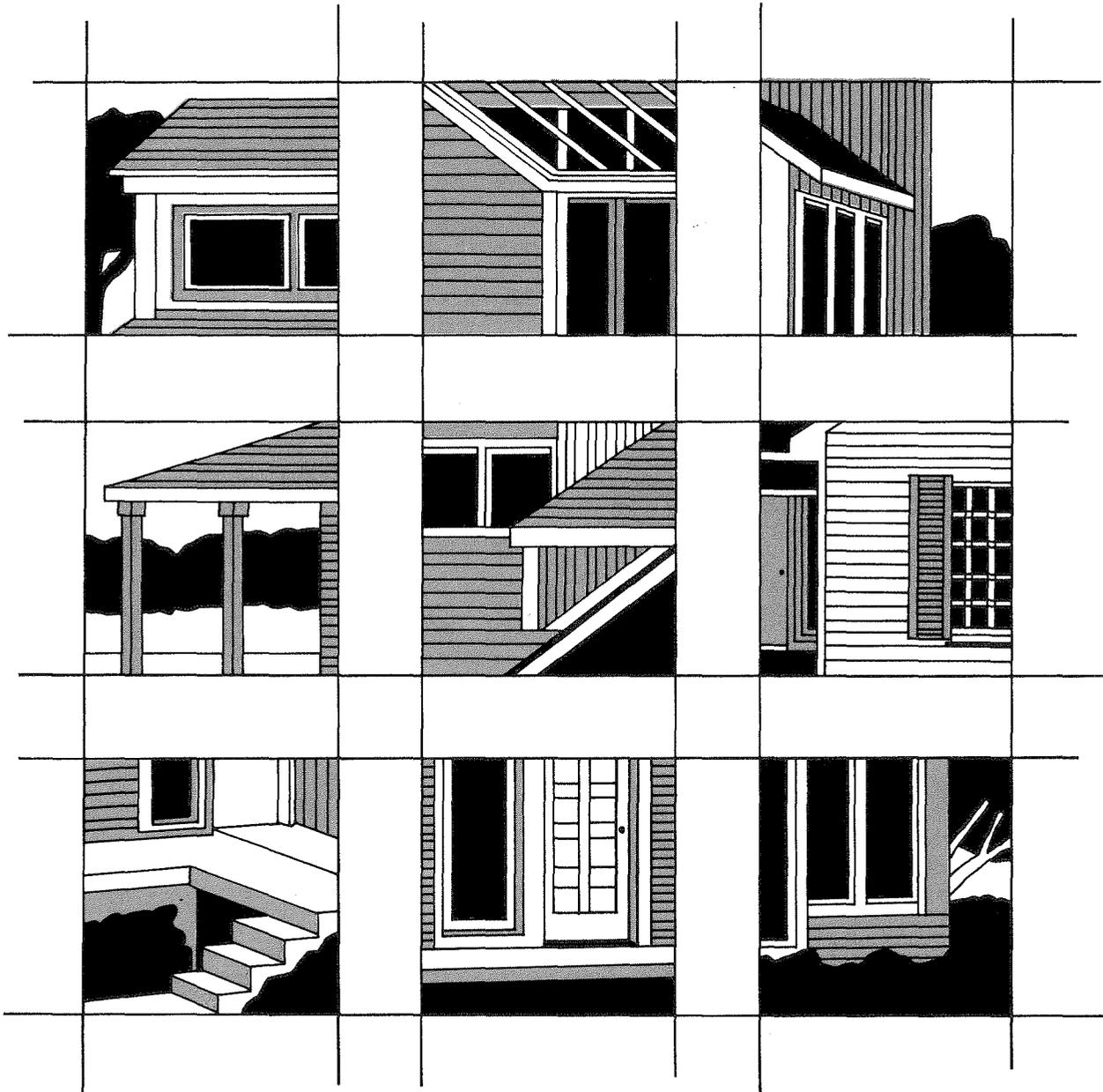


N O R T H W E S T ENERGY NEWS

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Northwest Power Planning Council

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MODEL CONSERVATION STANDARDS

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

Editor: Dulcy Mahar
Graphic Design: Linda Sawaya

Editor's Notes

This is a special issue with several stories devoted to one subject — the Model Conservation Standards. These should provide basic information on the standards. Over the next two years we will update the story with new developments as homebuilders, homeowners, and officials gain new expertise with super energy efficient building.

While building homes right the first time may be the Council's first priority, we also recognize the importance of making existing houses more energy efficient. In the last issue we introduced the nation's largest conservation project at Hood River.

In this issue, Carlotta Collette revisits Hood River to do a story on the sophisticated technology used to monitor the project. Incidentally, Collette has just joined the Council's public affairs staff as full-time writer-photographer.

About our writers: When we feature the work of a guest writer, a short biographical line will appear at the end of that story. All stories without the biographical line are the work of the Council's central and state public affairs staff. Unsigned articles are the responsibility of the editor.

Cover illustration by Georgiana Nēhl

NOW SHOWING

Several films and slideshows are available to groups who would like to learn more about the Northwest Power Planning Council and its programs. To borrow the shows, contact Chris Larson or Carol McAllister at the Council's central office (Oregon, 1-800-452-2324; Washington, Idaho and Montana, 1-800-222-3355 or 1-503-222-5161).

Energy 2000

This recently updated film introduces the viewer to the Northwest Power Planning Council and describes the 20-year Northwest Conservation and Electric Power Plan. (12 minutes)

Model Conservation Standards Slide Show

This slide show explains what the standards are, how they were developed, and why they are important to the region. (12 minutes)

The Journey of the Kings

The plight of the salmon and how their survival has been adversely affected by the dams in the Columbia River basin is the subject of this film, which will be released in April. It describes the work the Northwest Power Planning Council is doing to restore the salmon runs and protect fish and wildlife resources. (30 minutes)

—RC

CALENDAR

March 14, 15 — Northwest Power Planning Council meeting at the ERB Memorial Union Building on the University of Oregon campus, Eugene, Oregon.

April 4, 5 — Northwest Power Planning Council meeting at the Red Lion Inn, Boise, Idaho.

April 25, 26 — Northwest Power Planning Council meeting in Tacoma, Washington.

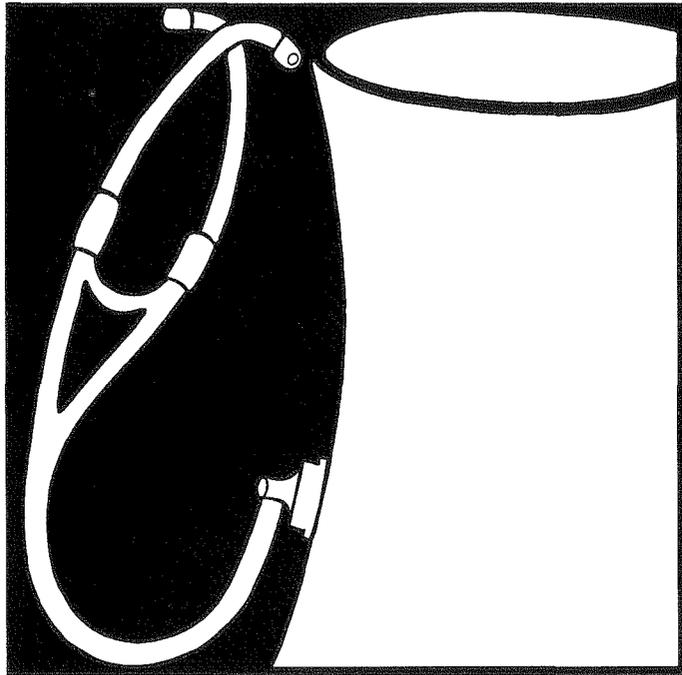
May 15 — Northwest Public Power Association Engineering and Operations Conference in Portland, Oregon.

May 16, 17 — Northwest Power Planning Council meeting in Helena, Montana.

May 31, June 1 — Northwest Public Power Association annual meeting in Victoria, British Columbia.

June 11-13 — American Water Resources Association symposium on "A Critical Assessment of Forecasting in Western Water Resources Management." Sheraton Hotel, Seattle, Washington. Contact Gary Minton, (206) 282-1681.

Compiled by Ruth Curtis



Nuclear sees one spot of good news

Diagnosing the health of the nation's nuclear power industry seems to be the favorite sport of editors and columnists this year. And, it turns out, the Northwest's infamous WPPSS default is but one of several landmark — and shattering — events for the industry in recent months.

For example, this January brought the one-hundredth cancellation in the last ten years of a nuclear reactor. Actually two reactors were cancelled at Marble Head, Indiana. One reactor was 59 percent complete; the other was 37 percent complete. Together, the twin reactors had already cost \$2.5 billion.

In Zimmer, Ohio, a 97 percent-completed plant will be converted to coal. Probably the most stunning setback occurred in Byron, Illinois, where a \$3.35 billion completed plant was denied a li-

cense by the Nuclear Regulatory Commission. The Commission cited "quality control failures."

The *New York Times* reports that no nuclear plant has been ordered since 1978 and says that of 60 plants under construction, three-fourths are more than half finished. The U.S. Energy Department's Energy Information Administration adds more bad news.

It has just issued a report showing that final construction costs for three-fourths of the nation's reactors ran at least double their pre-construction estimates and 28 percent came in at four times their estimated cost. Blamed were inflation, interest rates, construction costs, and delays.

The problems plaguing the industry include safety concerns, financial risks, high capital costs, operating problems, management failures, lowered demand for electricity, and public apprehension over nuclear power.

So serious is the latter point that a government report says that twice as many people op-

pose nuclear plants as favor them. So concerned is the nuclear industry that it is planning a \$40 million advertising campaign to bolster public confidence in nuclear power, according to the *Wall Street Journal*.

On top of all this bad news comes a rare bit of positive news. A report issued this February by the U.S. Office of Technology Assessment says that the problems are not inherent to nuclear power. The report, requested by the House Committee on Science and Technology, blamed immature technology and even more immature management for most of the problems.

