its estimates of potentially available geothermal energy, and lowered the cost of wind power. Although neither resource is included in the resource portfolio, both moved closer to meeting the cost-effectiveness limits for inclusion.
- The Action Plan now calls for the region to secure an option on a 500-megawatt resource if the regional surplus decreases by 1,000 or more megawatts, averaged annually. Such an option would allow the region to respond more quickly to a large surge in demand for electricity. (Optioning allows a resource to be taken through the time-consuming but relatively inexpensive stages of licensing and design, and then be held until need dictates construction. It reduces the time involved in meeting new electrical demand, and it lowers the risk of committing to a large project before need is established.)
- In response to utility suggestions, the Council ran studies of what would happen if events turn out differently from the plan's basic assumptions. These "sensitivity studies" explore the cost impact if some resources prove less available than supposed, or if different start-up dates and demand levels occur.

"It is possible to make and use plans that have no relationship to the world as it really is," says Council Chairman Bob Saxvik. "The best way to go wrong is to pick one number and ride it to death, without ever examining it. You remember the old forecasting methods that tried to balance all the eggs on a single line."

Among the factors that can separate a plan from reality, according to Saxvik, are "choosing resources on the basis of closed decision making, limited information and narrow interests."

The Council's open process works directly against those kinds of errors, Saxvik argues. He points out that the Council exposes all of its methods, data and conclusions to regionwide critical review. "Good, sound information from the public definitely helped improve the plan."

Interlocking numbers: a case study

To the extent that they are available, reliable and environmentally benign, cheaper resources are used before more expensive ones in the Council's plan. The value of using one resource instead of another is based on a comparison of their costs. In a move that lowered the amount and value of several other resources, the Council reduced its estimate of the cost of coal-generated electricity about 20 percent—from 5.2 cents per kilowatt-hour to about 4.2.

In high growth cases, the region is now projected to need more coal plants, because the plan includes less nonfirm energy than before. In large part, most nonfirm strategies in the draft plan dropped out because they are now more expensive than coal (see below).

These new coal figures have also reduced by half the likely value of preserving two unfinished nuclear plants—Washington Public Power Supply System Nuclear Projects 1

and 3 (WNP-1 and WNP-3). (See related story.)

Coal is the most expensive resource in the Council's resource portfolio; to be included, any resource must cost the same or less. Coal's new price resulted from changes in the assumptions regarding coal plant financing, tax treatment, plant lifetime and the value of out-of-region sales of electricity.

Several utilities noted that coal plant developers would get more favorable borrowing terms than the draft plan assumed, because of the likelihood that Bonneville would back the financing of such projects and acquire their output. Bonneville's involvement would spread

the cost and risk, encouraging less expensive loans.

Tax benefits for coal plants allow developers to defer (avoid) some income taxes on revenues from the project. The draft plan calculated the cost reduction due to these tax terms, but it did not take into account that these savings would also reduce revenue requirements, and would therefore likely keep down electricity rates.

The Council also found that new coal plants could be expected to operate a full 40 years, thus increasing the value of the plants by further lowering the cost of the electricity they produce.

Finally, Bonneville advised that net revenues should be slightly higher than in the draft plan, because California utilities would be willing to pay higher prices in the long run for Northwest power. As a result, Northwest ratepayers would have to pay less of the plants' cost.

The value attributed to the two Washington nuclear plants reflects the difference between the cost of preserving, finishing and operating those plants and the cost of building and operating new coal plants that could generate the same amount of electricity. When the Council reduced its estimates of coal plant

CHANGES IN RESOURCE PORTFOLIO

<u>Resource</u>	<u>1983</u>	<u>Draft</u>	<u>1986</u>
	(average megawatts)		
Conservation (total)	4,790	3,848	3,926
MCS (total)	1,470	1,097	1,190
MCS (residential)	855	622	792
MCS (commercial)	615	396	398
Manufactured Homes	0	40	35
Existing Res. Space Heat	520	402	455
Residential Appliances (a)	865	880	748
Existing Commercial (b)	735	789	802
Existing Industrial	545	530	538
Irrigation	385	155	124
Power System (c)	270	119	144
New Small Hydropower	920	255	200
Cogeneration	500	330	320
Combustion Turbines	1,050	0	0
Nonfirm Strategies	0	1,962	714
Coal (to meet high load)	2,924	4,171 (d)	5,425
TOTAL	16,444	15,596	15,811

NOTES: (a) This number includes water heaters. (b) This number includes governmental buildings. (c) The 1983 number includes only hydropower efficiency improvements, which are not considered conservation under the Northwest Power Act. The 1986 number includes 110 megawatts of hydropower efficiency improvements and 34 megawatts of transmission and distribution efficiency. (d) This figure has been adjusted from the draft for purposes of comparison in this chart and to reflect changes in the assumptions used to arrive at coal's contribution to the portfolio.

costs, it cut in half the price difference, and thus the potential value, of using WNP-1 and 3 to replace coal plants. The expected benefit of preserving WNP-1 and 3 drops from \$1.2 billion, cited in the draft, to \$630 million.

Similarly, the lower price for coal-fired electricity makes combustion turbines comparatively more expensive as a strategy for backing up the reliability of nonfirm hydropower. Although the coal price wasn't the only reason for the drop, only one-third as much nonfirm hydropower is now cost effective for the region.

"Nonfirm" hydropower is so-called because it is not always available. In years of average rainfall and snowpack, the hydropower system

produces 4,100 megawatts of nonfirm electrical energy—energy in excess of what is required to refill the region's reservoirs. Most of it is sold to industries in the Northwest and to California. The 1986 Power Plan includes 714 megawatts of nonfirm hydropower backed up by small combustion turbines. This strategy would make it possible for the region to develop new supplies of reliable power more cheaply than by building new coal plants.

But combustion turbines are expensive to run, and each additional unit that must be fired up costs more than the one before. This occurs because the added unit comes on line only when less hydropower

is available. When less of the inexpensive hydropower is available, the average cost of the strategy increases markedly. This improved use of nonfirm hydropower is cost effective when 80 percent of the energy comes from the falling water. Using all the turbines planned for in the draft would now push the cost of the original strategy above that for coal. The reduced amount of nonfirm in the plan is cost effective.

The draft plan counted on 1,962 megawatts from nonfirm strategies. At 714 megawatts, expected value of nonfirm hydropower is \$175 million, compared to \$1.2 billion in the draft.

: HIGH FORECAST

Conservation (total): The main reason the estimate decreases from 1983 is that the high load forecast is lower in the 1985 draft and 1986 final plan.

MCS: The number of new buildings is assumed to be less than in the 1983 forecast. The level of the standards remains the same as in the 1983 plan. However, the 1986 plan incorporates an amendment to the 1983 plan that provides more flexibility in how the standards may be implemented.

Residential appliances: The lower 1986 figure is due to several things. Hot water heat pumps proved to be less cost effective than originally estimated. However, refrigerator and freezer efficiencies are expected to improve as regional standards come into effect.

