

# N O R T H W E S T ENERGY NEWS

Volume 1, No. 7

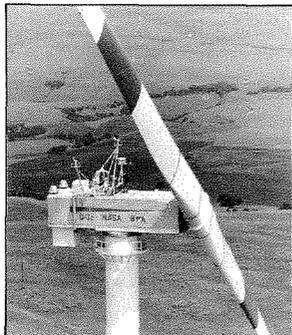
Northwest Power Planning Council

November, 1982

## RENEWABLE RENAISSANCE

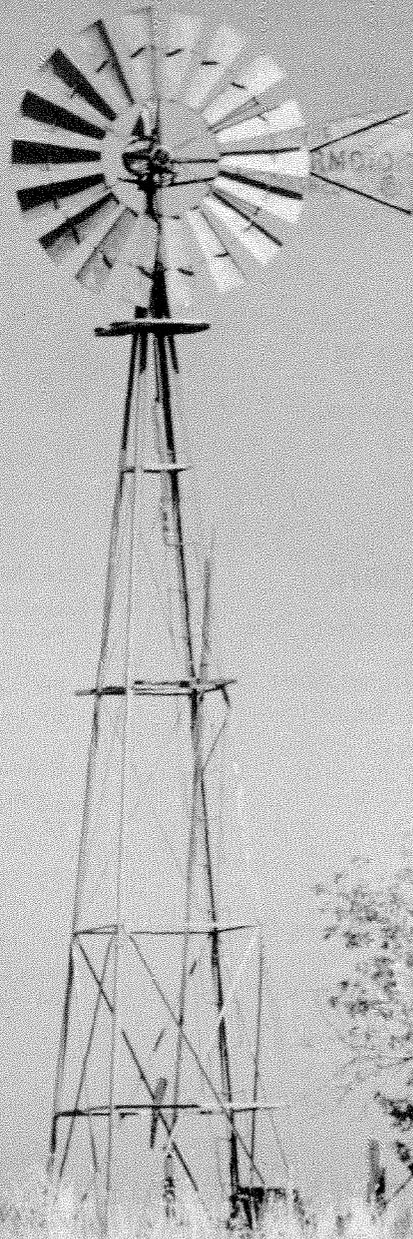
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*Old energy forms are making  
a resurgence in the NW*

**T**he resource-rich Pacific Northwest may be standing at the threshold of a renaissance of renewable energy resources. Recent developments plus the priorities of the Northwest Power Act, which makes renewables a high priority resource for meeting future regional energy needs, suggest a comeback for



old energy forms updated with new technologies. The water power on a small stream that turned a mill wheel, the sun that warmed a southern facing house, the wind that pumped farm water, the wood-waste that fired a boiler to generate early industrial power, these and other energy forms are poised to once again pro-

*(Turn to page 9)*



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

Cover photos: Don Lowe/Aperture; Boeing (inset)

# NOTICES

## Council schedule revised

The Northwest Power Planning Council has revised its schedule for making decisions on issues related to the regional energy plan. The schedule was outlined in the last issue of *Northwest Energy News*.

The new schedule follows:

### NOVEMBER 15-16 MEETING

#### Council Decision:

B5 — Conservation program evaluation and selection

#### Staff Presentation:

- A4 — Evaluation of key model sensitivities
- C3 — Constraints to resource development
- D4 — Surplus electricity marketing

#### Public Comment:

- B8 — Fuel switching/fuel choice
- B9 — Building codes and model conservation standards
- B10 — Surcharges (if, when, how?)
- C6 — Options — how will they work?

### DECEMBER 1-2 MEETING

#### Council Decision:

- B4 — Rate designs as model conservation standards
- B8 — Fuel switching/fuel choice
- B9 — Building codes and model conservation standards
- B10 — Surcharges (if, when, how?)

#### Staff Presentation:

- B11 — Establishing conservation targets
- C7 — Development of resource and option targets
- E1 — Resource portfolio evaluation

#### Public Comment:

- A4 — Evaluating key forecast model sensitivities
- C3 — Constraints to resource development
- C5 — Interregional exchanges — how much and what cost?
- D4 — Surplus electricity marketing

### DECEMBER 15-16 MEETING

#### Public Comment:

- B11 — Establishing conservation targets
- C7 — Development of resource and option targets
- E1 — Resource portfolio evaluation

The Council will schedule extra meetings in December to discuss the resource

portfolio. *Tentative* December meetings (subject to change) are:

Dec. 1-2, Portland, Western Forestry Center

Dec. 8-9, Portland, Hilton Hotel

Dec. 15-16, Portland, Hilton Hotel

Dec. 22-23, Seattle, South Auditorium

Dec. 29-30, Portland, Hilton Hotel

## Fish and wildlife program adoption and distribution set

The Northwest Power Planning Council will adopt its final Fish and Wildlife Program November 15 at the Hilton Hotel in Portland.

Copies of the final program will be available to the public in mid-December. Those who requested a copy of the draft program will automatically receive a copy of the final program. If you did not request the draft fish and wildlife program but would like to receive a copy of the final program, please call Beata Teberg at 1-800-547-0134 (in Oregon, call 1-800-452-2324).

## Oregon toll-free phone available

Oregon residents seeking information or having questions on regional energy issues can now call the Northwest Power Planning Council toll-free from outside the Portland metropolitan area. The toll-free number is 1-800-452-2324.

Portland-area residents can call the Council at 222-5161. For those elsewhere in the region, the toll-free number is 1-800-547-0134. The phone lines go to the Council's central staff office in Portland. To reach individual Council members, see the list elsewhere on this page.

## Errata

Due to a typographical omission, an error appeared in last month's *Northwest Energy News* on the story about BPA power sales contracts. The story should have said that Idaho Power Company "sought, and received, a promise from the Council that the power sales contracts would *not* be used as the vehicle to implement" the Fish and Wildlife Program.

# IN THE NEWS

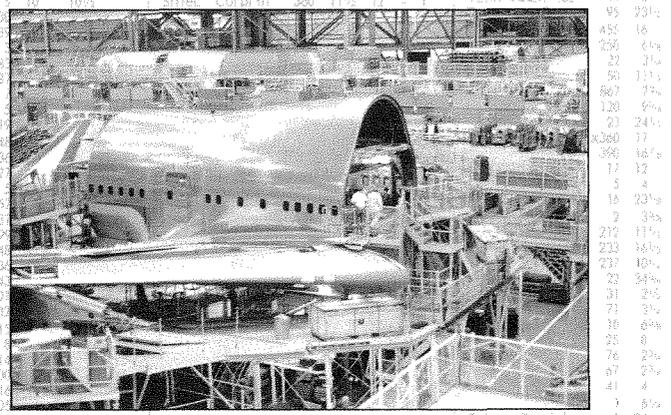
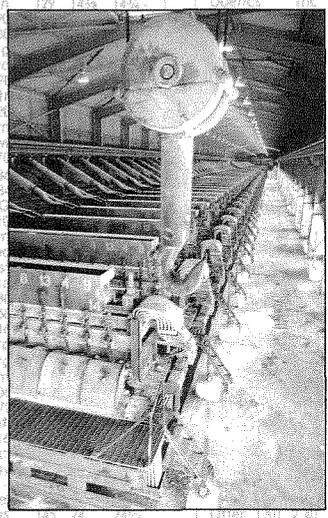
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NH 1				KLA Instrum																		9	3%	
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PhioB 2.20e				K M S Indus																		233	15%	
OklaBc .66				KnapeVogt 1																		237	15%	
AppleB 1.37				KnudsenCo 1																		23	94%	
gobB pf1 99				Koper Co 1.6																		31	2%	
RR BCo .60				Kreis 1.6																		71	3%	
Sava Wisc				KRM 1.9																		18	6%	
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TempNH 1.08				Kro 1.2																		76	2%	
Linon 1.24				Kro 1.2																		67	2%	
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InsLtd 20d				Kro 1.2																		3	6%	
ShipBk 1				Kro 1.2																		2	24	
Fe Inc 1				Kro 1.2																		14	8%	
Steel 65				Kro 1.2																		34	8%	
King 1.80				Kro 1.2																		116	11%	
Falex Intl				Kro 1.2																		106	26%	
CSBk pf1				Kro 1.2																		40	34%	
CommBk 1				Kro 1.2																		62	14%	
Cypr 1.6d				Kro 1.2																		127	11%	
GulfRII 74				Kro 1.2																		121	11%	
NatlBk 88				Kro 1.2																		9	9	
wTime Inc				Kro 1.2																		70	16	
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## Employment ranges — 1980 to 2000

(low/high ranges of potential employees, in thousands)

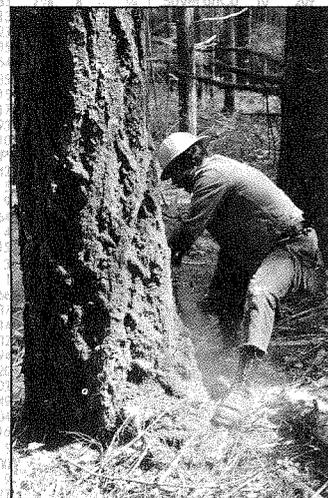
**ALUMINUM**  
6.0  
11.2

**HIGH TECHNOLOGY**  
137.2  
226.1



**TRANSPORTATION**  
86.4  
161.8

**WOOD PRODUCTS**  
113.6  
156.9



**Region's future:** Under the Council's high growth scenario, the aluminum and wood products industries recover from the current recession and the region experiences robust growth in transportation and high technology industries.