Overall, the 293-page report concludes further nuclear expansion is unlikely in this century unless major improvements are made in those two areas.

According to the report, positive issues weighing in favor of the nuclear option include the long-term environmental effects of coal and the current underdeveloped state of alternate energy sources such as solar and wind power. The report also took note of the fact that many retroactive changes made in existing reactors have resolved technological problems, giving hope that the technology of new plants would be more "mature."

Views mixed on proposal for exchange rates

Reaction to a proposed change in energy exchange rates has ranged from cheers to jeers. The cheers come from the Direct Service Industries (DSIs), principally aluminum plants. They support the Bonneville Power Administration's pro-

posal to change the method it uses for determining costs in its Residential Exchange Program.

On the other side are the private utilities who claim the proposed change could up their rates to residential and farm customers by as much as 26 percent. Still another reaction comes from members of the Northwest Power Planning Council.

Before addressing the merits of the proposed change, several Council members expressed concern when Bonneville published the proposed changes without consulting the Council as required by the Northwest Power Act. The Council was left with no time to analyze the proposal prior to its publication.

The Residential Exchange Program was stipulated by the Northwest Power Act to provide rate relief to residential and small farm customers of investor-owned utilities. Under the system, private utilities sell power to BPA at their "average system cost" of resources.

In exchange, BPA sells the utility the same amount of power back at its lower public utility "preference" rate. The savings are passed on to the utilities' customers.

The program was designed to allow all Northwest residential and small farm customers to share in the region's low cost energy. BPA recovers the cost of this benefit through rates it charges its direct service customers. The DSIs say their share of the exchange rate is too high.

Bonneville's proposal focuses on the "average system cost methodology," the computation it uses to determine the exchange rates. The agency would like to eliminate certain costs from its calculation when it decides how

much it will pay for the utilities' power.

Thus far, customers of the 24 participating utilities have received \$367 million in rate relief from the program, according to Bonneville.

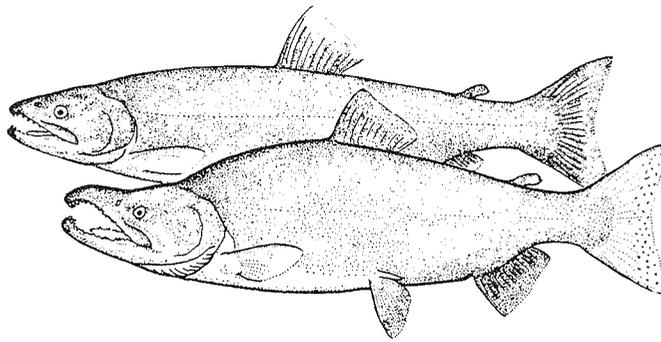
Idaho may get new hatchery

Construction of a kokanee hatchery on the Clark Fork River in north Idaho, which could lead to restoration of kokanee stocks in Lake Pend Oreille, was approved by the Northwest Power Planning Council earlier this year. The Clark Fork River is a tributary of Lake Pend Oreille, near Sandpoint.

The Council's action paves the way for completion of a three-party agreement for funding the hatchery between the Bonneville Power Administration, Washington Water Power Company, and the Idaho Department of Fish and Game. Total design and construction of the Clark Fork hatchery is expected to cost between \$1.5-1.6 million.

"The spirit of cooperation exhibited by the Idaho Department of Fish and Game, the Washington Water Power Company and the Bonneville Power Administration has been tremendous," according to Idaho Council member Larry Mills. "All these parties have spent several months working out the details for funding the Pend Oreille hatchery, which carries out one of the vital resident fish measures in the Council's Fish and Wildlife Program."

Consummation of a cost-sharing agreement between the three parties for the final design, construction, operation and maintenance of the hatchery also will result in substantial savings for BPA ratepayers, according to Mills. BPA, WWP, and Idaho Fish and Game are currently working out the details of the agreement.



The final design work and necessary environmental statements will be completed later this year to allow for a two-year construction period. Idaho Fish and Game hopes to begin operating the hatchery by October 1986.

The most recent harvest studies of the lake indicate that the fishery harvests have declined from about 1 million to less than 200,000 in 1979. The Clark Fork hatchery would produce around 20 million advanced kokanee fry, which is expected to result in an annual harvest of around 750,000 fish.

Decline of the kokanee fishery at Lake Pend Oreille has been attributed to a series of hydropower and nonhydropower problems.—SS

Alumax snubs extension

Fourteen years of planning ended quietly February 21, when Alumax Inc. failed to meet Bonneville Power's deadline for a long-term power agreement. Alumax had asked BPA for two more years in which to decide whether it could afford to pay Northwest electric rates for its proposed Umatilla, Oregon plant.

Bonneville considered an extension only three months shy of Alumax's requested one. But, after public comment swung against the aluminum smelter, BPA cut its extension to just 21 days. "The firm [Alumax] has been considering its option for many years," said BPA Administrator Peter

Johnson. "After careful review of the public comments . . . we find it is in the best interest of the region and its ratepayers to obtain a decision now."

The proposed Alumax smelter would have required 320 average megawatts of power, a load that, during a surplus period, would not have staggered the power distribution system. Unfortunately, the plant would have come on line in the late 1980s, when the region's current surplus could be depleted. To guarantee 320 megawatts to Alumax, BPA would likely have had to develop new resources for that power. Revenues from Alumax were not expected to cover the full cost of building the new resources, so the added expense would have been passed on to other ratepayers.

Complicating the issue even more was the Northwest Power Planning Council's decision to exclude the Alumax load from its 20-year plan. "The Council believed there was a low probability of Alumax building a plant in the region," wrote Council Chairman Keith Colbo in his comments to BPA. "Therefore, it was not prudent to plan for additional generating and conservation resources to meet such an uncertain load."—CC

Cheaper power may up yields for irrigators

Northwest agricultural experts

will be watching to see if the ability to buy cheaper power for irrigation will increase yields. A pilot program to make nonfirm energy available for irrigation during March and April has been offered by the Bonneville Power Administration.

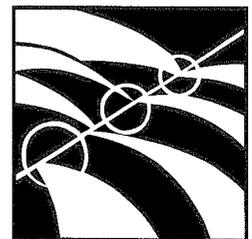
During this season irrigation is used to fumigate and fertilize the soil prior to planting. The low-cost sale could be a shot in the arm for the region's irrigated agriculture which is currently suffering from depressed markets and increased operating costs.

The nonfirm energy will be made available to Bonneville's nongenerating preference customers including cooperatives, public utility districts, and municipalities at a rate of 1.39 cents per kilowatt hour, less than half the normal rate.

The Northwest Power Plan promotes the sale of nonfirm, interruptible power within the region and cites irrigators as one of the groups which could benefit substantially from such a sale. The Plan concludes that such sales during periods of surplus can aid the regional economy and reduce rates for all consumers.

During the pilot project, Bonneville will study price elasticity, load shifting, impact of the sale on crop selection, and consumer acceptance. The data collected will be used to design future longer-term programs to assist irrigated agriculture.

To prevent revenue losses, participating utilities will be required to structure their retail prices to encourage sales above what would be expected if the project were not in place. In recent years, spring retail irrigation sales have declined.



Billing credits questioned

Bonneville Power Administration's billing credits policy should be consistent with the Northwest power plan according to the Northwest Power Planning Council.

The Council has told BPA to amend its policy to require that resources funded through billing credits meet the test of cost effectiveness. The power plan requires that resources be acquired in order of their cost effectiveness and does not differentiate between billing credit resources and other resource acquisitions. However, Bonneville had not adopted its billing credit policy at the time the plan was completed.

A billing credit is designed to give utilities an incentive for innovation in developing conservation or generating resources of their own. It is an alternative to BPA's acquisition of a resource. The Northwest Power Act allows the agency to grant credits to its customers for their own conservation and resource acquisitions if they reduce BPA's obligation to acquire additional resources.

The utility receives credit from BPA in the form of a reduction on its rates. The credit is compensation for BPA's reduced obligation to supply a comparable resource.

Since billing credit resources displace planned BPA acquisitions, they could change the make-up of the region's resource portfolio if they do not meet the same cost-effective test as other BPA acquisitions.

The Council sent BPA written notice saying the power act does not permit billing credits for generating resources which are inconsistent with the plan. The Council also noted that the plan considers cost effectiveness from a regional viewpoint and not from a single utility or BPA viewpoint.



Chinese visit to window shop

It turned out to be nothing more than a flirtation — at least for now.

A Chinese delegation raised some WPPSS bondholders' hopes when it visited one of the terminated plants in Washington. The Chinese, who are stepping up their efforts to improve their nuclear technology, were there to explore the possibility of buying some of the nuclear plant equipment and technology. There are also reports that the Chinese have contacted the Tennessee Valley Authority about a similar purchase from four other terminated plants.

For now, though, the sale is not to be. First, the Chinese must sign a nuclear nonproliferation agreement. Such an agreement would guarantee "no nuclear material will be reprocessed, enriched or otherwise altered" without prior approval of the United States.

U.S. Representative Don Bonker, who has been in contact with Chinese Premier Zhao Ziyang, reports such an agreement is possible when President Reagan visits China this year.

Meanwhile, WPPSS officials see such a sale as a minor step in solving their financial problems.

BPA works for rate increase

The Bonneville Power Administration is busy trying to revamp its accounting system. At risk is permission for a

permanent rate increase, without which the agency says it stands to lose \$2 million a month.

The Federal Energy Regulatory Commission (FERC) is allowing Bonneville a temporary rate increase from February through May to give the agency time to comply with a FERC order that the agency account separately for its federal and nonfederal revenues and deficits.

Earlier, FERC had rejected Bonneville's request for a 17 percent rate increase in an unusually angry session during which one FERC commissioner called Bonneville a "renegade" agency.

The issue revolves around whether revenues raised by rates charged for transmitting power are being used to subsidize other operations or not. Past budgeting processes do not show this clearly, according to FERC. The Commission says it cannot meet the Northwest Power Act's requirements that transmission rates cover only costs of transmission without this information.