Existing residential space heating: The expected savings declined because of updated information on actual performance of measures, and to reflect the lower economic growth forecast, and also because homes weatherized since 1983 are removed from the 1986 potential.

Existing industrial: The Council used a more thorough study, completed since 1983. The study was based on plant managers' estimates for their own facilities.

Power system efficiency: More recent studies and inventories revised the earlier figure.

New small hydropower: The Council estimated all feasible new hydropower in 1983. The current plan includes only energy from adding facilities at existing dams, irrigation canals and flood control channels. Such projects completed since 1983 were removed from the count between draft and final plan.

Cogeneration: More detailed and specific information since 1983 lowered the draft estimate.

Combustion turbines: Combustion turbines were included in the 1983 portfolio as a planning reserve to meet large, unexpected load growth. For the draft and 1986 plans, their operation was once again analyzed, this time as a backup resource for nonfirm hydropower.

Nonfirm strategies: The Council revised its draft estimate of the resource to reflect more complete calculations of cost effectiveness.

Coal: The region could potentially use thousands of megawatts of coal to meet resource requirements under high load conditions; the actual coal energy acquired would depend on the extent to which high loads exceed the supplies of other resources.

The higher price expected for nonfirm power sold to California also lowered somewhat the advantage of investing in its use here. A change in how the Council models hydrosystem operations had the further effect of raising the frequency and thus the cost of using combustion turbines to back up nonfirm energy.

"Combustion turbines are among the most expensive ways to firm up this energy," says Wally Gibson, system analysis and rates manager for the Council. "Other, less expensive back-ups may be available, which would increase the benefits of using this strategy. Imports from Canada and California could do the job. But their availability and price are uncertain right now."

Renewable resources

The final Action Plan outlines increased efforts to research, develop and demonstrate promising renewable resources, such as geothermal, wind and solar. If their costs can be reduced and their reliability proven, these renewables could replace some coal generation in future Council resource portfolios. Some of the environmental problems—and expenses—of coal plants might thus be avoided.

Increased geothermal estimates. The region may be sitting on top of extensive reserves of cost-effective geothermal energy, according to a four-state study completed just before the draft plan was issued. About 4,400 megawatts (equal to the output of nearly ten large coal plants) could be available for less than 4.5 cents per kilowatt-hour. The Council acknowledges this opportunity and is urging the development of programs that would confirm the resource. Until the costs and sites are confirmed, however, the Council will not include this geothermal energy in the 20-year portfolio.

Lower wind costs. Evidence submitted by the Oregon Depart-

ment of Energy during the draft comment period showed that the estimated cost and performance of an actual production wind machine were better than original Council estimates based on a generic machine. As a result, as many as 6,300 megawatts of wind power may presently carry costs within 150 percent of the 4.5 cent per kilowatt-hour upper Council limit.

If their costs can be reduced and their reliability proven, renewables could replace some coal generation in future Council resource portfolios.

Conservation resources

Some conservation measures cost less in the final plan because of the way administrative costs are now applied. In the draft plan, a 20 percent overhead cost was added to every installed measure (to cover accounting, overhead and other management functions of conservation programs). Several commentators—among them, the Natural Resources Defense Council, the Northwest Conservation Act Coalition, and the Bonneville Power Administration—pointed out that roughly the same administrative costs are incurred for any group of measures installed in a structure. Adding more efficient, higher cost measures, such as air-tightening or heat recovery ventilators, doesn't increase administrative costs for any particular conservation program. Therefore, administrative costs now apply to programs as a whole but are not added to the cost of particular measures.

Comment from a number of sources convinced the Council that a program to weatherize existing residences should not be eliminated, even though the cost effectiveness of the program would be limited during a time of surplus. The plan calls instead for the program to operate at the minimum viable level needed to keep alive the staff's skills and the services of the program. The Council emphasized the need to build the capacity for developing conservation in all sectors, including low income and rental housing.

Treatment of WNP-1 and 3

by Carlotta Collette

The Council's 1986 Power Plan includes two unfinished nuclear plants owned by the Washington Public Power Supply System (WNP-1 and 3) as cost-effective potential options. The plan calls on the Bonneville Power Administration to remove the barriers to their preservation and completion. These barriers, however, are currently so substantial that the Council voted to leave the plants out of its resource portfolio, because they were neither reliable nor available. Resources that can be depended upon replace the two plants in the portfolio. (The resource portfolio is the section of the plan that identifies what resources will be needed, in what amounts, and when, to meet future growth in power demand.)

The Council has described the plants as insurance against future power deficits. It would be more expensive to build and operate other new generating resources, such as coal plants, from the ground up, than it would be to complete the nuclear plants, which are approximately 70 percent finished. In its 1985 draft plan, the Council estimated the region could save an

average \$1.2 billion if WNP-1 and 3 could be kept available, and if their energy were needed. In the final 1986 Power Plan, the approximate value of the two plants dropped to an average of \$630 million.

What happened to the nuclear projects between the draft and the final plan is a good case study on the way the Council chooses resources, and the value of public comment.

The Council puts together its portfolio of resources to meet the region's electrical energy needs by comparing the costs and values of all available resources, including conservation, hydropower, other renewable energy sources and thermal generating resources such as coal and nuclear. Coal is the most expensive resource considered and it becomes the outer limit, or marginal resource. Other resources must be more cost effective than coal to make it into the portfolio.

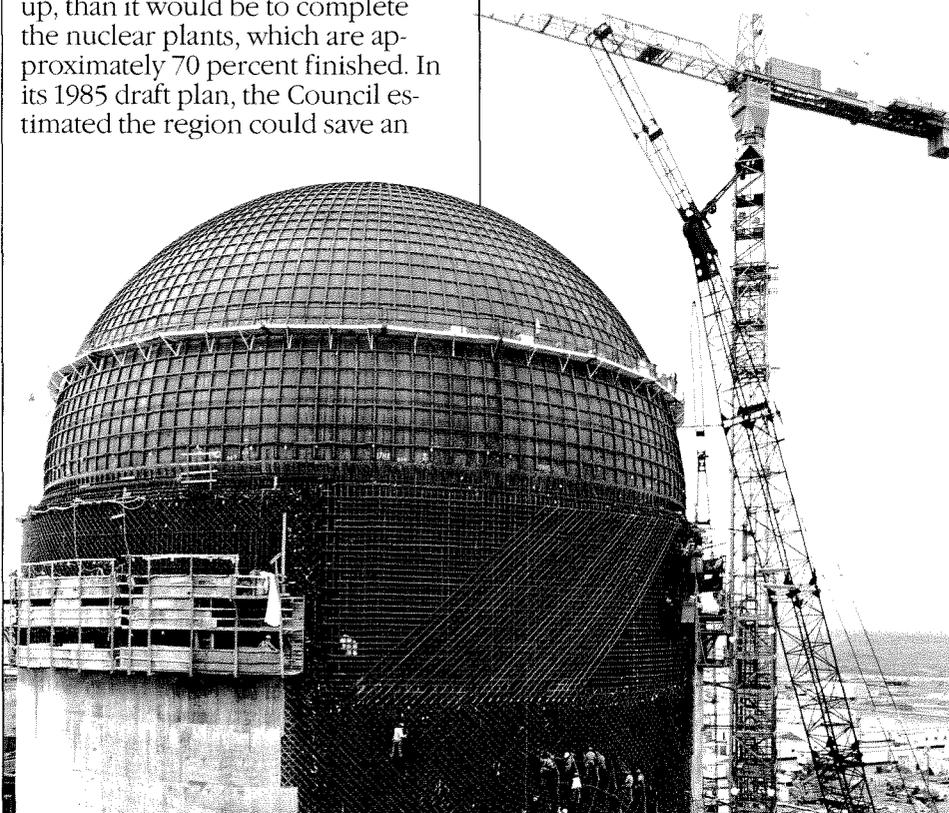
During the public comment period, the Council heard testimony that affected the cost and availability of almost every resource in the portfolio. The most significant change was in the cost estimates for new coal plants.