## Planning for the best of times

### Council sets high, low economic projections for region

From the onset nearly 18 months ago, members of the Northwest Power Planning Council have been grappling with the inherent uncertainties surrounding economic and energy forecasts. No matter what the given assumptions, the forecast of the future always seems to differ from the reality of the future. Nevertheless, forecasts of what the region's economy might do and what power the region will need provide tools for plan-

ning the energy future, a charge given the Council in the Northwest Power Act of 1980. To cope with these uncertainties, the Council elected to develop its economic and energy forecasts in a high-low range instead of a specific, and often wrong, mid-point. And using the format, the Council last month adopted basic economic assumptions to be plugged into the energy fore-

cast, economic assumptions which if they proved true could see the Northwest experience record growth. In the high range economic projections, the Pacific Northwest would gain more than 3.4 million employees between 1980 and the year 2000, a more than doubling of the number of employees added during the previous 20 years. This would set employment growth at 3.7 percent per year, making it the most robust period of economic growth in the re-

gion's history. In the high case scenario, the region's economy would quickly come out of the present recession and hit its long-term economic stride by the mid-1980s. Under this case, the region's traditional industries — lumber and wood products, aluminum, the aircraft industry, paper and agriculture — would all return to economic health. The greatest growth, however, would come in high technology industries, other light

manufacturing efforts and expanded trade and services.

In the low case, the region would add just under a million employees in the period, a growth rate of 1.3 percent per year compared to the historical average of 3.1 percent. Yet, even under this projection, the region grows slightly faster than the low-case national employment forecast. In the low growth outlook, the region's traditional industries are much slower to recover from the present recession and, in some cases, suffer long-term setbacks. For example, 30 percent of present aluminum capacity would be shut down and the Alumax Pacific plant proposed near Umatilla would never be built. The lumber and wood products industries recover only to 1980 employment levels and in the transportation equipment sector (which would include Boeing) employment falls 20 percent below the 1980 peak.

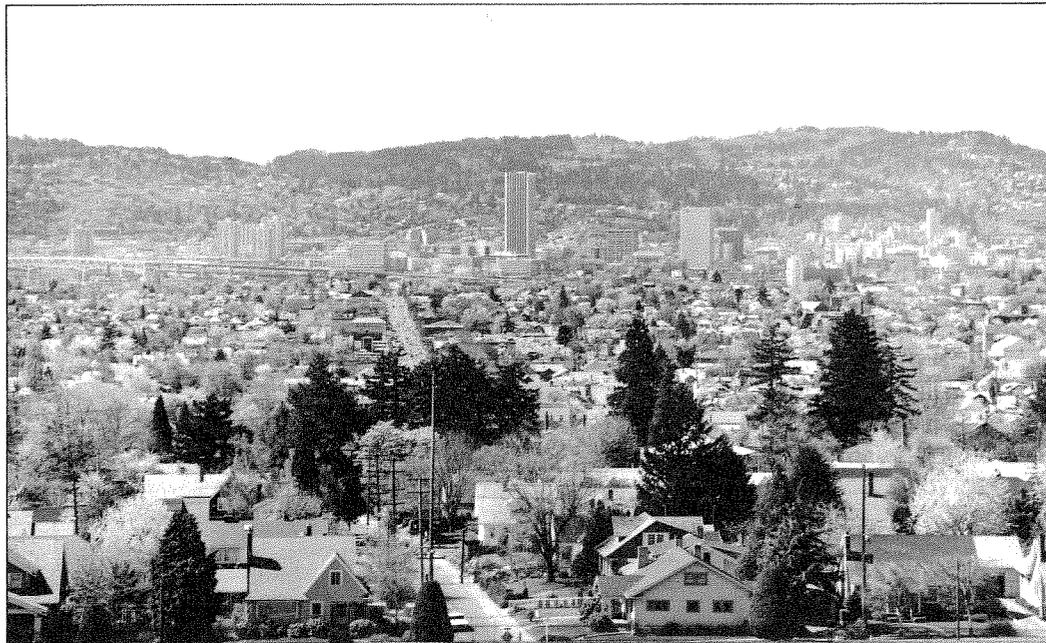
The high and low cases represent, according to Terry Moran, the Council's manager of forecasting, the best of times and the worst of times — two cases which are both probably unlikely to occur.

To assure adequate electrical supplies for economic growth, the Council says it will plan to meet the energy needs of the high-growth economic scenario.

But there are two caveats,



**Changing times:** Energy demand may not grow in lockstep with economic growth as less electricity-intensive industries expand rapidly, says Oregon's Roy Hemmingway.



**Population boom:** With employment projected to increase in the Northwest, the region's population is likely to follow a similar growth pattern.

said Council member Roy Hemmingway of Oregon. "Any forecast looking 20 years into the future is going to be wrong," said Hemmingway. "What we hope to do is develop a flexible array of energy resources that can be developed in increments as the need for power actually emerges. That way, we can have the power we need without running the costly risks of over- or under-building."

Hemmingway also cautioned about assuming a one-to-one relationship between economic growth and growth in consumption of electricity. "In even the high case, the bulk of the growth comes from less electricity-intensive industries, like electronics and service sector jobs. The energy-intensive industries, like the aluminum industry or the wood products industry, just don't grow as fast as the others. That's likely to mean total demand for electricity isn't going to run in lockstep with employment growth."

Deborah Kitchin, a Council staff economist, noted that because of rapid changes in the Northwest's economy and a lag in collecting information about employment trends, it may be necessary to revise the high-low range again before the Council's energy plan is produced next year.

The Council will now plug the economic assumptions into the energy forecast to develop a range for resource demand in Northwest electrical consumption.

## Council hears comments on draft fish plan

After months of meetings and reams of recommendations, citizens, groups and agencies came before the Northwest Power Planning Council last month to talk about the first piece of the panel's power puzzle — a program to restore the fish and wildlife nearly destroyed by the region's hydro projects.

The comments ranged from praise to complaints, focusing on several key elements of the program, released in draft form in mid-September. Fisheries officials generally hailed the program as a sweeping new initiative to rebuild the badly depleted fish runs of the Columbia and Snake Rivers. Utilities, on the other hand, cautioned about the cost of the program, which will be picked up by the re-

gion's ratepayers already seeing record rate hikes. And comments varied as the Council moved from state to state.

In Idaho, where irrigation water is vital for agriculture, there were repeated concerns about water rights, despite the Northwest Power Act's declaration that nothing in the law would abridge water rights and similar assurances from Idaho Council members Bob Saxvik and Larry Mills.

Underlying the comments on water rights was the concern about where water for spring fish flows would come from. Council Chairman Dan Evans told irrigators that the fish flows would come from shifting the river flow normally reserved for power production.

Throughout the hearings in Oregon, Idaho, Montana and Washington, much of the comments zeroed in on the Council's proposal to speed migrating salmon and steelhead from their spawning grounds to the sea — a precarious route greatly slowed because of the Columbia River System's many dams. Under the Council's proposed water budget, a set amount of water would be available each spring to literally flush the small fish past the dams. The water budget would be shaped (so flows could be accelerated dur-

ing key times of the April 15 to June 15 peak migration period) by treaty Indian tribes and fish agencies and would be available even in low-water years. Under even low water conditions, according to the Council's proposal, fish in the upper reaches of the Snake and Columbia Rivers would be able to travel to the ocean in about 30 days.

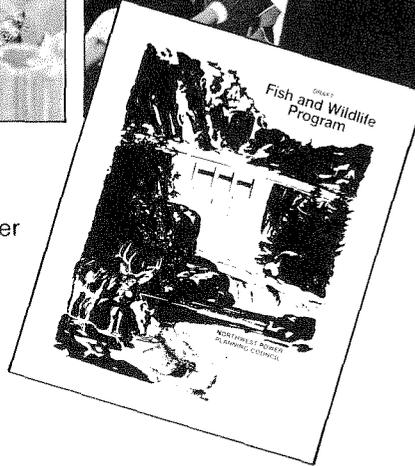
But the river treaty tribes questioned whether that was good enough, and asked the Council to enlarge the water budget for the Snake River. Under the tribes' proposal, according to Tim Wapato, executive director of the Columbia River Inter-tribal Fish Commission, fish would make the seaward migration within 27 days during low water years. The tribes' proposal would cause another 150 megawatt reduction in the river's firm power production capability, bringing the total reduction to over 700 megawatts.