Washington bill affects Council

Two new Northwest Power Planning Council members, Kai Lee and Don Godard, have passed committee-level confirmation hearings in their respective states of Washington and Oregon. Both Charles Collins of Washington and Robert Saxvik of Idaho have been reappointed by their governors.

Meanwhile, a move in Washington may affect the make-up of the Washington representation. SB2837, a bill to require one of the Washington Council members to come from eastern Washington, has been amended in the House to exclude current Council members but had not received Senate concurrence at press time.

Amazing Grace report issued

It had 2,478 ideas for cutting costs, and one idea in particular raised eyebrows in the Pacific Northwest. That was the Grace Commission's proposal that the federal government get out of the business of owning and marketing hydroelectric power.

The President's Private Sector Survey on Cost Control, better known as the Grace report after commission chairman J. Peter Grace, was charged with uncovering ways government spending and waste could be eliminated.

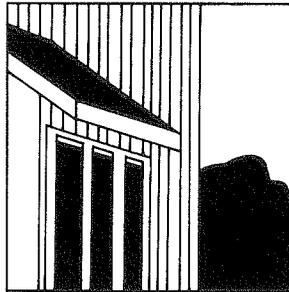
The report claimed its recommendations could save \$424.4 billion over three years. Of that, \$25 billion would come from the sale of federally-owned hydroelectric dams and of all assets of the five regional power marketing administrations (PMAs) of which Bonneville Power Administration is one.

The report also proposed Bonneville and the four other PMAs charge "fair market rates" as opposed to the current wholesale rates for electricity. The report noted that the Northwest's rates are less than half the national average.

The Northwest's industries, public utilities, and news media generally took a dim view of the idea. Most predicted such an idea would double electric rates, and drive the aluminum industry out of the region.

The Northwest Power Planning Council took no official position. But speaking unofficially, one Council member summed up the feelings of several Northwest observers. Speaking to reporters, Oregon's Roy Hemmingway said, "The chance that Congress will enact legislation to turn over the PMAs to private enterprise is extremely small. I don't worry about things that don't have any chance of happening."

BUILD IT RIGHT THE FIRST TIME



It may appear strange to a lot of people that while the Northwest enjoys a major energy surplus, the region's main energy policy-making body is pushing energy conservation — and in a big way.

The Northwest Power Planning Council has made conservation the cornerstone of its regional power plan. Furthermore, it has made its Model Conservation Standards (MCS) for new buildings the cornerstone of its conservation effort.

The Model Conservation Standards are standards to make new, electrically-heated residential and commercial structures super energy efficient. The deadline for adopting these standards is January 1986. Why the rush during a period of surplus?

The key word is capability. "You don't wait until the record dry year or an economic boom that puts heavy demand on energy resources to flip a switch and turn on conservation programs," says Council Chairman Keith Colbo. "The capability to conserve has to be put into place first."

Another key word is temporary, and that refers to the nature of a surplus. Council Member Gerald Mueller explained the idea succinctly at a recent public meeting. "When you build a house, you get one shot to build it right," he told a panel of local government officials. "I'm told the average life span of a house is 54 years. Is the current surplus going to last that long? I don't think so. But that house is going to stand there and use electricity year after year after year."

Still another key term is "least-expen-

sive." Conservation meets the criterion set by the 1980 Pacific Northwest Electric Power Planning and Conservation Act to use the least expensive resource first. Not only is conservation the region's least expensive energy resource, but the standards are among the least expensive and most effective conservation measures. Council staff analysts estimate the cost of building energy efficient features into a house from the start is about half the cost of retrofitting a comparable existing house. Not only that, making the house energy efficient in the first place saves far more energy.

While the Council's power plan emphasizes the importance of conservation in all sectors — industrial, agricultural, and governmental as well as residential and commercial — the latter two sectors by far hold the greatest savings potential. This is why the standards, which address the residential and commercial sectors, are critical.

Even without any other conservation efforts, Council energy analyst Tom Eckman estimates the model standards alone will save approximately 1,500 average megawatts of new electricity by the year 2002 under the Council's high growth projections for the region. "This represents about 14 percent of the new electricity that will be needed. Under the low growth projection with fewer houses being built, the model standards could save 265 average megawatts or about 36 percent of the needed new supply," Eckman reports.

To insure maximum savings, the standards take climate and geographic conditions into account. Separate standards are designated for each of the three climate zones (see figure 1). Zone 1 encompasses most of the mild marine climate west of the Cascades. Zone 2 is the more extreme climate east of the Cascades except for the higher elevations. Those elevations and most of western Montana are in zone 3.

These zones, developed by the U.S. Weather Service, are based on heating degree days — the average degrees per year it takes to bring the daily temperature to an "ideal interior temperature" of 65 degrees.

The standards do not specify how a new home or commercial building must be built. For homes, the standards simply set a ceiling, called an "energy budget," for space heating in each of the three zones. The builder may use a variety of options to meet those budgets including insulation, glazing, heat pumps, solar features, and control of air leakage. This method of setting standards allows homebuilders wide design flexibility.

While the MCS for residential buildings deal with energy budgets for space heating, the standards for commercial buildings deal with efficiency requirements for equipment used to heat, ventilate, air condition, and light the buildings.

The lighting standards for most commercial buildings are similar to codes already in place in Oregon and Washington. The only departure is for office buildings and for large retail buildings (over 20,000

square feet). These more stringent lighting standards have been adopted in California. (See figure 2 for MCS compared to current Oregon-Washington codes in office buildings. Figure 3 compares the figures for large retail buildings.)

The residential standards haven't been without their share of controversy. Two law suits have been filed, one by a group of Northwest natural gas companies which questions the impact of the standards on the natural gas industry. The other suit was filed by the Seattle Master Homebuilders Association and challenges the cost effectiveness of the MCS. (See related story for how cost effectiveness was determined.)

Despite the controversy, the standards are similar and in many cases identical to energy conservation design guidelines developed by the National Association of Homebuilders (NAHB) for insulation, glazing, air infiltration, and solar orientation.

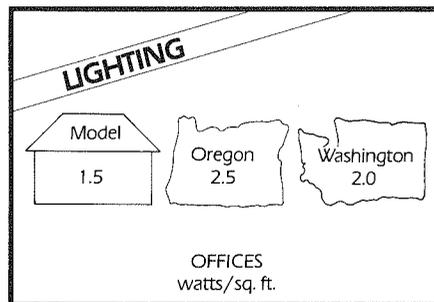
Some homebuilders have challenged the standards on the basis of their upfront cost. Certainly, installing energy-efficient features will increase the purchase price of a home. Eckman estimates the additional cost of building a home to meet the MCS will range from a low of \$2,400 in zone 1 to a high of \$4,500 in zone 3.

However, the regional power act specified that not only must the standards be cost effective for the region, but they also must be economically feasible — in short, affordable — for the consumer. The Council interpreted this to mean that a home built to the MCS must cost the homebuyer less to own and operate over its lifetime than one built to current standards. The

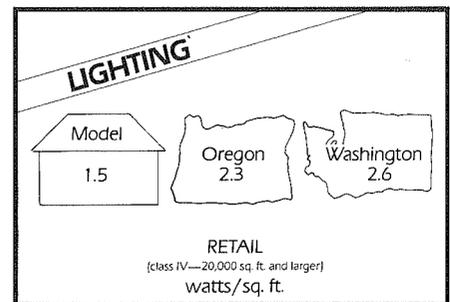
Building Type	CLIMATE ZONE		
	1 4000-6000 HDD* (kWh/sq. ft./yr.)	2 6000-8000 HDD (kWh/sq. ft./yr.)	3 over 8000 HDD (kWh/sq. ft./yr.)
Single-family (R-3)	2.0	2.6	3.2
Multi-family (R-1)	1.2	2.3	2.8

HDD = Heating degree days at 65°F.

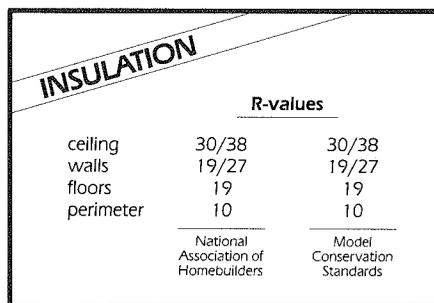
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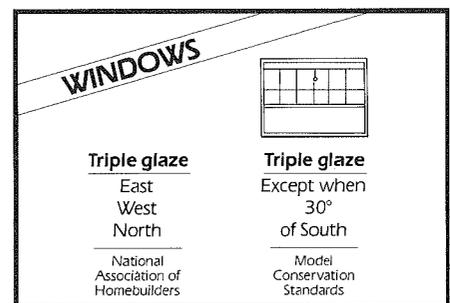
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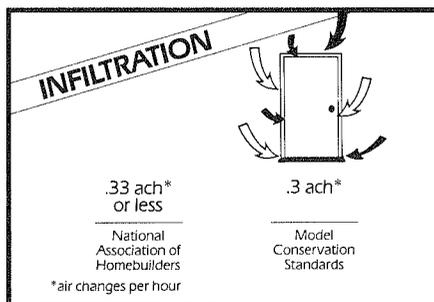
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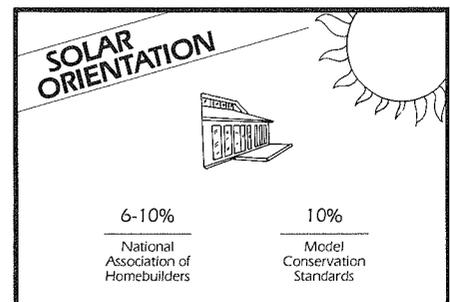
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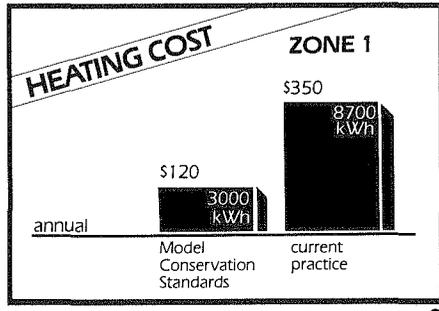


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MODEL CONSERVATION STANDARDS



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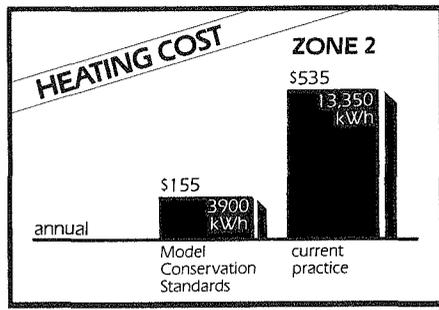
homeowner will earn a better rate of return for his or her energy investment than would be probable from other common investments.