In response to comments, the Council re-evaluated the assumptions used to calculate the price of coal (see related story, page 13). This caused the price of coal from plants built in the year 2000 to drop from 5.2 cents per kilowatt hour to 4.2 cents. Since the value of the two Supply System nuclear plants is directly related to the value of the highest priced resource in the portfolio—coal—the drop in the coal cost also lowered the average value of the two plants—from \$1.2 billion to \$630 million.

But saying that the two plants will produce a saving of \$630 million if they can be preserved and used does not fully describe the value of the plants to the region. The true value of the plants depends on the level of growth the region can expect to undergo in the next 20 years and the costs of preserving and completing the plants.

The figure \$630 million is an average of hundreds of possible outcomes. Under some of these scenarios, the region's demand for electricity grows rapidly and the plants are needed to displace higher cost new coal plants. In these scenarios, the plants save the region \$1 to \$3 billion, depending on how soon and how many of the plants are needed.

In lower load growth scenarios, neither plant is needed. Under these circumstances, the Council assumed preservation would be at the minimum level provided by the Supply System—\$24 million per year for the two plants. Such preservation for 15 years will cost the region about \$300 million. If the plants are not needed, the region will be out that \$300 million.



The Council based its evaluation of the nuclear projects on the following set of assumptions. *If* preserving the plants costs \$24 million each year, and *if* the plants can be held for up to 15 years and be restarted only when there is expected need for the output from the plants, and *if* the plants perform as well as it is expected they can, then the benefit to the region will be about \$630 million (see Figure 4).

If the costs of preserving the plants go up without a substantial reduction in the costs to complete the plants, their value as potential options drops. Doubling the costs to preserve the plants also doubles the potential liability and consequently the risk involved in keeping the plants.

During the comment period on the draft, the Council was asked to analyze the possibility of setting a specific date for restarting one or both of the power plants. After its analysis, the Council concluded that if preservation is planned with a scheduled, or forced, restart date in 1989, the plants' value to the region would be only about \$100 million. That value remains about the same through 1996 (see Figure 5).

If, on the other hand, the start-up date is allowed to float until the plants are needed, the value of completing one plant (assuming the plant can be preserved up to 15 years) is about \$440 million. The value of the second plant is less than the first, because it is only needed in the highest load growth case. The combined value of the plants, if both are needed, rises to \$630 million.

All of these variables led to the Council decision to leave the plants out of the resource portfolio until and unless they can be shown to be needed to meet regional electrical load growth, and can be cleared of the uncertainties that surround them.

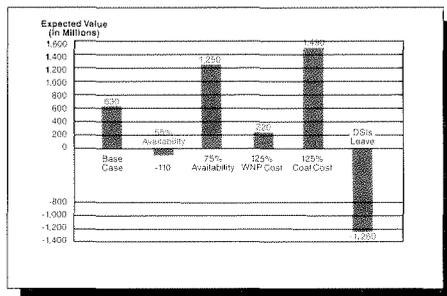


Figure 4
Effects of Variation in
WNP-1 and WNP-3
Planning Assumptions on Value

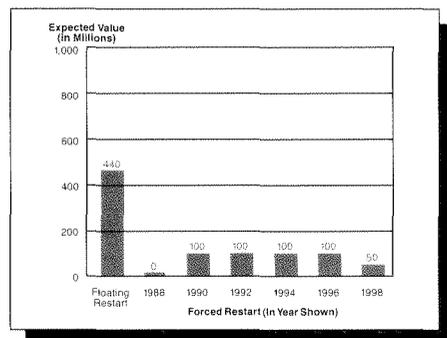


Figure 5
Value of Floating Restart vs. Forced Restart

This Plan Calls for Action

by Jim Nybo

Many people, on seeing the 1986 regional power plan with its forecasts, economic studies and resource portfolios, will ask, "What happens next?" These readers should turn to the Action Plan. It is the easiest section of the plan to find because the page edges are marked to stand out. It may also be the easiest to understand because it sets forth immediate objectives along with activities designed to achieve them.

A flexible process

The 1986 Action Plan differs in two principal ways from the 1983 version. First, it gives much more flexibility to the Bonneville Power Administration. Rather than exhaustively specifying actions to implement the plan, the Action Plan calls on Bonneville to develop detailed work plans to achieve regional objectives. Bonneville has stated it will cooperate with the Council in this process, and will consult with the Council and other interested parties in the region as it develops the work plans.

Emphasis on regional cooperation

Second, the 1986 Action Plan recognizes that many other regional institutions in addition to Bonneville and the Council will need to be involved if the region is to realize the benefits offered by the plan.

Although virtually every person and institution is potentially on the Action Plan list, key actors would certainly include: the Bonneville Power Administration; public utilities; investor-owned (private) utilities; state and local governments (including utility regulatory commissions); and industrial and other utility customers.

As part of the emphasis on cooperation, for the first time there is a special section providing recommendations to the region's utility regulatory commissions and investor-owned utilities. This is a critical component of the strategy to address the power resource imbalance between the public and private utilities.

Dealing with the surplus

The Action Plan sets forth a two-part strategy for dealing with the regional electrical power surplus. First, the Council believes the appropriate regional strategy is not to aggressively acquire those new power resources today that would aggravate the surplus. Second, the Action Plan calls for taking prudent steps to prepare for the time when additional power will be required. Those steps include 1) acting now to capture lost opportunity resources, and 2) developing and maintaining the capability to conserve electricity and develop new power resources, when needed.

Lost opportunity resources are cost-effective resources which, if not purchased today, could be lost forever to the region. The primary example is the model conservation standards, which call for energy saving measures in new residential and commercial structures at the time they are built.

Having the capability to conserve or develop electrical resources means developing and testing programs so they will be available when needed, generally stopping short of actually acquiring the resource. Maintaining existing capability may require operating a functioning program at the minimum level at which that capability can be sustained.

Action Plan highlights

The following are highlights of the course the Council has charted for the electrical power system of the Pacific Northwest.

- Achieve cost-effective energy savings in new residential and commercial buildings through the Council's model conservation standards—as building codes, through utility marketing and financial assistance programs, or through alternatives that achieve equivalent energy savings.

- Reduce the size of the residential weatherization program to the minimum viable level.