"Our work indicates that nothing less than what we have proposed will satisfy the requirements of the Act and of our member tribes' treaties," said Wapato.

But if Wapato and some environmental groups wanted to



**Conflicting views:** Tim Wapato, representing Columbia Basin tribes, wanted the Council's water budget enlarged for the Snake River. Don Barclay of Idaho Power, however, said he felt his utility was already meeting its fish protection duties.



enlarge the Council's water budget, the Idaho Power Company, which operates a series of dams, threw a potential roadblock in front of any water budget for the Snake

River and its tributaries.

Don Barclay, an Idaho Power vice president and a member of one of the Council's advisory committees, said the Boise-based utility didn't

know enough about the Fish and Wildlife Program's impacts on their power system to comment. Barclay said the utility didn't know the details of the water budget until recently and it would take weeks beyond the October 25 comment deadline for them to prepare their analysis.

Barclay said the utility believed its earlier settlement with various fish agencies was "the final step in restoring" the fish runs damaged by the company's Hells Canyon Complex of dams.

While the exact impacts of the water budget couldn't be gauged, Barclay said, the accelerated stream flows could reduce Idaho Power's power production by perhaps 300 megawatts during the summer months. Barclay doubted that the water losses could be replaced in kind, as the draft program proposes.

While not debating the specific measures of the program, Peter T. Johnson, head of the Bonneville Power Administration, said nevertheless that his federal agency had "serious reservations" about elements of the program and the role put forward for the Council.

The Council proposed creating a Fish and Wildlife Com-

## Council weighing surplus power for irrigators and others

What do fish and irrigators have in common?

At first glance, not much. But thanks to the Northwest Power Planning Council's proposal for seasonal fish flows on the Columbia and Snake Rivers, both the region's ocean-bound fish and some of its farmers may benefit.

Under the Council's draft fish and wildlife program, the flow of the river would be accelerated during key spring migration periods — meaning the dams will be producing more electricity than the region normally uses.

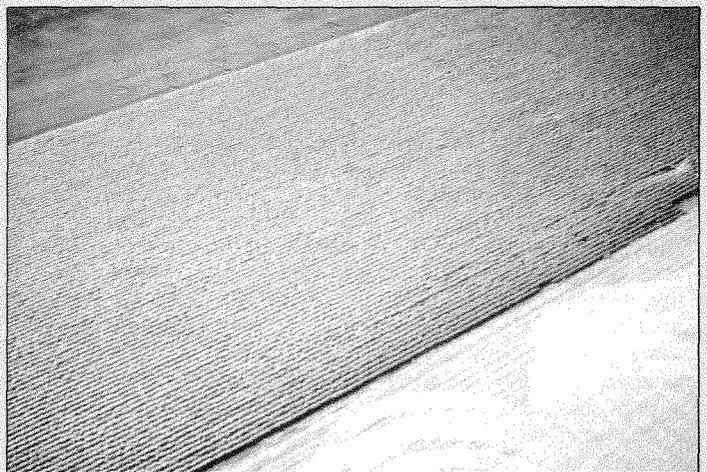
For some irrigators, this period (from April 15 to June 15) is one of their heaviest for watering crops. And for farmers these days, a substantial part of their costs is the price of electricity to pump the water. What might be possible is

for the irrigators to voluntarily give up a portion of their firm power contracts in exchange for the right to purchase seasonal surplus power at lower rates.

Excess power would be available during spring migration even in a low water year, said Edward Sheets, the Council's executive director. During other periods, the availability of surplus power would depend on water conditions.

For many farmers, the surplus power possibility comes just in time. With electric rates soaring and crop prices depressed, there are tough times down on the region's farms.

The region could benefit from the proposal as well, said Sheets, because it would free up firm power and keep the



**Irrigator relief:** The Council is looking at ways to sell irrigators cheaper surplus power and free up some of the firm power now used for crop watering.

economic benefits of the cheaper surplus power within the region.

The Council is continuing to

study ways to sell surplus within the region to farmers or others, said Sheets.

mittee, with one Council member from each of the four states, which would oversee implementation of the program and review specific funding requests.

But Johnson said he had trouble with the Council's role. "The answer is not for the Council to interject itself into day-to-day program implementation as a way of appraising and perfecting program elements," the Administrator told the Council at its Missoula hearing.

"The Act confines the authority to take implementing actions to protect, mitigate, and enhance fish and wildlife to federal agencies; it does not invest such authority in the Council," Johnson added.

Council Chairman Evans responded that the Council recognized the division of responsibility: "Yours is to implement; ours is to plan, and I suggest that those who implement follow the plan."

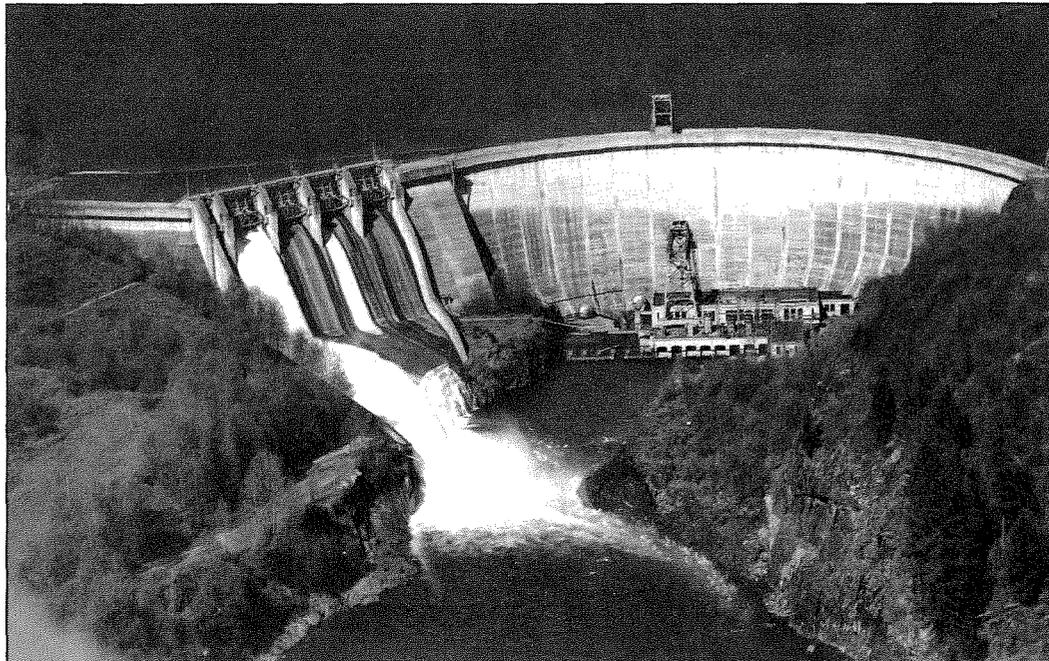
The agencies' independent responsibilities, said Evans, focus on implementation. "The real measure will be the degree to which the plan itself is carried out, and not independently assessed and redesigned and carried out in some other fashion."

Beyond the institutional roles, Johnson said BPA, which will finance those restoration measures related to federal hydroelectric projects, must weigh the cost-effectiveness of the various proposals and deal with the program in context of the agency's present financial constraints. In a late press statement, Johnson said the federal agency would do its "level best" to implement the Council's program.

The cost of the fish and wildlife program was the focus of much criticism at the hearings.

"Lately our own utilities have been spreading the word about the cost of our fish plan," Council vice-chairman Bob Saxvik said. "I wish they'd be equally honest about the WPPSS costs so the ratepayer can make a fair comparison."

Saxvik said that in 1983 ratepayers will pay approximately \$3.50 a month for their obligation for partially-



**Classic battle:** Privately-run Pacific Power is in a scrap with two public utilities over who will get Merwin Dam, a cheap renewable resource by any of today's standards.

completed WPPSS Plant 1.

According to Council estimates, the Fish and Wildlife Program could cost somewhere near \$160 million annually, or roughly \$2.25 a month for the average residential ratepayer.

And one ratepayer said he was already willing to pay his share.

"The utility companies came in here today and they tried to tell you that they spoke for me — the ratepayer," said Mike McLucas, a Central Oregon resident speaking at the Portland hearing.

"But they don't."

McLucas told how he had watched the fish runs decline and hoped they could be restored "before I cash in. You're my last hope. I pleaded at every hearing I could go to; I wrote letters to everybody I could think to write to about fish . . . and what have I got?"

Pulling a dollar out, McLucas told the Council, "As a ratepayer, I'm going to have to pay this per month to help restore these runs. I want you to hear loud and clear that I'm willing to pay it."

With that, McLucas left the greenback — the first dollar towards restoring the once great fish runs of the Pacific Northwest.