The major benefit the homeowner will see, aside from interior comfort, will be lower heating bills. Eckman estimates that the average home built to the MCS will use only one-third of the heating energy of a comparable home built to current standards. (See figures 8-10 for savings in each climate zone.)

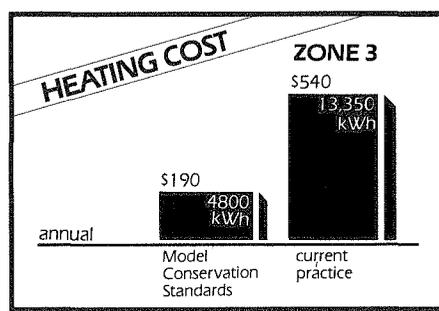
In addition, the MCS offer consumers protection against future rate increases. The more energy saved through conservation, the less the region will need to turn to more expensive resources which will increase the rates. For example, new conservation costs 1.8 cents per kilowatt hour versus 4.7 cents for a new coal plant. If the region experiences high economic and population growth, the standards could save the equivalent of three to four new coal plants, according to Eckman.

The Council, itself, cannot impose the standards it has developed. The MCS must be adopted into building codes by the various local and state governments within the region. These entities will also be responsible for implementing and enforcing the codes. For this reason, the Council has asked the Bonneville Power Administration to provide reimbursement for local and state code enforcement.

In addition, those areas which adopt the standards can avoid the possibility of significant surcharges on Bonneville power rates. Areas which do not adopt the model standards or similar measures will be subject to a surcharge of between 10 and 50 percent on wholesale power rates after



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Figures are for an average 1,500 square foot home.

January 1, 1986. The surcharge is intended to help recover costs to the region if it must turn to more expensive resources in the event conservation measures are not implemented.

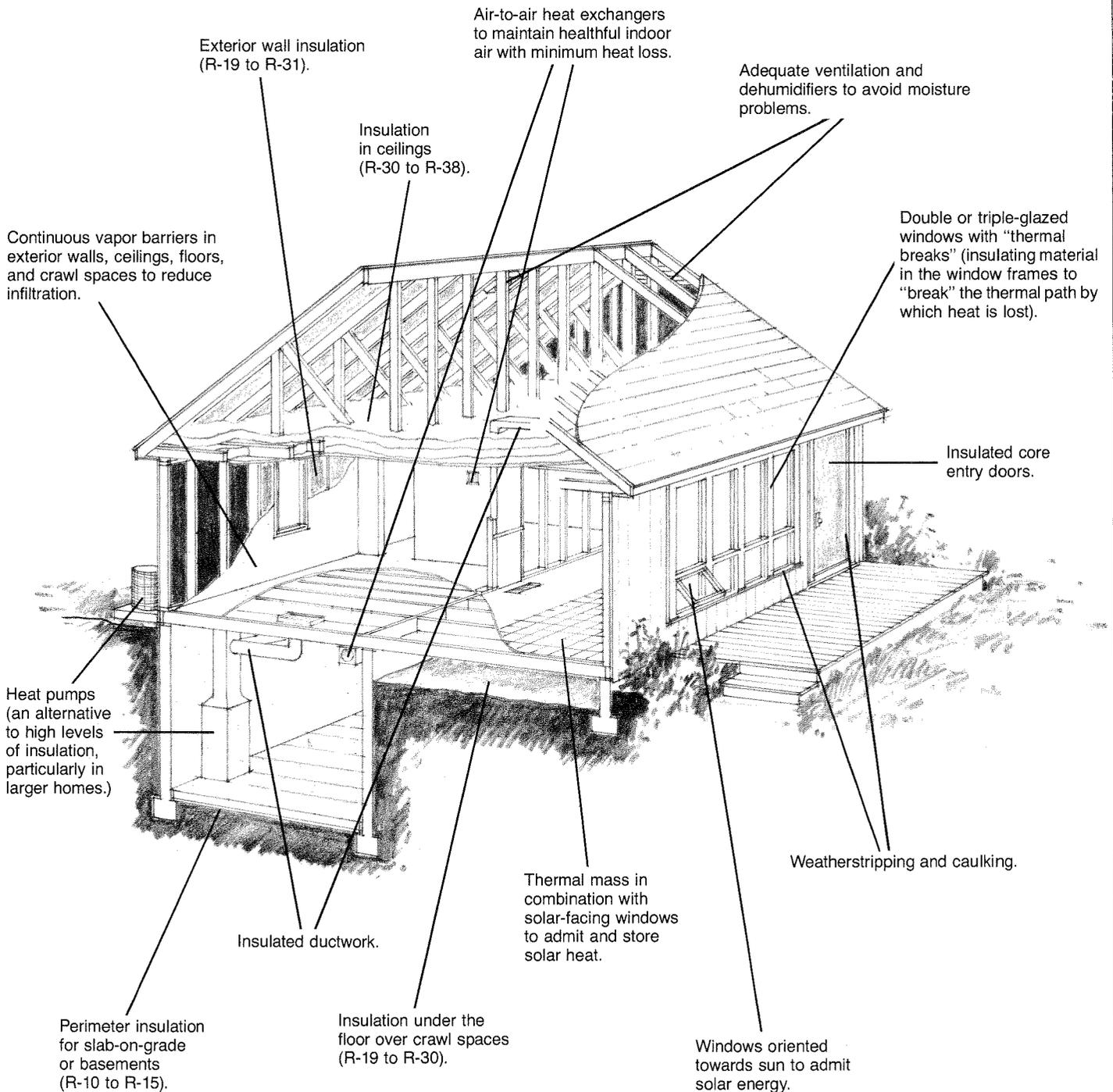
Bonneville is also developing an incentive program for those governments which adopt the standards early — before 1986. The city of Tacoma, Washington, was the first early adopter. Other activities associated with the MCS include training programs for builders, architects, code officials, appraisers, and lenders; an information program for the homebuying public; marketing assistance and incentives to builders and homebuyers; development of a system to rate new homes for energy efficiency; and model home demonstration projects.

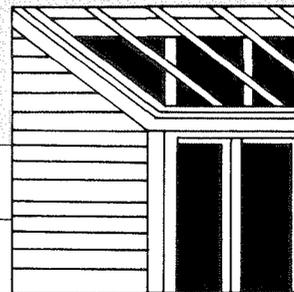
The latter program is designed to demonstrate "state-of-the-art" technology for making homes energy efficient and to show the public that these homes won't look "funny."

The cost of all conservation activities is small, less than 3/100 of a cent per kilowatt hour added to Bonneville's rates. The payoff, on the other hand, could be enormous, according to the Council's executive director, Edward Sheets.

"Not only do the model standards represent tremendous benefits for the region, they are equally important to the local economy. Installation of energy efficient features will mean more jobs in the local labor force. Purchases of energy efficient equipment, material, and services will put more money into the local marketplace. And lower energy bills will free homeowners to spend more for other goods and services," he points out. ■

TYPICAL FEATURES IN THE ENERGY EFFICIENT HOUSE





HOW THE STANDARDS GREW:

THE BLUEPRINT

by Tom Eckman

The Model Conservation Standards (MCS) are the product of extensive analysis on both the costs and the performance of energy efficient measures for new construction. What follows is a description of how the model standards for residential and commercial construction were developed.

RESIDENTIAL STANDARDS

To develop the residential standards, the Council first had to identify the characteristics of houses built to those current codes or practices which affect space heating. Once these characteristics were known, the Council could then establish a "base case" for analyzing costs and energy savings.

Existing energy codes and a survey of current construction practices helped establish the characteristics currently affecting space heating. These characteristics included the amount of insulation, type of windows, proportion of window area, and the "air tightness" of the house.

In Washington and Oregon, the minimum requirements of the current energy codes were used to establish "base case" building characteristics. Since Idaho and Montana do not have mandatory statewide codes, the Council used an annual survey of current construction practices prepared by Housing Industry Dynamics, Inc., for the Bonneville Power Administration.

Once the base case was established, the Council estimated what it would cost to improve the energy efficiency of structures built to current codes or practices. The consulting agency Ecotope was retained to survey builders, subcontractors and suppliers in the region (over 90 firms were contacted).

To verify the reasonableness of Ecotope's research, the Council staff also used a number of other data sources. These included a 1980 survey by the National As-

sociation of Homebuilders Research Foundation, another consultant's survey from the King County area in Washington, and cost estimates from a number of homebuilders. Finally, the Council compared all the cost estimates to those in nationally recognized cost estimating manuals, such as the *National Construction Cost Estimator* and *Means Cost Estimating Manual*.

In some cases, estimates varied little, such as those for installing additional ceiling and underfloor insulation. However, the incremental cost of more efficient windows and of highly insulated walls differed widely from source to source. Where variation was significant, the Council used the average or the median value (whichever was higher) of all estimates.

This method — as opposed to the standard practice of taking the lowest bid — ensured that at least half the contractors providing bids could build to the MCS at or below the cost used by the Council.

The next step was assessing the economic feasibility of various conservation measures. To do this, the Council had to determine how much energy was saved by each measure. The Council used a computer simulation which modeled space heating energy use on a daily basis and took into account weather data, building thermal performance characteristics, and solar radiation data.

Weather and solar radiation data were obtained from the National Weather Service. Thermal performance characteristics were developed using standard heat loss calculation procedures and heat loss values developed by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). The computer could then simulate a house's annual heating needs based on weather for its specific site and on its "heat loss" characteristics.