- Encourage states to adopt residential appliance efficiency standards for refrigerators, freezers, and hot water heaters.

The Action Plan calls for taking prudent steps to prepare for the time when additional power will be required.

- Continue state and local government programs to implement the regional power plan, including consultation, technical and financial assistance, solar access protection, education and training, and conservation in institutional buildings.

- Develop policies and procedures that will enable the region to secure and exercise options on power resources.

- Develop a process to acquire new resources. That process should be designed to develop cost-effective priority resources, capture lost opportunity resources, and develop the capability to acquire conventional resources. Critical to this process is a clear policy to establish prices the region will pay to acquire new resources, and rates that utilities will be charged to purchase from the new resource pool.

- Expand research and development on renewable resources such as geothermal, wind, and solar power so that they can be available and cost effective before the region has to turn to new thermal power.

- Use access to the federal interstate transmission lines to encourage regional cooperation in achieving the benefits of the plan.

- Develop an agenda for research, development, and demonstration efforts necessary to implement the regional plan.

- Carry out a West Coast Energy Study to explore mutually beneficial cooperative agreements among utilities in the Northwest and in connected regions.

- Encourage the region's public utility commissions and investor-owned utilities to consider actions to aid in developing the most cost-effective resources first, including: capturing lost opportunity resources; developing a consistent avoided cost policy for new resources; building conservation capability in the commercial and industrial sectors; and developing consistent incentive-based programs for efficient new manufactured housing.

In The News

Governors name two to Council

Two new members have been named to the Northwest Power Planning Council. Former U.S. Representative Robert Duncan was named by Oregon Governor Vic Atiyeh to replace Roy Hemmingway.

Tom Trulove, the Council's first member from eastern Washington, was appointed by Governor Booth Gardner to replace Chuck Collins. (Washington recently passed legislation calling for one of its Council members to represent the eastern side of the state, and the other the west side.)

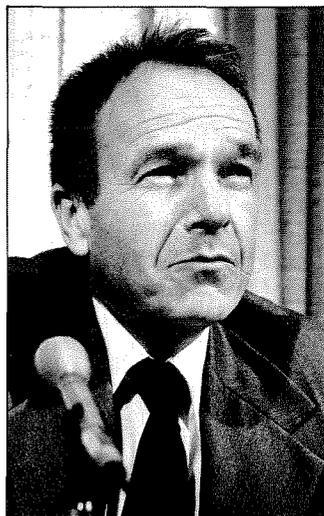
Collins and Hemmingway were charter members of the Council. Collins left to chair the Washington State Board of Higher Education, and Hemmingway, who asked not to be reappointed, announced plans to return to private life.

Duncan served in the U.S. House of Representatives from 1963 to 1967, representing Oregon's Fourth Congressional District, and from 1974 to 1980, representing the Third District.

After retiring from Congress, he became the Washington, D.C. based partner of the Portland law firm of Schwabe, Williamson, Wyatt, Moore and Roberts.

While a member of Congress, Duncan was involved in the legislative activities that culminated in the Northwest Power Act, which authorized the creation of the Council. With his appointment, he says, he's been given "a chance to do what Congressmen

are rarely able to do—to take the words I helped write and actually put them into practice."



Robert Duncan

Duncan is also a longtime friend and frequent ally of John Dingell, the Michigan congressman who was instrumental in adding the fish and wildlife provisions to the Act. Influenced by this friendship, Duncan adds that he is "very interested in seeing that commitments made on the fish and wildlife side of the Council's work are fulfilled."

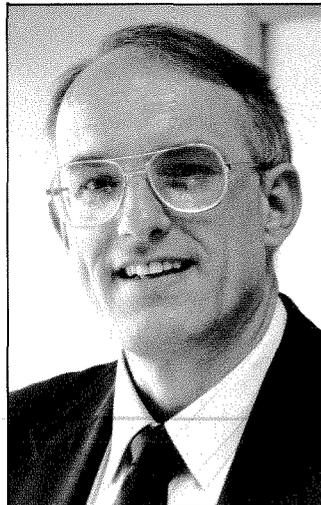
Trulove describes his former job—mayor of Cheney, Washington—as "lots of fun." Recently elected for his third term, he highly recommends being a small town mayor to anyone who wants great work. Having to resign as mayor was the toughest part of taking the Council position, he reports.

Trulove is taking a leave of absence from his other job—professor of economics at Eastern Wash-

ington University—in order to join the Council.

"No one is capable of replacing Chuck Collins," Trulove says. "Yet each of us brings our own strengths to the Council. As mayor, I had a great deal of experience with listening carefully to people before making decisions, and I intend to use the same approach while on the Council. People should know that I'm always a sucker for good, reliable facts and the logical argument."

Like Duncan, Trulove is no stranger to the Council, having served on its Scientific and Statistical Advisory Committee during the development of the first power plan. He has also been president of the energy committee of the Association of Washington Cities—an organization with which the Council works closely.



Tom Trulove

Both men were appointed for three-year terms and are subject to approval by their state legislatures. —RC

Western Montanans favor efficient homes

Energy consumers in western Montana think the best way to save energy is to build more efficient new homes, according to a survey conducted by the Bureau of Business and Economic Research at the University of Montana.

The survey was commissioned by the Montana office of the Northwest Power Planning Council to measure public awareness and sentiment concerning current and future electricity needs in that state.

Survey participants were given a list of conservation efforts to choose among. One-third of the respondents wanted to see requirements that new homes be built in ways that make them energy efficient. Weatherizing older homes was their second choice.

When asked whether they would be willing to pay more for an energy efficient house, 63 percent said yes. Almost two-thirds wanted Montana to require conservation measures in new construction.

The survey reached 302 Montanans, throughout all 19 Montana counties west of the Continental Divide (the boundary of the Bonneville Power Administration service area). Because of the small sampling, the margin of error is estimated to be about six percentage points in either direction. —CC

In The News

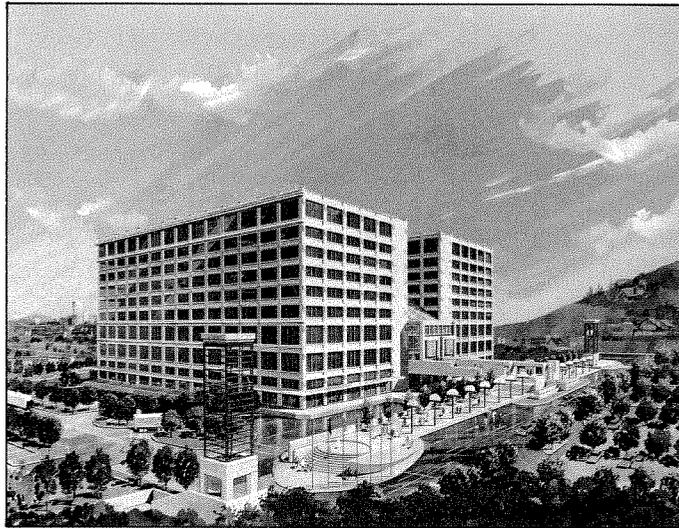
Portland building first start toward "Energy Edge"

Calling it the "Olympics of energy efficiency," Oregon Governor Vic Atiyeh, on January 23, launched the Northwest's "Energy Edge" competition for conservation in commercial buildings. The competition was inaugurated in the historic landmark Montgomery Ward Building in Portland, Oregon.