## Merwin Dam battlefield in relicensing fight

It is, in part, the classic conflict between private power and public power. But the tug-of-war over Merwin Dam in Southwest Washington represents something more: a scramble to lay claim to a low-cost renewable resource.

At stake is a dam on the Lewis River which has been steadily and reliably providing power for Pacific Power & Light, the Portland-based private utility, for more than 50 years. And while Merwin isn't a mammoth project by today's standards, it would certainly cost millions to build new generation equal to the dam's 136 megawatts.

So the race is on. Pacific Power on one side, the Public Utility Districts of Clark and Cowlitz Counties on the other.

It began in 1979 when Pacific's license from the Federal Energy Regulatory Commission expired. The two public utilities, citing the Federal Power Act of 1920, filed to take over the dam and pay PP&L somewhere between \$8 and \$15 million to compensate for

the original investment in the project.

The federal law initially set up a licensing system for hydroelectric projects being developed in the 1920s, giving preference to public agencies if other conditions were equal. In 1980, FERC upheld the preference provisions of the Federal Power Act and said in the case of relicensing an existing project, the public agency had to show they would operate the project in a way that would benefit the public interest at least as much as the private utility license holder. With the potential ramifications to private utilities around the nation, PP&L and 33 other private utilities appealed the FERC ruling to the 11th Circuit Court of Appeals. Meanwhile, Clark and Cowlitz utility officials have pursued Merwin, hoping to garner some of its cheap, renewable power for their own customers.

The public utilities have been running advertisements in local newspapers, telling ratepayers — already reeling from mounting costs of the troubled Washington Public Power Supply System nuclear projects — Merwin Dam could lower their bills. For its part, PP&L has characterized the relicensing battle as "a takeover attempt" and one of the utli-

ty's backers, Portland Mayor Frank Ivancie, accused the public utilities of "piracy."

While the dam — part of a three dam complex on the Lewis River — makes up only 3.4 percent of Pacific's generating capacity, the private utility says it might cost as much as an additional \$128 million annually to get replacement power.

The FERC hearings concluded in early October. A ruling is expected sometime next spring. The case, regardless of the ruling, is probably headed for the federal appellate courts.

Whatever the outcome, the battle over Merwin Dam points one thing out clearly — the long-term value of a renewable resource.

## Model efficiency code big saver for consumers and region

New homeowners could save nearly 60 percent on their electric heating bill and the region could defer billions of dollars for new coal or nuclear plants under a model energy-efficiency code developed by the staff of the Northwest Power Planning Council.

"Houses built to the proposed model efficiency standard would be twice as efficient in their electrical use as today's typical new home," said Edward Sheets, Council Executive Director. "Under the proposal, you could heat two houses for roughly the same amount of electricity used today to heat one house of the same size.

"For the region, that means we could save billions of dollars we would otherwise have to spend for building new conventional power plants."

The proposal divides the region into three climate zones, with the standards setting performance levels for new structures which would allow the builder to pick an array of methods to achieve the comparable efficiency (see table).

## Proposed model standard

Annual space heating use, in kwh per square foot

Building Type	Climate Zone		
	1 (West of the Cascades)	2 (E. Wash./E. Ore. & Idaho)	3 (W. Mont.)
Single Family	2.0	2.0	2.4
Multifamily (5-plex or larger)	1.2	2.3	2.7

Under the proposed efficiency levels, a new 1,500 square foot home would use about 3,000 kilowatt-hours for space heating, costing, at a regional average rate of 3 cents per kilowatt-hour, \$90 annually to heat. This compares to the same sized house built to today's standards, which would use 7,500 kilowatt-hours, costing \$225 annually.

For new non-residential buildings, the efficiency standards would be based on the most recent version of the model energy code of the American Society of Heating, Refrigeration and Air Conditioning Engineers.

Applied only to new buildings, Sheets estimated the model standards could save approximately 650 megawatts of power, or roughly the operating capacity of a new coal or nuclear plant, under the Council's high growth projections.

To allow builders to make the transition to more efficient buildings and learn new construction techniques, Sheets said the staff is proposing that new efficiency steps be regionally financed through the Bonneville Power Administration for the first three years.

"Under the Council's high-growth population forecast, nearly 60 percent of the housing stock in the year 2000 will be built between now and then," Sheets said. "It's important that these buildings be built to the highest efficiency levels economically practical for the region. After all, the efficiency level of each new structure will help determine how much power the region will need."

In addition to new build-

ings, the Council staff proposal also calls for full payment of all physically feasible efficiency steps for existing electrically heated structures, residential and non-residential, which are regionally cost-effective. The particular measures would be determined by on-site audit. The cost of the audit would be paid by the region as part of the program's cost.

The staff also proposes that BPA reimburse agencies with responsibilities for building or energy-efficiency code enforcement, picking up the cost of implementation and inspection for those agencies which adopt the model standards.

While the standards for new construction would require some change in present building practices, Sheets said the only noticeable difference between a home built now and a model efficiency home "would be that your window sill would be a bit wider."

The staff proposal was presented before the Council on its November 3 meeting as part of the comprehensive energy plan being drawn up by the eight-member panel. The Council is seeking public comment on the proposal.

"This is one of those cases where everyone can win," said Sheets. "The consumer gets a more energy-efficient house that's cheaper to heat. The builder gets paid by the region for building a more efficient home that's more financially attractive to the potential homebuyer. And the region gets the power savings — and the dollar savings — of more efficient new housing stock. We all come out ahead."

## Council weighs inverted rates for conservation

For years, it has been a topic of little concern in a land awash in low-cost power. But today, more and more utilities, regulatory officials and consumers are talking about electric rates and how they should be structured.

The Northwest Power Planning Council joined the debate last month with a staff proposal for wholesale and retail rate designs to encourage conservation — and it quickly became the shot heard around the region.

"There is a very strong negative feeling to this proposal by public power," said Jim Boldt, director of the Washington Public Utility District Association. Jay Waldron, an attorney representing the Northwest Public Power Association, accused the Council of trying to usurp local control of rate making without the legal authority.

At the center of the controversy is a proposal for inverted rates for the residential sector, with a portion of the bills priced at the cost of new resources, or marginal cost. The Council is reviewing the feasibility of inverting commercial and industrial rates.

"With a design approach, those who do not conserve get a direct and continuing incentive to take some action," says Wally Gibson, the Council's program manager for rates. Under the proposed rate design package, Gibson said, those individuals or businesses which had taken some conservation steps would probably avoid the last, high-priced block of power.

Most of the Northwest's major private utilities and several larger public utilities, such as Seattle City Light and the Eugene Water & Electric Board, already have some form of inverted residential rate structure. Most of the region's small public utilities, however, charge customers a flat or average rate regardless

of the amount of power used.

Gibson told the Council during a recent meeting that an inverted rate structure would also encourage consumers to respond to the changing — and escalating — cost of electricity because rates would more closely reflect the increased costs of new power generation of any type.

The staff proposal, being considered as part of a model conservation package, drew its sharpest fire from some of the region's public utilities.

But Council members cautioned the utilities about over-reacting to the proposal. Charles Collins, a Washington member, said the only burden facing a utility would be to show it could save an equivalent amount of power. "And you can do that any way you want," Collins added.

In addition to the retail rate proposals, the staff proposed a new surplus power policy to encourage use of seasonal excess power within the region, such as in irrigation or multiple fueled boilers, before selling it out-of-region.

The proposal also calls for a tiered, or inverted-type, rate for the wholesale power sold by the Bonneville Power Administration which would more accurately reflect the cost of new resources and encourage utilities to pursue conservation programs.

It also calls for a low-water contingency surcharge, to be passed on to retail utilities, if the region experienced a water shortage and was forced to buy high-cost stopgap power.

The package goes before the Council in early November for consideration on whether it should be adopted into the panel's long-range energy plan.

## Workshops focus on key energy issues

Workshops were held last month by the Northwest Power Planning Council, drawing citizens from around Montana, Washington and



**Prose on power:** Working group discusses issues at Council citizen energy workshop.

Oregon to discuss major energy issues prior to release of the Council's draft regional energy plan early next year.

The Montana workshops focused on how much electrical power is enough, how should electricity be priced and how electricity could be conserved.

Responses from Butte residents to the first question about electricity supply ranged from "Build fewer power plants and make better use of what we have" to "Better to have too much power than not enough."

First priority for developing possible power supplies was small-scale alternative energy sources. Number two was a suggestion that there should be a shorter time between planning and building energy plants.

Butte workshop participants favored using incentives rather than regulation to promote conservation, with many feeling that regulations were expensive. In addition, many people thought that increased rates would be adequate incentives, although actually using the electricity price structure to encourage conservation got few votes.

The workshops in Spokane and Seattle focused on three approaches to achieving residential conservation: regulatory, incentive and market.

After a panel discussion on the issues, working groups discussed the alternatives and came up with recommendations which were presented to Washington Council members Dan Evans and Chuck Collins.