Next, to verify the reasonableness of the

computer estimates, the simulation results were compared to actual consumption by houses built in the Northwest and to savings estimates produced by other computer models.

Eight actual homes monitored by public utilities in Eugene and Springfield, Oregon, averaged 2.57 kilowatt hours annually per square foot for electric heating. The computer predicted these same houses would use 2.54 kilowatt hours. Another 23 actual houses monitored by Portland General Electric had an average annual use of 2.88 kilowatt hours per square foot. The computer had predicted 2.7 kilowatt hours for these houses.

Broken down by month, the computer agreed to within .1 kilowatt hour per square foot of actual use. On an annual basis, the difference between projected and actual use for all 31 homes was about what it would take for average use of a solid state color television in one year.

Calculating the economic feasibility of different conservation measures posed new problems. The Northwest Power Act is explicit about evaluating the cost effectiveness of its standards from a regional standpoint. To be cost effective for the region, the MCS must produce energy savings at a lower cost than the next cheapest resource available. However, the Northwest Power Act gives no such guidance for assessing the economic feasibility of the MCS for consumers.

The Council evaluated five different approaches to assessing consumer economic feasibility. These included simple payback (how long it takes to recoup money invested in energy features), discounted payback (how long it takes energy savings to equal cost), internal rate of return (interest rate earned on the investment), additional annual mortgage and energy cost (assesses if the added cost of the mortgage and conservation measures are less than energy costs of a home built to current

*A home built to the
model standards must cost less
to own and operate over its life span
than one built to current standards.*

standards), and life cycle cost (all costs and benefits over the life of the investment).

After assessing the strengths and weaknesses of each approach, the Council determined a home built to the MCS must cost less to own and operate over its life than one built to current standards.

The standards are considered to meet the feasibility test if this criterion is met. One result is that the investment in energy measures required by the standards will be a better investment than most other alternative investments available to consumers. (See figure 11.)

Once the Council established the base case building characteristics, estimated the cost of improving thermal performance and resulting energy savings, and set criteria for assessing economic feasibility, it had the ingredients for establishing the standards. The final step was choosing the form to express the standards.

Current energy codes come in three principal alternatives: (1) total building performance budgets, (2) component-by-component (i.e. windows, walls, etc.) performance budgets, and (3) prescriptive requirements for individual building components.

The Council chose the first alternative. Setting a total energy budget for residential space heating allows designers, contractors, and local implementing agencies to decide how to meet the standards. The MCS do not stipulate how a home will be built; instead, they establish a ceiling for annual energy use for space heating.

To help the building industry and local code officials determine if a particular building will meet the performance budgets, the Council also provided sample prescriptive paths and sample language for component performance approaches. (See figures 12-14.)

COMMERCIAL STANDARDS

The standards for commercial buildings took a different route. The Council first reviewed existing commercial building standards to evaluate their economic feasibility and cost effectiveness to the region. Three major standards were reviewed — the ASHRAE 90-80 Standard,

California's Chapter 24 Energy Code, and the U.S. Department of Energy's Building Energy Performance Standard (BEPS).

BEPS was the most stringent of the standards. It is similar to the Council's residential standards in that it specifies a maximum energy budget for the entire building. However, unlike the Council's residential standards, it provides no alternative prescriptive or component path.

While BEPS provided maximum design flexibility, it left building officials with little information for evaluation without access to a computer simulation. Therefore, the Council did not feel the BEPS standards were practical for the region.

The second standard evaluated, the California Energy Commission's, also specified total building energy performance budgets. In addition, it specified minimum thermal performance for equipment efficiencies and for building envelopes (total enclosure).

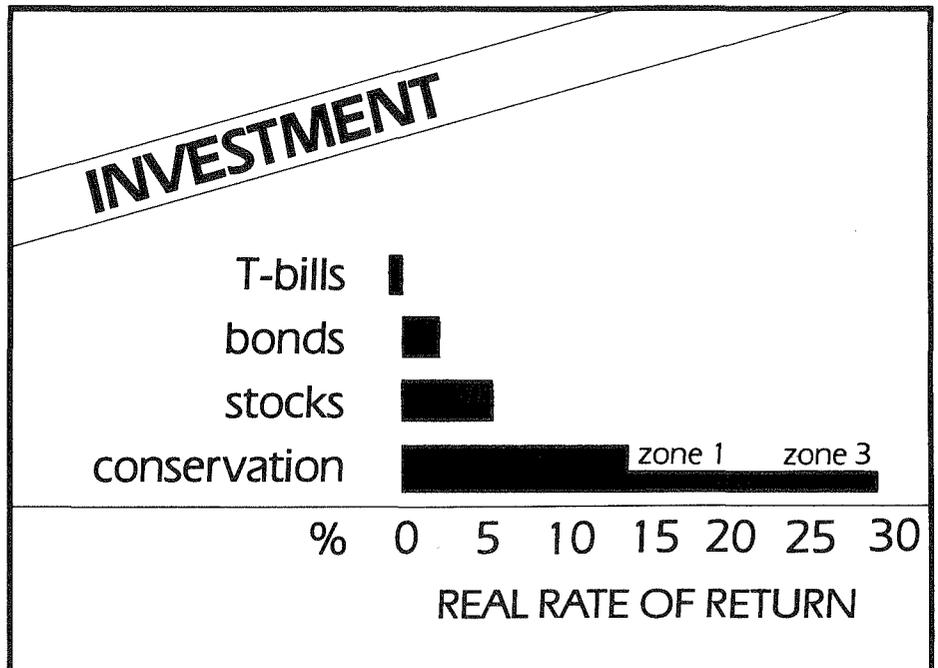
The Council compared the California standard to the region's most stringent current standards — the Seattle Energy Code. This code, adopted in 1980, is based on the ASHRAE Standard 90-75. In comparing the two, the Council found the

Seattle code could be modified to be more stringent than the California standard. The Council updated the Seattle code to reflect the most recent ASHRAE standard, 90-80.

The Council also made revisions to tighten requirements for lighting budgets and minimum heating, ventilating, and air conditioning (HVAC) equipment efficiencies. The lighting budget revisions were based on work done by the California Energy Commission and by a consulting firm for the Seattle Energy Code. The minimum HVAC equipment efficiencies incorporated into the standards have been specified by ASHRAE for equipment installed as of 1984. The Council considered these standards to be economically feasible since ASHRAE standards require both a consensus of members and economic and technical feasibility.

STANDARDS QUESTIONED

Despite all the extensive analysis and public comment, questions about the cost effectiveness of the standards have come up. Some homebuilders contend certain cost figures, particularly those for walls, are unrealistic. This may be due to the fact



MODEL CONSERVATION STANDARDS

Alternative Paths to Meet the Standards

ZONE 1 (4,000-6,000 Hdd)

Element	Current Practice	MCS Alternative			
		Well Insulated-1	Well Insulated-2	Sun Tempered	Passive Solar Design
Door	No. Reqmnt	R-13	R-13	R-13	No Reqmnt
Ceiling	R-30	R-38	R-38	R-38	R-30
Wall	R-11	R-27	R-19	R-25	R-19
Floor	R-11	R-19	R-30	R-30	R-19
Windows	Double	Triple	Triple	Double	Double
Infiltration	(not specified)	0.4 ACH	0.4 ACH	0.4 ACH	0.3 ACH
Glass (% of floor area)					
Max. area	15-19%	15%	15%	15%	15%
Min. solar			8%	12%	

ZONE 2 (6,000-8,000 Hdd)

Element	Current Practice	MCS Alternative		
		Well Insulated	Sun Tempered	Passive Solar Design
Door	No Reqmnt	R-13	R-13	R-13
Ceiling	R-30	R-38	R-38	R-30
Wall	R-11 or R-18	R-31	R-27	R-25
Floor	R-11 or R-19	R-30	R-30	R-19
Windows	Double	Triple	Triple	Triple
Infiltration	(not specified)	0.3 ACH	0.3 ACH	0.3 ACH
Glass (% of floor area)				
Max. area	15-17%	15%	15%	15%
Min. solar			8%	10%

ZONE 3 (Over 8,000 Hdd)

Element	Current Practice	MCS Alternative		
		Well Insulated	Sun Tempered	Passive Solar Design
Door	No Reqmnt	R-13	R-13	R-13
Ceiling	R-38	R-38	R-38	R-38
Wall	R-11 or R-18	R-31	R-27	R-25
Floor	R-19	R-30	R-30	R-19
Windows	Double	Triple	Triple	Triple
Infiltration	(not specified)	0.3 ACH	0.3 ACH	0.3 ACH
Glass (% of floor area)				
Max. area	13%	15%	15%	15%
Min. solar			8%	10%

ACH = air changes per hour
Hdd = heating degree days

figures 12, 13, 14

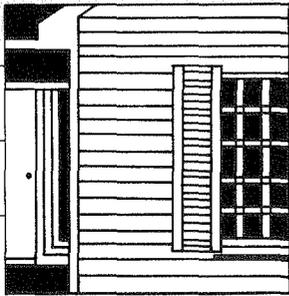
that many homebuilders are still unfamiliar with the building techniques the MCS require. Most of the higher cost estimates for constructing highly insulated walls came from builders who lacked this experience. Furthermore, each component had to be cost effective, so expensive ones were not averaged in with cheaper ones.

The issue of the impact of the MCS on health has also been raised. Reduced air leakage (infiltration) can affect indoor air quality. The model standards address this by providing for air-to-air heat exchangers to force ventilation where air quality is a concern. Although a relatively new idea for residential construction, such devices have been used commonly in commercial construction and have demonstrated their effectiveness.

While most of the questions and challenges to the model standards can be answered now, the Council is open to fine-tuning the standards to make them more realistic in the event future questions cannot be answered. Overall, however, the Council feels an urgency to implement the Model Conservation Standards quickly because buildings which do not meet these standards represent both a future expense and a lost opportunity for the region.