Renamed Montgomery Park, the massive building being renovated by Portland developers Sam and Bill Naito, is the tenth largest in the Pacific Northwest. Energy savings from conservation measures in the 782,900 square foot, nine story building are expected to average over \$186,000 each year.

Portland Energy Conservation, Inc., a not-for-profit corporation that develops innovative energy conservation programs in the Pacific Northwest, and the Oregon Department of Energy are co-sponsors of this first in a series of 34 demonstrations of the potential of energy conservation in commercial buildings.

The four-state, \$8 million program is funded by the Bonneville Power Administration. The Energy Edge competition will pay building owners the added cost of including energy efficient features in new or significantly renovated commercial buildings in the region. Payments will cover additional design time; increases in construction



Artist's rendering of Montgomery Park Building renovation.

costs over conventional buildings; computer modeling of the building's energy performance; and administrative costs of the program.

Participants in the program will also receive technical assistance in energy efficient design and construction techniques. Buildings in the competition are expected to use 30 percent less electrical energy than current construction.

The competition is open to owners, developers, architects, or engineers who have a commercial building in the design or planning stage. Since the program is particularly concerned with saving electricity, preference will be given to buildings that rely on electricity as a primary heating and cooling source. Offices, hotels,

motels, grocery stores, retail outlets, restaurants and warehouses in Idaho, Montana, Oregon and Washington are all candidates for selection.

For more information about the competition, or to obtain an application, contact the Energy Edge representative in your area.

In Washington: Washington State Energy Office, 400 East Union, Olympia, Washington 98504, (206) 754-0768. In Idaho, Montana, or Pacific Power & Light's service areas in Washington: Pacific Power & Light, Room 440 PFFC, 920 Southwest Sixth Avenue, Portland, Oregon 97204, (503) 243-3069. In the Portland metropolitan area (including Multnomah, Washington and Clackamas counties in Oregon, and Clark County in Washington): Portland Energy Conservation, Inc., 2950 Southeast Stark, Portland, Oregon 97214, (503) 248-4636. In the rest of Oregon: Oregon Department of Energy, 102 Labor and Industries Building, Salem, Oregon, 1-800-221-8035.

—CC

FERC decision calls for protection for future fish runs

The Federal Energy Regulatory Commission (FERC) has determined that Rock Island Dam, the oldest dam on the Columbia River, will have to be operated with an eye to protecting future, as well as existing, fish runs.

The FERC decision followed a hearing in which the State of Washington Departments of Fisheries and Game, the Oregon Department of Fish and Wildlife, the U.S. National Marine Fisheries Service and the Confederated Tribes and Bands of the Yakima Indian Nation argued for increased fishery protections in the six year old "Mid-Columbia Proceeding."

The Northwest Power Planning Council, the National Wildlife Federation and the Confederated Colville Tribes were intervenors on behalf of the petitioners.

The "Mid-Columbia Proceeding" refers to the five dams on the Columbia River just below Chief Joseph Dam. These dams, all owned and operated by public utilities, were the subject of litigation because, according to the petitioners, they failed to adequately protect juvenile fish attempting to migrate past the dams to the ocean.

FERC, licensor of non-federal dams, ordered the hearing, which was held last summer. Last spring, the parties reached agreement on four of the five mid-Columbia dams. Rock Island was the exception.

In The News

The new FERC decision establishes interim fish protection procedures for the Rock Island project. First, additional studies must be conducted by the dam's operator, Chelan County Public Utility District, to quantify juvenile fish mortalities, both in the reservoir behind the dam and at the dam itself.

These studies should help determine Chelan's responsibility for long-term mitigation and compensation for the lost fish. ("Mitigation," according to the FERC judge, refers to efforts to *prevent* fish losses in the existing run. "Compensation" is the addition of hatchery-produced fish to the existing run to replace those losses which cannot be avoided.)

The FERC decision goes on to say, "Chelan must do more than 'compensate' for Rock Island's damage to the current run; it must also make efforts to enhance future runs." Citing the Northwest Power Act, FERC ruled out Chelan's premise that a cost-benefit analysis justified their not carrying on additional mitigation after 1987.

The "equitable treatment" language in the Act, FERC noted, "suggests fisheries and power production on the Columbia River should not be balanced solely by a cost-benefit analysis."

The costs of protecting the existing and future fish runs are relatively small, FERC concluded, when compared to the long-term benefits of sustaining those runs.

—CC

COMMENT INVITED ON HUNGRY HORSE DAM WILDLIFE MITIGATION PROPOSAL

The Northwest Power Planning Council is seeking public input before making a decision on a proposal to offset the damage done to wildlife by Hungry Horse Dam in northwestern Montana. The proposal has been submitted to the Council by the Montana Department of Fish, Wildlife and Parks.

The mitigation proposal would provide for habitat enhancement and protection projects to help such animals as elk, mule deer, grizzly and black bears, waterfowl, bald eagles, and furbearers (e.g., beavers and bobcats). These animals have suffered habitat and/or food losses as a result of the construction and operation of

Hungry Horse Dam.

The Council's Columbia River Basin Fish and Wildlife Program calls for the development of this type of mitigation plan for a number of hydroelectric projects in the basin. The plans are to be developed by the appropriate fish and wildlife agencies, Indian tribes, the Bonneville Power Administration, and the project operators.

The Hungry Horse mitigation plan is the first such proposal to be submitted to the Council for review. As such, it raises several policy questions about the wildlife program that must be addressed before a decision is made.

These questions in-

clude: What is a reasonable way to determine which portion of wildlife losses can be attributed to hydropower when the dam in question serves multiple purposes? Should the same approach be used for all projects? Is full redress for wildlife losses caused by past hydropower development the intent of the Northwest Power Act?

An issue paper on the subject is being distributed for public comment. Comment is being taken through March 21, 1986. For a copy of this paper, use the order form on the back cover or call Judy Allender at the Council's central office. —RC

Everyone who'd love a new home this year, sign here.

Build a higher energy efficiency standard in this Super Good Cents home & no more energy bills. You can expect to save from one to two-thirds on heating bills while enjoying more comfort than is possible in any conventional home.

Energy saving features pay for themselves. The extra insulation and double or triple-pane windows in Super Good Cents homes typically add just a few dollars to your monthly house payment, but could save hundreds in annual heating costs.

Get more information today. There's no cost or obligation. Just a few minutes. Call your local electric utility or 1-800-228-CENT to request this coupon today.

Choose any style of home you want. Actually, Super Good Cents is not just a single house. But any house plan you'd like.

YES! I want more information on building a new Super Good Cents home this year.