The recommendations included:

- Mandatory appliance efficiency standards should be adopted, and phased in gradually.

- Inverted electricity rates should be established, also phased in gradually.

- Rental housing should be required to be weatherized by a certain date.

- Special programs should be offered to weatherize low-income homes. Opinion was divided on the types of programs to be offered and the source of payment for the programs.

- Building codes for new dwellings should be tougher, based on the marginal cost of electricity.

- Utilities should offer incentives — zero or low-interest loans or direct payments — to homeowners to encourage them to weatherize.

The Oregon workshops dealt with a variety of planning and conservation issues. The issues and recommendations including:

- Planning uncertainty should be dealt with by building small facilities with short lead times and by improving forecasting techniques.

- During a surplus, continue to develop and implement conservation programs. Build small-scale renewable resources, not new large-scale power plants.

- Conservation programs should be directed toward all existing housing, regardless of ownership or heating fuel, and they should utilize incentives, direct assistance, education and marketing rather than mandatory measures.

- Building codes for energy

efficiency should be mandatory in the region, and should provide incentives to exceed the building code's efficiency.

- Electricity rates should not be used as a conservation measure.

"I was really pleased by the comments," said Gerald Mueller, a Montana Council member. "We're finding the public has a number of good ideas about how we can better plan our energy future."

## Washington solar conference held

Focusing on ways to promote solar energy and conservation, more than 120 people attended the fourth annual conference of Citizens For a Solar Washington.

The conference included workshops on planning, organization, and more effectively influencing energy policies in local areas, utilities, and at state and regional levels.

Workshops also focused on the "model plan" developed by the Northwest Conservation Act Coalition (of which CSW is a member). The plan calls for aggressive conservation in implementing the Northwest Power Act.

Richard Conlin of the Northwest Conservation Act Coalition feels conference participants wanted to know how to get the Model Plan implemented. "It looks good to them on paper, but they want to know when all this will happen. They found out how to get busy with their PUD, to find out what their utilities are doing. The conference gave them tools to work with."

# RENEWABLE RENAISSANCE



**Big wind:** Three giant Boeing-built wind turbines sit on the Washington side of the Columbia River Gorge. Together, the prototype wind machines can produce enough electricity to serve about 2,000 homes.

(From page 1)

provide the energy for Northwest homes and businesses.

- **LIBBY, MONTANA** — The Kootenai Medical Clinic here is all lined up with fuel for winter — sunlight to power its hybrid solar-ground source heat pump. Like last year, Dr. Richard Irons expects to make it through winter without using the small electric heat system he installed for back-up.

- **LAKEVIEW, OREGON** — Electricity produced from low-temperature geothermal wells here will be sold by private developers if they can find a buyer. The well-head generators will use 200° F ground water to produce 300 to 400 kilowatts per hour.

- **SULTAN, WASHINGTON** — Electricity from a water storage reservoir will be the first hydroelectric project owned and operated by the Snohomish County Public Utility District when it is completed in the spring of 1984. It will generate 112

megawatts of peaking power and 50 megawatts of firm electricity.

- **CAPE BLANCO, OREGON** — A feasibility study of wind power is underway for this blustery coastal area. If things work out, as much as 80 megawatts or more of electricity could be generated. Up the Coast near Coos Bay, Pacific Power and Light is negotiating with a private firm to buy the electricity from 50 25-kilowatt wind machines.

- **BOISE, IDAHO** — For the past 90 years, hot ground water has supplied heat to 250 homes here through a small geothermal heating district. It's being renovated and expanded to cover an additional 200 homes. The City of Boise is completing work on another small heating district to serve 50 mostly commercial buildings. The state is finishing up a geothermal heating system for eight office buildings, including the Capitol.

- **BURNS, OREGON** — The Harney Electric Cooperative and the Edward

Hains Lumber Company are ready to develop a 40 megawatt wood-fired cogeneration project. With a site approval certificate from the Oregon Energy Facility Siting Council, and equipment supplied by General Electric Company, the project needs development capital and a purchaser for the power to trigger construction.

There's more.

Hydropower, for six decades the staple of Pacific Northwest energy supplies, may well re-emerge as one major new source of regional energy. Throughout the region, filings have been made for sites with an "on paper" potential of 10,000 megawatts of small-scale hydroelectricity. Experts say the potential for producing electricity from geothermal wells is massive. Add in solar, wind, and biomass, and the region appears to be just as rich in yet untapped renewable resources as it was in 1900 when engineers and investors viewed the Columbia and Snake Rivers and dreamed

*Renewable resource proponents view big coal and nuclear plants as modern-day dinosaurs.*



**Small hydro; big potential:** While most of the large dam sites have been used, Northwest hydro experts say there is enormous potential for small-scale projects.

of developing the large hydroelectric projects now built.

This rosy view of renewable energy resources for the Northwest, however, has a thorny side. Proponents criticize the Bonneville Power Administration for not putting more money into developing renewable resources now. For its part, BPA says given the large surplus of electricity from existing resources, it doesn't make sense to acquire more now. Other energy planners, sounding a note of skepticism, say additional research and demonstration is needed to find out how much *actual* power these renewables can produce and which technologies are the most cost-effective.

The regional energy plan, being put together now by the Northwest Power Planning Council, will help answer some of the questions surrounding the development of renewable resources. Due in final form next April, the plan will chart an energy course for the region, specifying which resources are to be developed, when, and how. Two important determinations will drive this plan. One is the Council's forecast of regional need for electricity. The other is the cost-effectiveness of new resources on the menu of choices. Expecta-

tions for the plan have already been felt. The Spokane-based Washington Water Power Company, for example, while proceeding with plans to site a 2,000 megawatt coal plant at Creston, Washington, has said it will build the facility only if it is needed and a part of the Council's energy plan.

But projects like the Creston plant, or the nuclear plants of the Washington Public Power Supply System, are viewed as modern-day dinosaurs by the proponents of renewable resources. They say the evidence is in to prove the case for developing renewable energy, and they marshal an array of data and arguments in making their case.

#### HYDROELECTRIC

A national survey conducted by the Army Corps of Engineers shows that half the nation's hydroelectric potential lies within the four-state Pacific Northwest region, reports Gil McCoy, hydroelectric specialist with the Washington State Energy Office. McCoy labels as "myth" the notion that we've used up the hydroelectric resources in the region.



"What we've used up is the very large-scale sites (in the 1,000 megawatt range) on the Columbia and Snake," said McCoy. "Looking over the region, we've developed the two large rivers and largely ignored the rest."

In Washington State alone, McCoy said, there have been 248 filings on sites where small-scale hydropower projects might be developed, projects ranging from 100 kilowatts up to 30 megawatts:

179 new sites, mostly high-head, run-of-the-river projects that have virtually no reservoirs behind the dams;

33 projects at irrigation dams, where drop structures and wasteways would permit installation of generators to produce power;

17 projects would involve rebuilding once-used hydroelectric sites or installation of additional turbine generators at existing sites;

14 projects could produce electricity at dams built for flood control or recreation purposes; and

5 projects could generate power by installing turbines on existing water supply lines.

Although it is unlikely that all of these

projects would be developed, McCoy said their total electricity production potential is 1,275 megawatts.

McCoy said 19 filings for medium-sized projects of the type at Sultan, Washington, carry a potential hydropower output of 2,070 megawatts. At Sultan, the Snohomish County PUD is building a powerhouse at the end of a long tunnel that will carry water from Culmback Dam, operated by the City of Everett as a water reservoir. By elevating the earth/rockfill dam an additional 62 feet, and building the tunnel and powerhouse, the water reservoir will produce 112 megawatts of peaking power and 50 megawatts of average or baseload power. Another medium-sized project is being built by Seattle City Light, Tacoma City Light and the South Columbia Basin Irrigation District. This 74 megawatt project near Moses Lake, Washington, will use flows through irrigation canals to power turbine generators.

## GEOTHERMAL

Thanks to the volcanic roots of mountains in the Northwest, this region is dotted with hundreds of potential geothermal sites where once-active volcanoes left behind pockets of hot earth and ground water. According to Gordon Bloomquist, geothermal specialist at the Washington State Energy Office, as many as 150 cities in Oregon, Idaho, Montana and Washington may be as lucky as Boise in that they are located near potentially productive geothermal fields.

The State of Idaho's Capitol Mall project will provide about 90 percent of the 700,000 square foot complex's heating needs with geothermal energy. Idaho Public Works Administrator Brian Chase predicts that in 1982 the project will save the state \$150,000 in natural gas costs. The only costs to maintain the project will be electricity to run the well pumps and maintenance on the piping system.

"The nice thing about geothermal," observed Bloomquist, "is that it's an indigenous resource, it uses off-the-shelf technology, and it can use many technologies that have proved effective."