They are a future expense because they will probably have to be further weatherized at a later date at greater ratepayer expense — or more expensive resources will have to be built. And they are a lost opportunity because it may not be possible to "retrofit" all of the features that could have been incorporated into a building at the time it was built. ■

Eckman is a conservation analyst for the Northwest Power Planning Council.



HOW THE STANDARDS WORK: THE SHOWCASE

by Richard H. Watson

The meeting room in the Bellingham Holiday Inn was filled to capacity. The majority of those present were homebuilders with a sprinkling of architects, realtors, and lenders for good measure. The event that had brought them out on this cold evening in early January was a briefing to inform them about the Residential Standards Demonstration Program.

This same scene was repeated over the following three weeks in Tacoma, Vancouver, Richland, Yakima, Spokane, and Bellevue. In all, over 1,700 members of Washington's homebuilding industry have made the effort to find out how they can participate in the world's largest demonstration of very energy efficient residential construction. By the time you read this article, hundreds more will have taken part in similar briefings in Oregon, Idaho, and Montana.

By late spring and early summer, multi-family buildings meeting the Northwest Power Planning Council's Model Conservation Standards (MCS) will be under construction. By next fall and winter, Northwest families will be living in these homes, enjoying the benefits of lower heating costs.

The Residential Standards Demonstration Program (RSDP) is being administered by the energy agencies of the Northwest states (the Washington State Energy Office, the Oregon Department of Energy, the Idaho Department of Water Resources, and the Montana Department of Natural Resources and Conservation) with funding from the Bonneville Power Administration. The program is in response to Action Item 2.10 of the Council's Two-Year Action Plan.

When the Council adopted the model standards it was well aware that the standards represented a significant advance

over current building practice. It was also aware that there was no consensus within the building industry about either the additional costs involved in building to the standards or the energy savings which would result. To address these problems, the Council called for BPA to carry out a large scale demonstration of homes built to the standards. The result was the Residential Standards Demonstration Program.

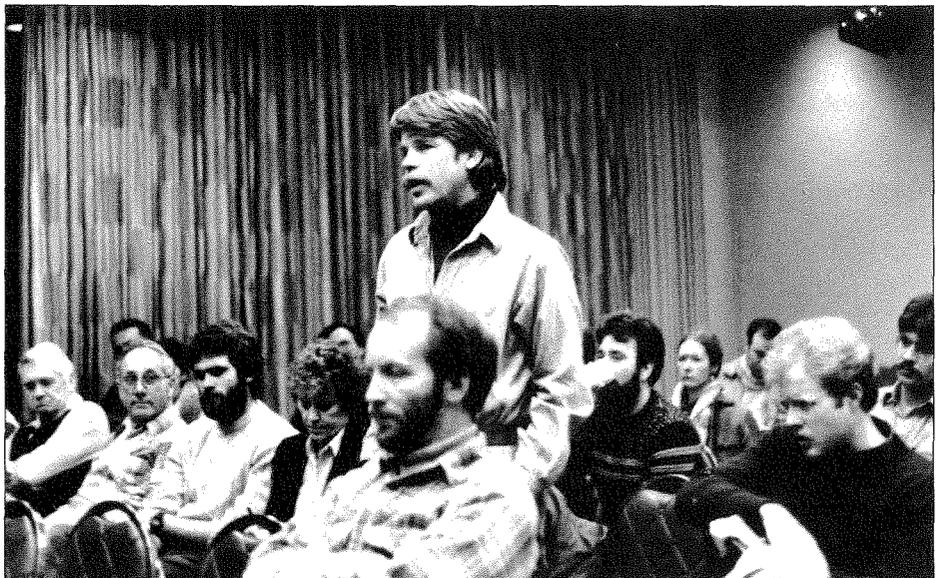
This program has two basic, interrelated objectives: to involve a broad spectrum of the homebuilding industry in constructing homes which meet the standards; and to demonstrate in a large scale field application the additional costs and energy savings which result from the standards. To accomplish these objectives the RSDP involves both technology transfer and data monitoring.

TECHNOLOGY TRANSFER

The importance of the technology transfer aspects of the RSDP is underscored by Washington Council Member Chuck Collins' observation that "we never had a builder who is building very energy efficient homes testify against the model standards and we never had a builder who isn't, testifying in favor of them." This anecdote is borne out by the cost data the Council gathered during the development of the MCS.

Uniformly, the cost figures supplied by the builders of very energy efficient homes are at the low end of the cost range while those building to current energy codes supplied cost estimates at the high end. There appears to be a strong "learning curve" effect. The RSDP provides an opportunity to help a relatively large number of builders up that learning curve.

Missoula, Montana builder Steve Loken raises question at builder's information meeting conducted by Council members Keith Colbo and Gerald Mueller and Council staff member Tom Eckman. Meetings, such as this one in Montana, are being conducted throughout the region.



Bernd Hoffmann photo

We never had a builder who is building very energy efficient homes testify against the model standards, and we never had a builder who isn't, testifying in favor of them.

—Charles Collins

The vehicle for moving up the learning curve is training. Each state will be providing training to particular builders. In Washington the training has been contracted to the Energy Business Association of Washington. The training team assembled by EBA includes local architects and designers who have long experience in energy efficient building design, a member of the Canadian R-2000 training team, and, perhaps most important, a Washington homebuilder with several super energy efficient homes to his credit. The goal of the training is to transfer a working understanding of the "hows" and "how not tos" of very energy efficient construction from current practitioners to those otherwise experienced builders who have not yet built super energy efficient homes.

The training curriculum is designed to cover the essential elements of very energy efficient construction in considerable detail. Among the topics to be covered are advanced framing techniques for high R-value walls and ceilings; foundation and slab perimeter insulation; vapor and infiltration barrier materials and techniques to achieve low infiltration without moisture problems; and sizing and installation of air-to-air heat exchangers (devices which exchange indoor air for fresh outdoor air while recovering most of the energy in the exhaust air).

The training materials emphasize slides of "at-the-site" applications and hands-on demonstrations as well as a detailed manual the builder can use during actual design and construction. Once the first demonstration homes have reached the appropriate stage of construction there will also be a series of on-site "blower door" tests to demonstrate where significant air leakage occurs in a house and how to stop those leaks.

The amount of material to be covered in the training requires a two-day training session. There was initially a good deal of concern that builders would be discouraged from participating in the program by the length of the session. Those attending the Washington briefings, however, indicated overwhelmingly that they would participate in the two-day training,

whether or not they were chosen for the Demonstration Program. (General builder training will be provided by the state energy agencies as part of their building code technical assistance activities.)

The ultimate technology transfer will, of course, occur when the builder puts the training into practice in construction of the demonstration home. The interaction of the training with each builder's experience and special skills should result in many new solutions to the problems of very energy efficient construction.

MONITORING

There have been energy efficient home demonstration programs before, most notably the Canadian R-2000 program. What makes the Residential Standards Demonstration Program unique is the large scale monitoring of both construction costs and energy use. For the RSDP, the monitoring is essential to demonstrating the costs and energy savings of model standards homes.

Energy Use

The most straightforward aspect of the RSDP monitoring effort involves the monitoring of energy use. The majority of homes built in the demonstration will be "triple metered" as will a corresponding number of existing "control" homes built in recent years to current energy codes. Triple metering means that separate kilowatt-hour meters will be placed on the heating circuit, the domestic hot water circuit, and the lights/appliances circuit. Cooperating homeowners will be paid to periodically record the meter readings and indoor and outdoor temperatures. Analysis of these data will yield a good comparison of the heating energy use of homes built to the MCS with that of homes built to current codes.

To achieve a more rigorous comparison, one hundred "matched pair" homes will be built and monitored using a sophisticated multi-channel remote monitoring system to measure energy use, temperatures and other potentially important parameters several times each day. The matched pair homes will be two otherwise

identical homes except that one is built to the MCS and one is built to current energy codes. Builders will be paid a special incentive to build the current code home. The matched pair homes in conjunction with the other demonstration homes and their controls will result in the most extensive residential energy use data base ever developed.

Costs

More difficult but equally important is the monitoring of the additional construction costs of building a home to the MCS. What makes this monitoring more difficult is that it must be done by people rather than meters. Costs will be tracked by participating builders using a cost accounting system being developed by the National Homebuilders Association Area XV. Those builders who are constructing only demonstration homes will record actual material and labor costs for those elements of the home which differ from current code and will estimate the costs of building those elements to current code. Those builders who are building matched pair homes will record actual costs for both the model standards and the current code homes.

Another aspect of the cost monitoring is an attempt to quantify the learning curve. The training will bring builders part way up the learning curve. It won't, however, bring them to the point that actual building three or four homes to the MCS will. The learning curve effect will be characterized in two ways. First, an attempt will be made to include builders already experienced in very energy efficient construction so that their costs can be compared with those of the first-time MCS builders. Second, some builders will construct up to five demonstration homes in sequence using the same crews. Direct monitoring of the costs of these homes should yield a good fix on the learning curve.

WHY SHOULD BUILDERS PARTICIPATE?

The technology transfer and monitoring aspects of the RSDP may be of great interest to the Council, BPA, and the state en-

Energy efficiency is becoming an important marketing tool, and many builders are eager to learn how to incorporate greater energy efficiency in their homes.

ergy agencies, but why are builders showing such great interest in participating? The answer is that the RSDP gives builders a low risk way of getting in on the ground floor of a growing segment of the housing market — the market for very energy efficient homes. Energy efficiency is becoming an important marketing tool, and many builders are eager to learn how to incorporate greater energy efficiency in their homes.

The demonstration program reduces the risk of getting into very energy efficient construction in several important ways. First, there is the training. The training participating builders receive will substantially reduce the costly trial and error associated with changing to more energy efficient construction. In addition, participating builders will be able to call on the state energy agencies for technical assistance in design review and in resolving on-site problems.

Second, builders participating in the RSDP will benefit from marketing assis-

tance. The demonstration homes will be highly visible examples of what homes built to the Model Conservation Standards will be like. The states will be identifying these homes with distinctive logos certifying them to be homes which meet the Model Conservation Standards and helping focus the attention of the home-buying public on these homes. At the same time, BPA will be mounting an effort to inform the public of the benefits of very energy efficient construction.