Name _____
Address _____
City _____
State _____
Name Super Good Cents
P.O. Box 100
Portland, Oregon 97208

The "Super Good Cents" campaign to encourage energy efficient home construction that meets the model conservation standards kicked off this spring with television, radio, newspaper and magazine advertisements. Stressing the

advantage of building new homes now, while the interest rates are low, the advertising push is intended to reach markets in all four Northwest states: Idaho, Montana, Oregon and Washington. The advertisements feature an easy-to-remember toll-free number (1-800-228-CENT) consumers can call for more information.

A Map of Values

Hydropower Assessment Study Takes Shape

by Carlotta Collette

The map in the corner office shows a filigree of lines that concentrate and thin out in seemingly random patterns. The boundaries of the region are on it, and, with guidance, it becomes clear that concentrated lines emerge where the Cascades and Rockies turn loose thousands of streams with their runoff. Where the lines on the map thin out, the rain shadow of the Cascades has left the high plains dry. The map shows nothing else, just 21,000 pieces of river, known as stream reaches, and the perimeters

of the Northwest region.

The map represents the data file of river reaches that was assembled by the Environmental Protection Agency (EPA) to chart the route of pollutants in water. It is posted in the corner office where four people are using it, and the data base it represents, as the core of a study of the 350,000 miles of year-round streams in the Pacific Northwest—the regionwide Hydropower Assessment Study.

The Hydropower Assessment Study has three key components: collection of available data on the anadromous fish (primarily salmon

and steelhead trout) in the region; collection of data on other fish and wildlife resources and recreational, cultural or historical values that apply to rivers in the region; and a compilation of Indian religious, cultural or historical resources that must be protected from development.

The Northwest Power Planning Council is conducting the first and last of these studies, and combining data from all of them into one usable data base. The Bonneville Power Administration is coordinating the four Northwest states' participation in the remaining study—the Pacific Northwest Rivers Study.

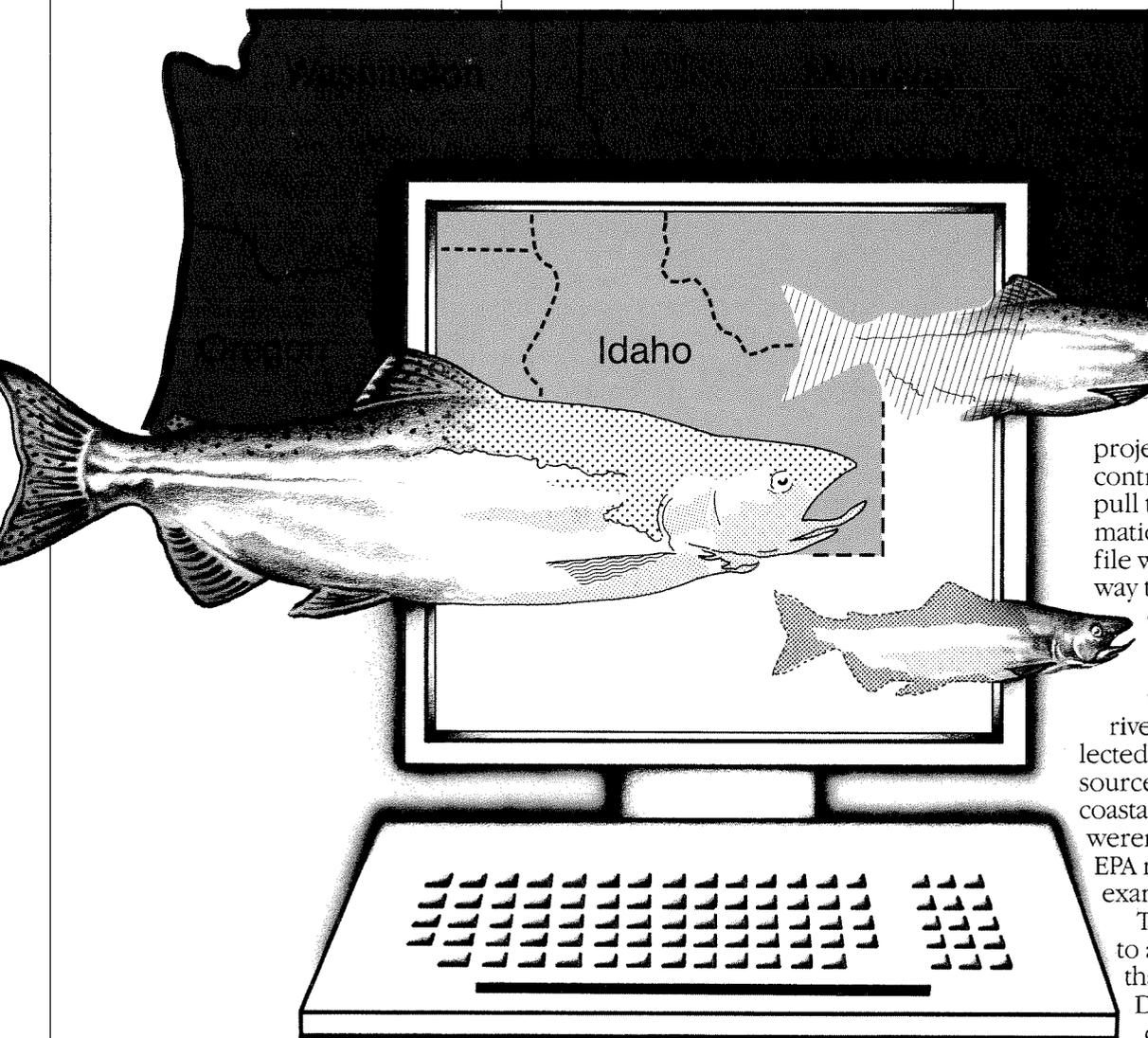
The EPA map and file figure prominently in the anadromous fish portion of the work. "The EPA system gave us stream reaches from one confluence to the next," explains Jack

Jack Damron,

project manager under contract to the Council to pull together the information. "The EPA reach file was a cheap [free] way to get a lot of already computer coded material fast, but we found thousands more river reaches as we collected data from other sources. More than 2,000 coastal streams in Oregon weren't included in the EPA reach file, for example."

The base map refers to a data file of locaters that link river reaches. Duane Anderson, the computer-wise

biologist and unofficial linchpin on



A Map of Values

Damron's team, is adding new information that will couple the geographic records to information about where the fish actually are; how abundant they are; the history of fish catches in each stream reach; hatchery production in a given area; habitat condition and availability; and the counts of fish passing each of the major hydroelectric dams in the system.

This effort will make the data base useful for another study the Council is conducting in conjunction with its goals study for the Columbia River Basin Fish and Wildlife Program. When this work is completed, the computer will be able to estimate the production potential of any recorded stream reach in the basin. This will help the Council develop production alternatives for the program (see goals update, page 26).

When this work is completed, the computer will be able to estimate the production potential of any recorded stream reach in the basin.

But the primary goal of this elaborate choreography of information is to create a comprehensive data base that can be used to assess the effects of developing any of these river reaches for hydroelectric generation. Before any new dams will be constructed, planners will be able to locate all the stream reaches above the proposed site, and estimate the fish and wildlife of that specific area. With such information, the Council can specify which areas must be protected from hydroelectric development for fish and wildlife purposes.