Bloomquist describes as a "breakthrough" the use of well-head generators to produce power from low-temperature geothermal sites. The Lakeview, Oregon



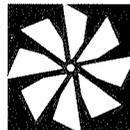
**Capitol idea:** The State of Idaho is finishing its Capitol Mall geothermal project to provide heat for 700,000 square feet of office space.

project is one good example. Until recently, low-temperature ground-water was used mainly in district heating systems like those in Boise. But work by technicians in Israel produced equipment to generate power from solar hot water ponds, according to Bloomquist. And the shift to using this equipment at low-temperature geothermal sites came as a logical next step.

Using the geothermal resources in our region could "add substantially to the energy resource in our area," Bloomquist said. Several Northwest utilities agree.

The Eugene Water and Electric Board, Northwest Natural Gas, and Seattle City Light are among those exploring for geothermal resources.

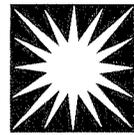
**WIND** "We could be looking at 80 megawatts," says Angus Duncan, director of the WindFarms, Inc., project at Cape Blanco on the southern Oregon Coast. The feasibility study will examine meteorological, geological and engineering feasibility for installing wind machines at the site. The \$1 million cost for the study will be shared by Bon-



neville Power Administration (80 percent), WindFarms (10 percent), and by Portland General Electric and Pacific Power and Light (5 percent each). Duncan said there is great wind potential in the Northwest. His study will take 1½ to 2 years to complete.

The Boeing Company, under contract with the National Aeronautics and Space Administration, has built three 2½ megawatt wind machines at the Goodnoe Hills site near Goldendale in southern Washington. Bill Engle, of Boeing Engineering and Construction Company, said the machines have proven themselves technically. However, he said, "the jury is still out" on the economics of the wind-power experiment.

**SOLAR** One reason for the great potential of solar energy is that it can be harnessed in so many different ways. Design of buildings for passive solar, active systems that employ a variety of mechanical devices, and passive/active hybrids offer a wide range of choices for exploiting solar energy.



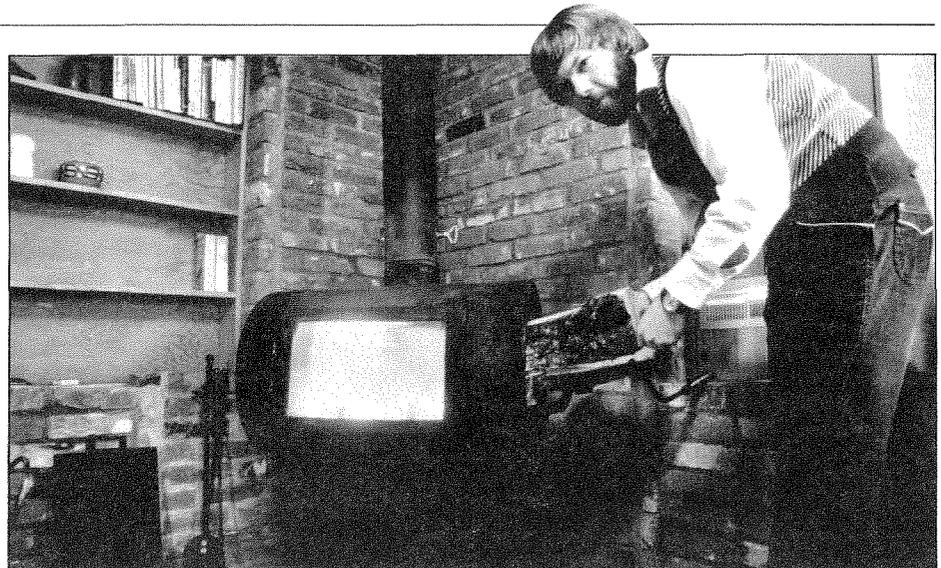
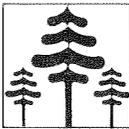
Passive solar energy applications, through siting, designing and building to take the most advantage of available sunlight, are on line now. "Yes, we are ready with passive solar buildings," says John Reynolds, professor of architecture at the University of Oregon and also a practicing architect at Equinox, a company he owns in partnership in Eugene.

Reynolds designed the Lane Energy Center in Cottage Grove. This one-story, 2,100 square foot building, houses a store for energy conservation products and a restaurant. "The owners are delighted," says Reynolds, who noted that the passive design for heating and cooling has worked: the hottest the building has gotten is 75°F, the coolest no lower than 62°F. Reynolds said many contractors lack experience with passive solar designs and need to learn about the techniques of constructing such buildings. But the designs themselves are ready to go.

At his clinic in Libby, Dr. Irons said he is "quite pleased" with performance of his solar-ground source heat pump system, which has cut his energy bill 30 percent. His 2,000 square foot building was "super insulated" when built and received an energy conservation award from the Pacific

Power and Light Co. The solar-ground source heat pump system is an Alten-Solar Tech system by Alten Northwest of Seattle. Dr. Irons said he helped finance its installation by using both Montana and federal solar tax credits.

**BIOMASS** The timber-carpeted Northwest had many cogeneration installations in the late 19th and early 20th centuries when lumber mills used mill wastes to generate their own power. This resource is another potentially large producer of electricity, according to Richard Durham of the Oregon Department of Energy. Head of the Pacific Northwest Bio-conversion Task Force, Durham said the 40 megawatt Haines-Harney cogeneration project, costing \$38 million to build, could produce power at a price competitive with conventional resources. Another cogeneration project, sponsored by the Eugene Water and Electric Board and the Springfield Municipal Electric Utility at Weyerhaeuser's big mill at Springfield, would generate 50 megawatts. Washington Water Power Co. is in the process of engineering and constructing a 40 megawatt steam electric generating plant at Kettle Falls, Washington, that will be fueled with wood waste from sawmills. All over



**Wood energy:** Among the forms of biomass energy making a comeback are wood stoves. But the stoves aren't without problems, such as air pollution.

the Northwest there are potential projects to use the region's vast forests to generate power.

**W**hile the outlook for renewables may be bright, it must be tempered by the need to solve some remaining difficulties. Solar energy, passive and active, can be

expensive. Active solar systems have been plagued by equipment breakdowns. Wind projects do not always yield the amount of power projected. Geothermal energy is very site-specific, dependent upon the temperature and chemical composition of ground water. Although the supply of slash in the forests is large, gathering the slash for cogeneration use is still very expensive. Developing small hydroelectric

## Small town strikes a geothermal gold mine

**EPHRATA** — A mini geothermal heating district will come on line at the Grant County Courthouse here in mid-November, the culmination of a project that began as a search for domestic water and wound up as an energy project.

Back in the spring of 1978, reports Ephrata City Engineer Jim Churf, a city crew was drilling for potable domestic water. They found good, clean, potable — but also hot — water. "We put our heads together," he recalled, "and we came up with the idea that maybe we could use the water for heat. The old Courthouse (oil-fired) boiler and steam-heat system needed to be replaced anyway."

With help from the Washington State

Energy Office, the Oregon School of Technology and a \$468,000 U.S. Department of Housing and Urban Development Innovative Grant, Churf's project drilled its well to 1,850 feet where they reached hot water at 84°.

The water was quite low-temperature for direct heating application so a dual heat-pump system was designed. The first heat pump will raise the water temperature from 84° to 120° for normal heating of the Courthouse. A second heat pump will be available for back-up and for further raising the temperature to between 140° and 160° when especially cold weather requires this extra peaking heat boost.

The system is large enough so that it will heat the new law and justice center

to be built soon next to the Courthouse, Churf said. And it is being tested in two low-income houses to see how it might serve a single family type home. Nearby merchants are eager to connect to the system, Churf reported. But he added that he's cautioned them from moving too fast. "Let's wait first and see how well the system works," he said.

By the way, the unexpected energy benefits from the project did not shove aside the original purpose of finding a potable water supply. Churf said one unique aspect of the project is that after the hot water is used for heating, it will be sent into the regular water system for domestic use.

projects carries environmental risks and now must take into account the "hard constraint" of the Northwest Power Planning Council's program to replenish the Columbia River Basin's fishery.

Proponents acknowledge these problems. They argue, however, that most can be overcome if enough resources are brought to bear to get on with the job. Much of the blame for lack of progress in developing renewable energy resources in the Northwest, they say, lies at the feet of BPA.

"Bonneville's proposed near-term resource policy has put a tremendous damper on development of renewables," said Durham. "Nowhere in Bonneville do you have anyone interested in developing renewable resources."