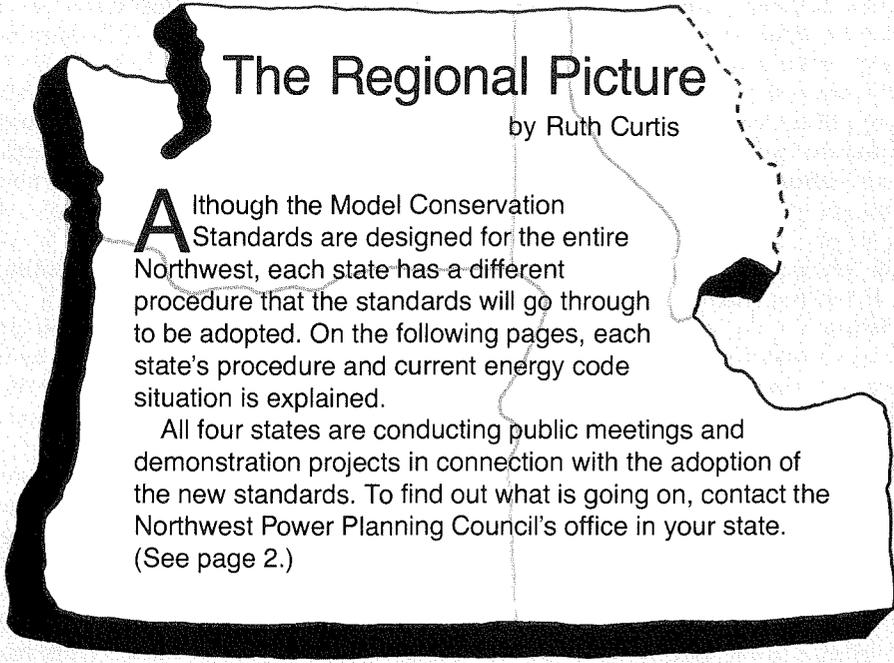
Third, there is the bottom line. Builders will receive cash incentives for participating in the RSDP. The incentive is intended to compensate the builder both for the additional responsibilities imposed by RSDP and for part of the incremental costs of building to the standards. How the incentive is paid to the builder will vary from state to state, but the amount will total from approximately three to five thousand dollars for a typical 1,500 square foot home.

Finally, there is the information which

will be developed by the Demonstration Program. In most states, the region's homebuilders' associations have generally opposed the Model Conservation Standards. They have, however, uniformly supported the demonstration and have been active, constructive participants on the state steering committees established to design and oversee the program. The reason for this support is that the associations see the demonstration as the one way to answer the questions they have about the Model Standards.

By being active participants in demonstrating the costs and energy savings associated with the standards, builders are helping define their role in meeting the Northwest's future electrical needs at the lowest possible cost. ■

Watson is director of the Washington State Energy Office.



The Regional Picture

by Ruth Curtis

Although the Model Conservation Standards are designed for the entire Northwest, each state has a different procedure that the standards will go through to be adopted. On the following pages, each state's procedure and current energy code situation is explained.

All four states are conducting public meetings and demonstration projects in connection with the adoption of the new standards. To find out what is going on, contact the Northwest Power Planning Council's office in your state. (See page 2.)

A BUILDER^{AND} HOMEOWNER SPEAK OUT

by Susan Skog

By mid-December, temperatures had already plunged to 10 below in Twin Falls, Idaho, but you'd have thought it was the dog days of summer from looking at Diana VanHooser's heating bills. Though heating requirements in the southern Idaho area have been 48 percent above 1982 levels, VanHooser's electricity bills from July through December 1983 were only about \$40.

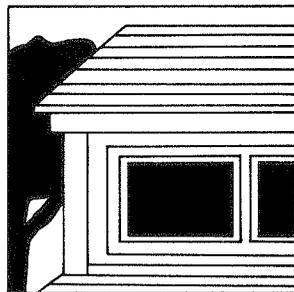
VanHooser is one of several new homeowners in the Magic Valley area of Idaho who are realizing both the financial and aesthetic benefits of living in super-insulated homes built by Whitehead Home and Energy, which is owned and managed by father and son Dick and Dave Whitehead.

The Whiteheads began selling storm windows, insulation and other energy conservation materials six years ago. But they diversified their business in a big way several years ago when they began constructing super-insulated homes, or "zero energy concept homes," as they call them.

Whitehead Home and Energy, like many other construction companies around the region, banked on the fact that energy-efficient homes were a good investment — and that consumers were willing to pay more to own them. Despite their convictions, the Whiteheads took a lot of heat from their peers in the building industry.

"They (other contractors) told us seven years ago that people wouldn't pay for energy-efficient homes. I got tired of fighting them and began building them," Dave Whitehead says.

So far, the Whiteheads have been right on all counts. Over the past two years, the company has built nine super-insulated homes which have quietly, but swiftly, become the focus of much attention in the Magic Valley. Outside of some area home shows and displays at county fairs,



Whitehead hasn't had to advertise his product because word-of-mouth has generated most of the company's customers. "If people want you, they'll find you," Whitehead says.

The Whitehead formula for successful super-insulated construction combines increased insulation and decreased infiltration — ultimately creating a tighter, more energy-efficient home.

The company is continually researching and upgrading its product. Homes typically feature R-60 attic insulation; R-42 wall insulation; and R-19 to R-30 floor insulation or, if a basement is included, R-20 insulation. Double-glazed windows with an inside storm window are used, and extensive caulking is done to control infiltration. A continuous vapor barrier is also a must to reduce infiltration, Whitehead says. An air-to-air heat exchanger is installed in the homes to control humidity, he adds.

If possible, the homes are oriented for southern solar gain, and the garage is built on the west side of the home to blunt the impact of the Magic Valley's notorious winter winds.

The passive solar benefits delight VanHooser, who is amazed at the comfort the sun provides for the majority of her living space which faces the south. "It's absolutely amazing how fast the temperature in that area of the house goes to 72 degrees," she says. She usually keeps her thermostat at 70 degrees, she adds.

Russell Morgan, Whitehead construction manager, says quality control is a critical link in the construction of a super insulated home. "From the start of construction to the very end, we're interested in quality control, making sure every hole's plugged."

The strict attention to detail often scares off prospective builders of super-insulated homes, according to Whitehead. "They're afraid of building energy efficient homes because you have to oversee them more during the construction process," he said. "Everything must be done precisely, or the house won't function as it should."

Whitehead readily admits that his super-insulated homes cost an additional \$3 to \$4 per square-foot to construct. But he's quick to add that they are about one-third more efficient than homes built to current practices. The homes also require much smaller furnaces. VanHooser's 1,850 square-foot home is heated with a small 5 kilowatt electric furnace, which is at least 50 percent smaller than one usually required in a typical home that size, according to Idaho Power representative Bill Specht.

The Twin Falls Idaho Power office has monitored the performance of VanHooser's home since October 1982 and is encouraged by what it's found. From October 1982 through June 1983 VanHooser's electrical payments were about \$93, he said.

"It confirms what Idaho Power's been saying for 20 years. Insulation, tightening up the home and reducing the air changes per hour are definitely going to pay dividends for home owners," says Specht.

The Whitehead homes, especially VanHooser's, are creating quite a stir, Specht said. When other homeowners hear about VanHooser's ridiculously low electric bills, they ask, "How in the world did they accomplish that?" he said.

Consumers seem to be willing to spend

*They told us seven years ago that
people wouldn't pay for energy-efficient homes.
I got tired of fighting them and began building them.*
—Dave Whitehead

the additional money for lower heating costs, Specht says. The cost of energy won't remain static, and the company is encouraging consumers to build as efficiently as possible, he adds.

Convinced that his form of construction makes sense, Whitehead hopes to begin construction of a 3,200 square-foot, super-insulated home in the next four weeks, with the possibility of constructing two more homes this spring. He predicts that in 10 to 15 years most builders will

have converted to the super-insulation field, especially for large home construction.

But in the meantime, he's enjoying the satisfaction of his customers, like VanHooser. "I just feel it's foolish to build a home without the proper insulation and passive solar design," she says. "If I built another one, it would be the same type."

Whitehead is also enjoying the benefits of his own super-insulated home, which was completed in June. The 4,700 square-

foot home is proving to be a high performer, outstripping even his own expectations.

Whitehead projected his energy bills would possibly reach \$250 for the entire year, but even with the recent winter much colder than normal, he now thinks his bill will come in around \$200. With pleasant surprises like that, it's easy to see why Whitehead thinks, "It's crazy to build houses any other way." ■

In 1983 only about 40 percent of Idaho's population was covered by any type of energy efficient building code. While the state government has produced an energy code, it is considered to be simply a guideline that local governments can enforce, modify or ignore. Many governments have chosen to ignore it, largely because they lack the funds, staff or training necessary to enforce it.

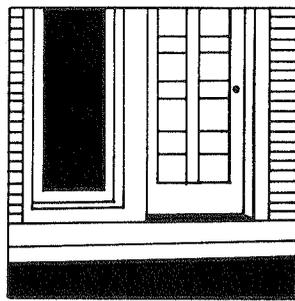
Eventually each of these cities and counties may adopt the Model Conservation Standards with assistance from the Northwest Power Planning Council and the Bonneville Power Administration. Some may become early adopters and receive the benefits of the standards prior to the January 1986 mandatory adoption date.



Electric bills for the VanHooser home in Twin Falls, Idaho, averaged less than \$7 a month. Homeowner Diana VanHooser is pictured with Kim Nilsen (left), former construction manager of Whitehead Home and Energy, and Dave Whitehead (right), co-owner of Whitehead Home and Energy.

WHAT HAPPENS NEXT ADOPTION

by Susan Skog



Ever since the Northwest Power Planning Council called for state and local governments and authorized utilities to adopt its model conservation standards for new buildings by January 1986, meeting rooms have been abuzz with discussions of how the ambitious program will be carried out in the Northwest.