With these distinctions and additional recreational, historical tribal and other considerations in hand, the Council will be better able to estimate exactly how much future hydroelectric development the Northwest can count on to meet its electrical needs over the next 20 or more years.

To reach that goal, Damron's team, Bonneville and the states must first collect the findings from each state and incorporate them into the data base the team is building. Unfortunately, each state's information is coded differently—often several different codes are used even by the same state. None of the states' data automatically corresponds to the data already in Damron's offices.

In the Oregon rivers study, for example, 14,300 stream reaches were mapped and categorized as to the quality of each reach for non-anadromous fish and wildlife purposes. The work relied, for the most part, on existing maps and assumptions. Because of time constraints built into the project, the Oregon researchers found themselves setting values for reaches by gathering around maps of subbasins; listing whether they thought a given stream had outstanding, substantial, moderate, limited, unknown or an absence of resources; and then checking their assumptions against staff in the field or other records that were available.

This ranking does not necessarily match that done for rivers in Idaho, Montana or Washington. Nonetheless, the information must somehow fit into the data base with the findings from the other states. Recreational and scenic values were determined in similar ways, and are also in need of integration.

In Washington, white water boating groups and others contributed maps and additional details they had compiled for their constituencies. A panel representing recrea-

tional users of the rivers reviewed the findings of the Washington groups. Much of this information is, by its nature, subjective. Yet the final data base has to be able to incorporate the opinions from Washington, as well as those from Idaho, Montana and Oregon.

Somehow, Duane Anderson must make sense of all the information the states and the Council are ferreting out. When he first gets to talking about the growing data base, he lights up and becomes effusive. "We can now pick a stream anywhere in the region," he explains. "We will be able to tell stream length, width and presence or absence of fish by species. We can then estimate the habitat available at low flows for fish production. We will also use the amount of habitat we find there to estimate the potential productivity of the stream."

Anderson's catching enthusiasm wanes slightly as he begins to describe the remaining tasks. "All of that just represents the beginning of our anadromous fish data entry," he notes. "The other part of the evolution of this thing is to work all the cultural, recreational, institutional, wildlife and non-anadromous information into the system. We need to cross-reference the stream numbering systems used by the states to the EPA reach numbering scheme used in our data base. That will take a considerable amount of reformatting and laborious data entry, but it will allow us to keep all the data in a compatible format."

From Damron's perspective, the project will give some regional consistency to the states' data. "We want to put all the available data into one data base, so each organization that needs it will be able to use it. The states," he adds, "have developed their own systems to serve their needs. We're just connecting them all. The information will still serve each state independently, but it will also serve to link the states."

Shorts

Idaho's bald eagle population may benefit thanks to kokanee releases from a new hatchery on the Clark Fork River near Lake Pend Oreille. Biologists estimate that the number of eagles could increase from the present 60 to several hundred because the hatchery creates a major new wintering area for them. Eagles feed on adult kokanee while migrating south. Idaho Fish and Game Department biologists plan to band or tag a number of the birds with radio transmitters to map their movements and preferred habitat. Washington Water Power Company and the Bonneville Power Administration shared in construction of the hatchery. (Source: BPA, Media Relations Office-ALM, P.O. Box 3621, Portland, OR 97208)

Some 40 Northwest sites hold potential for wind power, according to a report released by the Bonneville Power Administration. The Oregon State University Department of Atmospheric Sciences collected data from 350 places throughout the Northwest to help determine promising sites for developers. The data, which took five years to compile, have been published in the three-volume "Pacific Northwest Wind Regional Energy Assessment Program." For more information, call John Geyer at (503) 230-5327 or write him care of BPA, Routing PRS, PO Box 3621, Portland, OR 97208.

The most frequently asked energy question is about recommended levels for home insulation, according to the Washington Energy Extension Service, which operates a "Home Clinic" for consumer questions. The next most frequent questions, in descending order, involve how to get rid of window moisture and wall mildew, what chemical chimney cleaners are effective, should crawl space and attics be vented, and how to tell if furnace ductwork contains asbestos. "Home Clinic" appears weekly as a column in the *Seattle Times*. (Source: Washington State Energy Office Dispatch, January, 400 East Union, Olympia, WA 98504)

Tribal rights to hatchery fish have been confirmed by the Supreme Court. The Court let stand a decision giving treaty tribes the right to catch up to half of the fish produced in Washington State hatcheries. The Washington State Department of Fisheries had argued that the fishing rights granted in the 1800s applied only to wild salmon and steelhead. The tribes had argued that hatchery fish compensate for wild runs that have declined. Hatchery fish have been included in the tribes' 50 percent allocation since 1974. (Source: Pacific Fishing, February, 1515 N.W. 51st, Seattle, WA 98107)

The first full year of operation for WPPSS nuclear plant 2 was a mix of "successes, disappointments, and surprises," according to the Washington Public Power Supply System's newsletter. The plant operated at a 55 percent capacity, close to the national average of 61 percent, despite the fact that the first few months were a "shakedown period." Biggest disappointment was the delay in operating at full power due to vibration problems from one of the plant's reactor recirculation pumps. The biggest success was a 100-day uninterrupted run. Total generation for the year was 5.2 billion kilowatt-hours, while the number of shutdowns was 19. (Source: Power Lines, December, Washington Public Power Supply System, Mail Drop 325, P.O. Box 968, 3000 George Washington Way, Richland, WA 99352)

Appliance efficiency standards have been upheld by the court in two California lawsuits filed by appliance manufacturers opposed to the state's new regulations. The new standards require energy use reductions of 10 percent in 1987 and 19 percent in 1992 over current standards. The first lawsuit challenged central air conditioning standards, and the second dealt with energy consumed by refrigerators and freezers. (Source: Western Energy Update, November, 6500 Stapleton Plaza, 3333 Quebec St., Denver, CO 80207)

Three Northwest states are among the top ten hydropower project developers. Between 1980-84, Idaho ranked fourth in the nation with 14 hydropower projects (36 megawatt capacity); Washington ranked sixth with ten projects (206 megawatt capacity); and Oregon seventh with eight (66 megawatt capacity). The other states in order of ranking included California, first; New York, second; New Hampshire, third; Maine, fifth; Colorado, eighth; Vermont, ninth; and Alaska, tenth. (Source: Hydro Review, special issue, 755 Boylston Street, Suite 707, Boston, MA 02116)

Sealed offices and space stations share a common problem—indoor air pollution; and NASA has a promising solution—house plants. NASA's scientists made the discovery while searching for a biological air purification system for space stations. Spider plants performed best at removing toxic gasses given off by such things as formaldehyde, nitrogen dioxide, and carbon monoxide—all pollutants that can be found in homes. While prevention is still the best solution, eight to 15 plants can do wonders for the average home, according to NASA scientist B.C. Wolverton. (Source: Northwest Conservation Act Coalition Report, Box 20458, Seattle, WA 98102)



THE GOALS PROCESS UPDATE

by Ruth Curtis

One of the principal products the Northwest Power Planning Council is hoping for as it works in the fish and wildlife arena this year is cooperation. Fishery agencies, tribes, and other interests are currently working together to help develop and implement the Council's Columbia River Basin Fish and Wildlife Program. That cooperation is an underpinning of an activity known as the goals process.