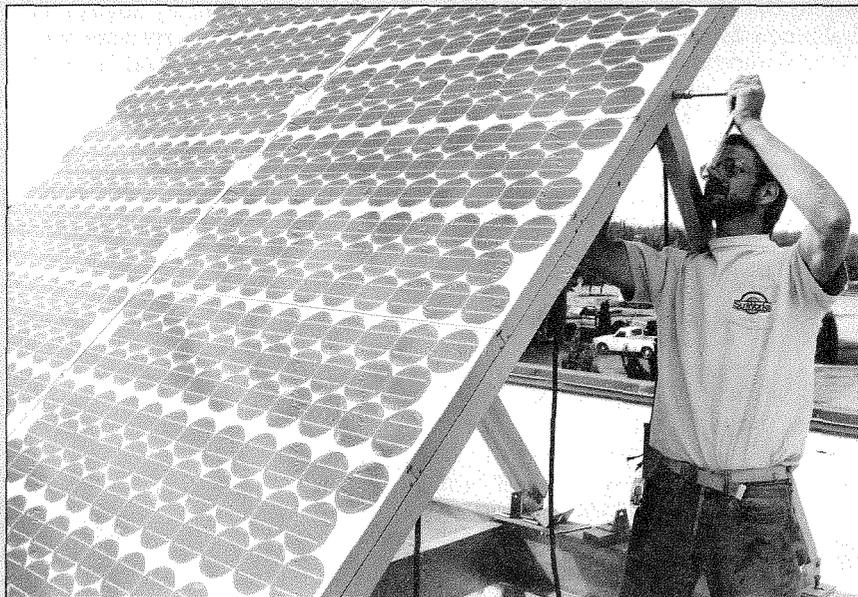
David Philbrick, Durham's colleague at the Oregon Department of Energy, outlined the case against Bonneville on the question of renewables. "For starters we had to put together for Bonneville a list of its own renewable programs," said Philbrick.

Durham and Philbrick say BPA lacks a willingness to develop renewable resources despite a plethora of opportunities around the region to finance such projects. "Bonneville is looking creatively to sell WPPSS power to California, but not creatively to sell renewable power to California," said Philbrick.

McCoy echoed this criticism of BPA. Speaking of developing small hydroelectric sites in the region, McCoy said under BPA's proposed near-term resource policy "in the next few years we're going to see very few (small hydro dams) coming on line."

Last summer BPA issued a proposed policy that would restrict its acquisition of new electric resources to certain conditions. Any acquisition could have only minimal impacts on BPA cash flow requirements and the environment. Most of the power produced (or saved in the case of conservation) would have to come on line in the periods of forecast deficit (late '80s or early '90s), take several years to realize full production/savings potential, and not cost more than 3.5 cents per kilowatt-hour in constant 1982 dollars.

BPA's proposed near-term resource policy pledged that in 1983 program specifics would be developed for acquisition of small renewable resources but that a lim-



**Going solar:** A worker tightens down a final nut on the Bonneville Power Administration's photovoltaic installation in Redmond, Oregon.

## BPA installs photovoltaic panels; seeks sunpower for substation

The Bonneville Power Administration last month installed one of the largest photovoltaic power systems in the Pacific Northwest. The project is one of BPA's ongoing efforts to develop renewable resources for the region.

The system consists of 1,120 square feet of solar cell panels. They are being assembled in two 56-foot-long rows on the roof of a BPA maintenance building at BPA's Redmond substation near Redmond, Ore.

Sunworks, Inc., of Portland is the general contractor for the project, which will cost about \$196,000. The system is to go into operation in November.

Craig Mortensen, a BPA electrical engineer, said the system should generate about 15,000 kilowatt-hours per year. It will average about 20 kilowatt-hours a day in winter and about 60 kilowatt-hours a day in summer.

The photovoltaic system will be connected to BPA's transmission grid. When the solar panels produce more power than the building is using — as on weekends — the extra power will flow into the grid.

BPA has had photovoltaic systems in operation for several years, particularly in remote areas where it is too costly to hook up with conventional power lines. But the Redmond system is unusual because of its size and because it will connect with a regional power supply system.

"The beauty of hooking into an already existing power system is that it enables a solar user to get by without expensive storage facilities, such as batteries," Mortensen said. "This feature may make the system attractive for many businesses — if we can show that it will operate successfully."

ited number of small-scale projects would be acquired as part of its effort to develop and test the components of a full-fledged program.

"We intended to draw a balance," said Jim Curtis, Acting Resource Acquisition Manager at BPA's Power Management Division. "We want to balance the needs of the ratepayers in a deficit period versus the needs of ratepayers in a time of surplus. It's a tough one to call." BPA is being "cautious due to a high level of uncertainty," he added.

Despite the demonstrated promise of several renewable resources in the region, Curtis said uncertainty remains over just how much *actual* power can be produced from renewables. "Even the assessment of the potential is in dispute," he said.

Curtis outlined the reasons for BPA's caution with respect to acquiring new resources, renewable or otherwise. Given the regional surplus, he said, the power is

not needed now. The region will need more electricity when power deficits occur in the late 1980s or early 1990s as Bonneville now forecasts, he said. Secondly, Curtis said Bonneville must develop "a coherent marketing and intertie policy" for selling power to California, deciding who can sell power over its transmission lines to the Golden State. A third matter is cash flow. Curtis said Bonneville wants to hold down rate increases in this time of surplus as ratepayers in the region are already being hit hard by a depressed regional economy and by substantial rate boosts as WPPSS costs are passed through the BPA rate structure. And finally, Curtis stressed that Bonneville is awaiting the Northwest Power Planning Council's energy plan to see what it calls for in the area of new resource development.

"We're reticent to move forward too rapidly until the Council makes some of its decisions," he observed.

If Durham and Philbrick are critical of BPA, they see time as on their side in the argument over development of renewable resources. For one thing, the Northwest Power Act sets statutory priorities for resource acquisition: conservation first with a 10 percent price bonus; renewable resources second; cogeneration third; and, conventional resources (such as coal and nuclear) last.

"The site-banking concept needs renewables," said Durham of an idea that Council members like Washington's Chuck Collins and Oregon's Roy Hemmingway have discussed. The idea is to study and plan for new electric energy resources so they are "on the shelf" ready to be used when needed. Most renewable resources are small in scale, compared with a nuclear or coal plant, and require less lead time to plan and develop. Under the site-banking concept, selected re-

## Solution to the resource puzzle?

Power planning has always faced some kinds of uncertainty: What will be the demand for power? When will new resources come on line? How much water will we have to run the dams?

The Northwest Power Planning Council has developed a planning philosophy to deal with the uncertainties of power planning. This philosophy emphasizes a forecast range of possible electric demand rather than a single point forecast. It also emphasizes flexible resource planning through the use of "options."

A resource option will be an investment by the region in the early stages of developing a resource. Options will be exercised, creating a resource with shorter lead time, if energy demand turns out to be high. If demand turns out to be low, the chosen resource will be placed "on the shelf" to be used when needed.

Future resource development will thus involve four stages:

**Stage 1. Planned Option.** The Council identifies the most cost-effective electric energy resources by examining such factors as cost, timing, reliability, environmental costs and benefits, and availability. These cost-effective resources will be included in the Council's regional energy plan.

**Stage 2. Acquired Option.** BPA follows the Council's plan and negotiates with a resource developer and purchases option.

**Stage 3. Resource Acquisitions.** The Council recommends that the op-

tional resource be developed based on current conditions and forecasted energy demand.

**Stage 4. Resource Completed.** BPA acquires the energy supplied by the resource.

There are several different types of resource options.

1. A resource could be sited, licensed, and designed but not constructed (site-banking).
2. A resource could be acquired before the region needs the power and then sold outside the region until a later time when the power is needed.
3. A demonstration project, perhaps for a conservation program, could provide information about the cost and the amount of energy provided by a resource.

There are many unanswered questions — regulatory, legal, institutional — that need to be resolved before options can be used effectively by the region. The Council is working with the

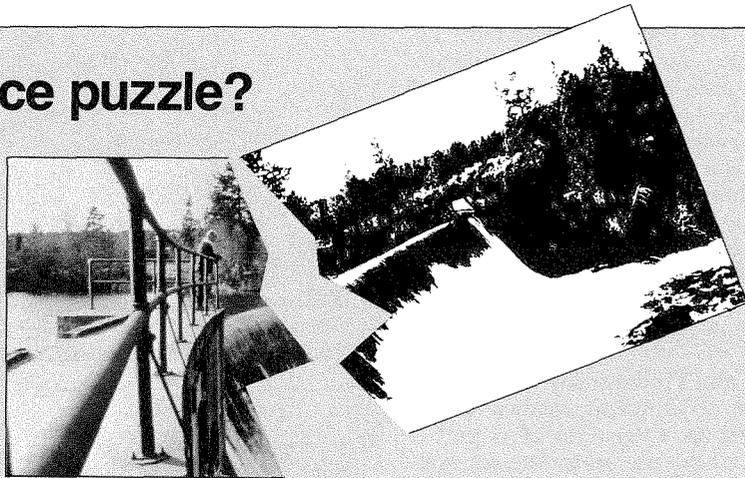
region's utilities and resource developers to resolve these issues.