The goals process is designed to set the scope of the Council's program to protect and enhance the salmon and steelhead resources damaged by hydroelectric development in the Columbia River Basin. The process deals with such issues as the extent of the salmon and steelhead losses and the degree to which electricity ratepayers should be expected to restore these fish populations.

Goals were not included in the original program in 1982 because swift, remedial action was needed to protect the fish, and more study was needed before goals could be discussed. But the goals process is now underway and by early summer the Council will be making preliminary decisions on goals for the program.

Below is a summary of the current major activities in the goals process.

Losses and contributions

The Council and its contractors have been assembling data that estimate the historical abundance and current size of the salmon and steelhead resource in the Columbia River Basin. This information will be

used to help determine hydropower development's contribution to the resource's decline. *The Revised Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin*, went to the Council for approval in mid-February. It had been through two rounds of public review: the first in the fall, after which it was rewritten to reflect comment providing additional information, and then again in January.

The fishery losses had many causes, but the Council is instructed by the Northwest Power Act to address only hydropower-related losses. An issue paper on the contribution of hydropower to those losses will be distributed for public comment in late March. (See order form on back cover.) A public review period will follow, and the Council will make a preliminary decision on the amount of the hydropower-related losses in the following months.

Planning workshop

Key Northwest fish and wildlife biologists and planners gathered this winter for a workshop where they developed modeling procedures for the Council to use to develop fish production alternatives for the Columbia River Basin.

Salmon and steelhead data base

The Council and the region's fishery managers are better able to determine where the fish actually are in each individual section of

stream by using the Council's salmon and steelhead data base—the first such comprehensive data base in the Northwest. It is being used to estimate the productivity of the sub-basins that make up the Columbia River Basin. The data base and its potential are discussed on page 23.

Goals package

In late spring or early summer, the Council will be ready to look at actual numbers for the goals of the fish and wildlife program. An issue paper addressing these goals will then be distributed for review. The information provided by the losses and contributions work, the salmon and steelhead data base, and various preliminary policy decisions the Council has made will be combined into this draft goals package.

Production objectives workshops

Production objectives are the building blocks that will be used to meet the goals the Council decides upon. While goals will be long term and for the entire Columbia River Basin, objectives will be smaller, short term, and for the basins of individual streams, known as subbasins.

To develop these objectives, a series of workshops on individual geographic areas will be held this spring for fishery experts. Using the model developed at the previous planning workshop, these experts will develop alternative objectives for each subbasin in the Columbia River Basin. Each alternative will contain a management strategy and an estimate of the number of fish expected from that strategy.

Before the Council makes a decision on any of these production objectives, an issue paper will be distributed summarizing and analyzing the production alternatives in terms of the Northwest Power Act, which called for the Columbia River Basin Fish and Wildlife Program, the program's proposed goals, and fishery agency and tribal management objectives. A preliminary Council decision on these objectives is expected in August 1986.

Calendar

March 1 - June 30— "Energy Smart Design for Commercial Buildings," a series of workshops throughout the Northwest on integrating energy efficient design into projects without increasing costs, sponsored by the Bonneville Power Administration. For information: MCC Associates, Inc., P.O. Box 7472, Silver Spring, Maryland 20907, 1-800-622-6200 or (301) 589-8130.

March 12-13— Northwest Power Planning Council meeting in Portland, Oregon.

March 27-29— "Electrical Industry Exposition" in Tacoma, Washington, sponsored by the Electric League of the Pacific Northwest. For information: Electric League of the Pacific Northwest, Suite 210, 555 116th Ave. NE, Bellevue, Washington 98004, (206) 455-0490.

April 9-10— Northwest Power Planning Council meeting at the Village Red Lion in Missoula, Montana.

May 7-9— "Tools for Managing Energy," the annual conference of the Interstate Solar Coordination Council at the Portland Marriott Hotel, Portland, Oregon. For information: Jon Biemer, Bonneville Power Administration, (503) 230-3457, David Robison, Oregon Department of Energy, (503) 378-4040, or Lawrence & Craig, P.O. Box 40244, Portland, Oregon 97240.

May 14-15— Northwest Power Planning Council meeting at the Federal Building in Seattle, Washington.

June 3-5— "4th Annual Renewable Energy Technologies Symposium and International Exposition" at the Anaheim Convention Center in Anaheim, California. For information: Barbara Flynn, Renewable Energy Institute, 1516 King St., Alexandria, Virginia 22314, (703) 683-7795.

June 8-14— "11th Annual National Passive Solar Conference" at the University of Colorado in Boulder, Colorado. For information: Susan Burley, 2030 17th St., Boulder, Colorado 80302, (303) 443-3130.

June 11-12— Northwest Power Planning Council meeting in Idaho. Please call central office for location.

July 14-17— "FutureFocus: The Next 15 Years," the 1986 annual conference of the World Future Society in New York City, New York. For information: Scott Foote, World Future Society, 4916 St. Elmo Ave., Bethesda, Maryland 20814, (301) 656-8274.

July 21 - August 22— "Fisheries Data Management Using Microcomputers," a training program offered by the Consortium for International Fisheries and Aquaculture Development and Oregon State University in Corvallis, Oregon. For more information: CIFAD Training Programs, 443 Snell Hall, Oregon State University, Corvallis, Oregon 97331, (503) 754-2624.

August 25 - September 18— "Fisheries Economics," a training program offered by the Consortium for International Fisheries and Aquaculture Development and Oregon State University in Corvallis, Oregon. For more information: CIFAD Training Programs, 443 Snell Hall, Oregon State University, Corvallis, Oregon 97331, (503) 754-2624.

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 will be sent to you as soon as they are.)

Publications

- 1986 Power Plan (Do not check if you ordered the draft plan. The final plan will be sent to you automatically when available.)
- Response to Comments on 1986 Power Plan.
- Contributions Issue Paper—Columbia River Basin Fish and Wildlife Program Goals Study (See page 26.)
- Staff Report on Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin (See page 26. Do not check if you ordered the draft or the revised draft. It will be sent to you automatically.)
- Hungry Horse Dam: Wildlife Mitigation Proposal Issue Paper—Columbia River Basin Fish and Wildlife Program (See page 22.)
- 1986 Applications for Amendment—Columbia River Basin Fish and Wildlife Program (This is a multi-volume set.)

Mailing Lists

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

- Northwest Energy News* (this bimonthly magazine)
- Update!* (public involvement newsletter mailed with the Council meeting agenda)

Name _____

Organization _____

Street _____

City/State/Zip _____

(Or call Judy Allender at the Council's central office. (503) 222-5161, 1-800-222-3355 in Idaho, Montana, and Washington, or 1-800-652-2324 in Oregon.)

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

BUCK RATE
U.S. POSTAGE
PAID
PERMIT NO. 1709
PORTLAND, OR

J. H. Smith