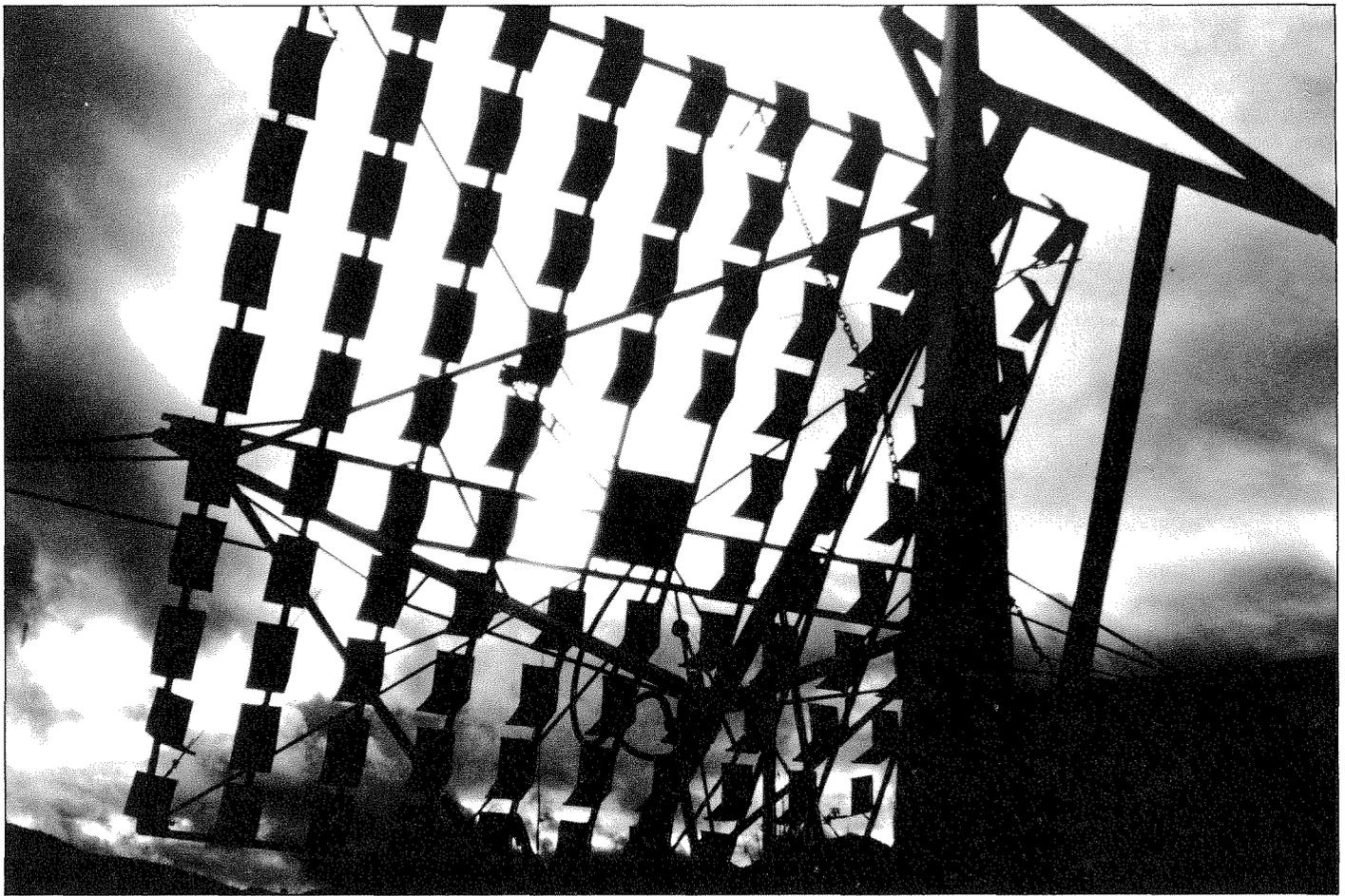
"The key question," says Randy Hardy, "is whether this offers a new course for energy planning in the Northwest. In other words, will it really work?"

Hardy, executive director of the Pacific Northwest Utilities Conference Committee, has begun studying the resource options idea to determine all the steps that would need to be taken to bring the idea into practical reality.

Hardy said that for the resource options concept to work, the Council, the Bonneville Power Administration, and utilities all have a series of steps to take. For example, the Council needs to develop a method for analyzing which options are cost-effective.

If the idea works, says Washington Council member Chuck Collins, resource options could provide an important "insurance policy" against the uncertainties of power planning.





**Renewable turning point:** Renewable resource advocates say advancement of these resources could usher in the next energy era.

sources would be designed, sited and licensed and placed "on the shelf" to be completed when the need arises.

This idea is among those being worked on by the Council and its staff as part of the energy plan preparation. Meeting a cost-effectiveness test, of course, is a statutory requirement the Council must fulfill in putting together the plan's list of resources to acquire. While many proponents of renewable resources argue with special zeal for developing solar, wind and biomass projects, the test in the end will be economic and practical technical applications. As Council Chairman Dan Evans, Washington, noted at the outset, the Council's energy plan will seek to provide energy efficiency and stability and will not be a blueprint for social reform.

Perhaps a brake more powerful than BPA's near-term resource policy with respect to development of renewables is the dramatic shift of federal emphasis. Under President Jimmy Carter, there was a concerted support of programs and rhetoric to develop renewable energy resources. President Reagan has not only cut out the money for such programs, like un-funding the solar bank,

but he has moved the Presidential pulpit from renewable energy resources to nuclear projects, like the Clinch River Breeder Reactor, with money to back up the words.

The shift away from renewable energy resource development by the federal government worries many who want more research in such areas as the high-tech solar cell. "This really should be a national priority," observed Philbrick. "We could lose this high-technology to the Japanese. Solar photovoltaic cells could usher in the next energy age."

Duncan, who served in Washington, D.C. as energy liaison under former Transportation Secretary (and Portland Mayor) Neil Goldschmidt, offered the same kind of criticism regarding wind technology.

"It's analogous to development of the microcomputer with the support of the Pentagon," Duncan said. "Several years ago, the Pentagon invested heavily in data processing, allowing the computer companies to learn more about the technology. This military market has led to the very rapid buildup of the small computer industry. If Bonneville were to provide such a market for wind machines, we could go through the necessary learning curve to produce and bring down the cost

of wind machines. BPA is one of the few utilities in the country that can provide a market for wind energy and drive down costs."

New technologies may be required to harness wind, biomass, solar and geothermal power for today's applications. But governmental policy can't change the fact that many of the touted renewable resources in the Northwest are not new ones. Rather, they are energy forms that were used effectively in earlier times. Their utility has already been tried and proved for agriculture, industry and in the home.

Renewables offer one advantage of being flexible. They can be developed in small increments, relatively quickly. Many renewable resources may require little capital to develop, use simpler equipment, and be easier to maintain. Little or no fuel costs means low operating costs. Because they are dispersed, a breakdown is less catastrophic when compared with large central station generating plants. Long ago, most of the energy used in the Pacific Northwest came from these smaller, simpler resources. It may be that way again in the future.

Still, for the time being, the renewable resource picture in the Northwest focuses more on potential than reality.

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## MAILING LIST

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- Council meeting agendas and Northwest Energy News
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## Scientific and Statistical Advisory Committee

Please send me agendas and minutes for:

- All Subcommittees
- Conservation Subcommittee
- Fish and Wildlife Subcommittee
- Forecasting Subcommittee
- Reserves and Reliability Subcommittee
- Resource Assessment Subcommittee
- Executive Committee

## DRAFT FISH AND WILDLIFE PROGRAM

- Please send me a copy of the Council's draft fish and wildlife program.

## ISSUE PAPERS

Please send me the following issue papers. (Some issue papers are not yet available.)

### Forecasting

- A1 - Economic and demographic assumptions
- A2 - Fuel price forecasts
- A3 - Double counting of conservation
- A4 - Evaluating key forecast model sensitivities

### Conservation

- B1 - Do we need avoided cost?
- B2 - What are conservation savings?
- B3 - Should we acquire conservation during periods of surplus?
- B4 - Rate designs as model conservation standards
- B5 - Conservation program evaluation and selection
- B6 - Agricultural conservation programs
- B7 - Industrial conservation programs
- B8 - Fuel switching — should we go get it?
- B9 - Building codes and model conservation standards
- B10 - Surcharges (if, when, how?)
- B11 - Establishing conservation targets

### Resources

- C1/C2 - Resource ownership and financing assumptions/capital availability and cost
- C3 - Constraints to resource development
- C4 - Incorporating environmental impacts in resource plan
- C5 - Interregional exchanges — how much and what cost?
- C6 - Options — how will they work?
- C7 - Development of resource and option targets

### Reliability/Power System Optimization

- D1 - Fish and wildlife impact on hydropower
- D2 - Power shortage costs
- D3 - Aluminum ingot storage

## ANNUAL REPORT

- Please send me a copy of the Council's annual report.

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