For the past nine months, from Missoula to Tacoma, representatives of local and state governments, utilities, consumer groups, the Bonneville Power Administration and the Council have huddled to try to iron out the obstacles that stand in the way of adoption of the standards.

But of all the issues that political jurisdictions are grappling with in considering adoption of the model standards, few strike a more sensitive chord than the question of who will pay for enforcement of the standards and how long the financial support might last.

The Council's staff liaison with local governments in the region, Jim Nybo, works closely with the local government associations in the four states. He recently observed, "It is ironic — but for local officials probably not surprising — that the most significant near-term action resulting from the 1980 Northwest Power Act and the Council's regional plan is coming to rest right in the lap of the region's local governments."

Many of the questions center around a section in the Council's 20-year power plan which states that BPA should develop and implement a program to reimburse state and local governments for the full cost of adopting and enforcing all model

conservation standards . . . as long as the standards program is cost effective. The Plan also calls for enforcement assistance throughout the region including areas served by utilities not currently getting power from BPA. The Council urged BPA to have the code reimbursement program operating by next January in western Montana, Oregon, Washington, and Idaho, regardless of utility service territories.

The model standards would likely be adopted in the form of building codes by local or state governments, which now enforce a variety of codes. If political jurisdictions fail to adopt and enforce the standards or refuse to carry out another program to achieve comparable energy savings, they will be subject to a 10 to 50 percent surcharge on wholesale power they purchase from BPA. (The surcharge provision is found in the Northwest Power Act of 1980, which instructed the Council to develop model standards.)

With 1986 looming closer and closer, local and state governments are hoping a clearer image of the code reimbursement picture will soon emerge for those which adopt before 1986 — known as "early adopters" — and for those which adopt after the 1986 deadline. Though some definition of the early adopter question may occur in the coming months, it appears the long-term reimbursement picture will still remain cloudy.

BPA is hoping to encourage as many local and state jurisdictions as possible to adopt the standards before 1986, and the agency has budgeted "limited funding" for fiscal years 1984 and 1985 to "provide reasonable, adequate and acceptable" financial support for early adopters, according to Sydney Berwager, BPA director of technical and marketing support.

Bonneville wants to support early adopters "any way we can because they'll be blazing the trail," Berwager said. "We want to make their experience as smooth an experience as we can."

In April, the agency expects to distribute draft guidelines illustrating the type of information a local or state government must provide BPA to qualify for code enforcement assistance, according to Peggy Crossman, BPA program analyst in conservation.

BPA would prefer to reimburse only those early adopters which lie in the service territories of utilities which signed long-term conservation contracts last fall with the agency, Berwager said. But since it doesn't anticipate being deluged with numerous early adopters, Bonneville is confident it will be able to provide early adopter assistance in FY84-85 across the region, regardless of utility service areas, he said.

From early adopters, like Tacoma, Washington, BPA hopes to glean valuable information about the costs and administrative and technical needs of cities, counties and states which will be required to inspect new buildings for compliance with higher energy efficiency requirements. The agency will then distill the data it receives from early adopters to design its

Few issues strike a more sensitive chord than the question of who will pay for enforcement of the standards.

post-1986 program on code reimbursement.

While no decisions have been made about how local and state governments will be reimbursed for adoption of the standards after 1986, current thinking is that the assistance will be extended for a "limited time" and then "tapered off," Berwager said. It's also unlikely the agency will have a long-term program to launch in the region by January, he said.

Nybo said, "If the region is to meet the January 1986 target for adoption and enforcement then the reimbursement program details have to be known well in advance." Every legislature in the region will be convening in January of 1985 and virtually every jurisdiction will be making fiscal and organizational decisions for 1986 during the first half and in many cases the first quarter of 1985. "It is unreasonable to expect state legislatures, state agencies, and local governments to adopt in 1985 without that information," Nybo said.

As one might expect, BPA is finding itself in difficult straits as it tries to craft a program which equitably meets the diverse needs of some 900 local governments and the four states in the region. Compounding the difficulty, BPA must also wade into the complex area of budgeting and earmark funding for long-term reimbursement as the agency prepares its fiscal year 1986 rate proposal, scheduled for release this summer.

With only Tacoma identified so far to guide the way through the model standards enforcement maze, the financial needs of local governments — ranging from Moscow, Idaho, which issued 28 new single-family housing permits in 1983, to Seattle with 427 — are unclear. Nevertheless, BPA anticipates including long-term code reimbursement funding in the upcoming rate case.

To get a fix on what governments will need to enforce the model standards, BPA recently assembled a task force of local and

state government representatives, including building officials. The task force has met twice since its formation in December to provide BPA with information about the types of standards currently enforced in the region, what additional steps might be needed to enforce a much stiffer code, and how best to address any obstacles which prevent smooth adoption and implementation of the standards. The task force provides BPA with a valuable "reality check" for reimbursement ideas, according to Crossman.

Though building practices, code enforcement and administrative and legal constraints may differ widely from state to state, one concern cuts across all jurisdictional boundaries. Local governments are being asked to play an entirely new role, at a time when their resources and budgets have been drastically reduced.

City and county officials are understandably wary about letting their communities commit to playing an entirely

Despite Montana snows, this energy-efficient 2,300 square foot house built by Linda Brock in Helena stays cozy.



Montana's legislature has formed an interim committee to study what changes are needed in current laws and regulations to implement the model conservation standards.

Montana's existing energy code is what the building industry calls a "minimum and maximum standard." This means cities and counties cannot adopt codes that are either less or more strict than the state code, but they can choose not to enforce a code at all. If a town decides not to enforce a code, the state government is responsible for enforcement. However, the state only has authority over dwellings larger than a four-plex and has very few inspectors to cover an extremely large state. This situation has led to uneven enforcement throughout the state.

In large cities the traditional building codes (plumbing, electrical, etc.) are generally administered by local governments. The energy codes may be enforced *defacto* by financial institutions, which are more willing to provide mortgages on homes that are energy efficient.

It is ironic that the most significant near-term action resulting from the Act and the plan is coming to rest right in the lap of local governments.

—Jim Nybo

new game for which the rules are still undefined. At the Council (Feb. 1-2) meeting in Coeur d'Alene, Lewiston, Idaho City Council member Marion Shinn testified: "We can't honestly extend the taxpayers' money in that area (model standards enforcement) unless we know what BPA will do to us and for us . . ."

Another Idaho local official, Ada County Building Department Director Glen Stephens, told the Council that local governments must "have a more definitive idea" of the amount of assistance they might be eligible for, when it might be received and how long it will last. "We need to nail down the more nebulous features of what local governments are expected to do and what they can expect."

Association of Idaho Cities (AIC) Energy Specialist Dave Williams said local officials are wondering, "Am I susceptible; what's this mandate mean; who's responsible; and what's it going to cost?"

Unless local governments have a clear understanding of the benefits of adopting the model standards, few will look at the

issue seriously, Williams predicted. Local governments will not "jump at the bait unless the bait is clearly dangled in front of them," he said.

This spring the Idaho Department of Water Resources, with assistance from the AIC, will initiate a study of at least ten communities to assess their administrative and financial needs in enforcing the Council's standards. The local governments will be asked to simulate enforcement of the Council's standards.

Arlene Braun, policy coordinator for the Montana Local Government Energy Office, which serves cities and counties, echoes Williams' concerns. Until local and state governments have a specific response from BPA, "we're just talking in the theoretical," she said. "City councils and county commissions are saying, 'Come back when you have more specific information,'" she said.

The Montana Legislature created an interim committee to study what legislative action is needed to implement the Council's energy plan, including the

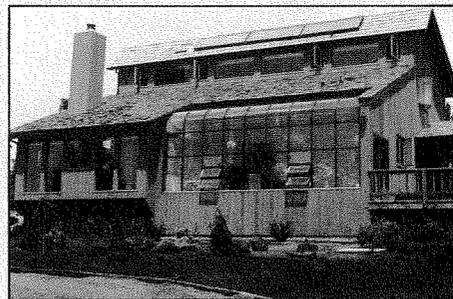
model standards. As the committee meets in the coming months, it needs concrete information about the amount of financial assistance Montana could receive from BPA, Braun said. If that piece of the puzzle is missing, it will hamper the committee's efforts to strategize for the 1985 legislative session. "That's one piece of information they need," she said. "They won't recommend statewide standards in a vacuum."

Fred Neal, senior staff associate, League of Oregon Cities, said his association is working to resolve many issues surrounding the Council's standards, such as their cost effectiveness in Oregon. Neal said the Oregon Department of Commerce hopes to form a committee of state and local building officials and homebuilders to identify the costs that might result from enforcing the model standards.

Neal is adamant that any financial assistance offered by BPA must be offered on an ongoing basis. "Since we're acquiring an energy resource, those ongoing enforcement efforts must be considered part

Oregon also has a minimum and maximum standard and, as in Montana, cities and counties can choose whether they want to enforce it or leave that job for the state. In general, smaller, less densely populated areas let the state do the enforcement work.

The state energy code is due to be revised in 1985. The Oregon Department of Energy is reviewing the Model Conservation Standards and will recommend changes to the code. These recommendations, developed with the assistance of the Energy Conservation Board and the Structural Code Advisory Board will be presented to the Department of Commerce's Building Code Division to be acted upon by its administrator. A November 1985 adoption date is anticipated with the codes going into effect December 31, 1985.



This energy-efficient house in Tumalo, Oregon, built by Dennis Staines invites solar energy with its window walls.

of the resource purchase" by BPA just as the ongoing maintenance and operation costs of a coal plant are absorbed by a utility, he said.

BPA recognizes it "owes it to the region" to start sending some signals about how it will help local governments gear up and enforce the standards, Berwager said. But a number of regional uncertainties stymie Bonneville's attempts to draw up a regionwide approach to building code assistance.

First, few of the region's private utilities, which serve 60 percent of the regional residential load, are purchasing power from BPA under long-term power sales contracts signed in 1982. And since the region is awash in surplus power, few of the utilities envision purchasing power under the contract for some time.

Another contract offered by BPA last fall — a long-term conservation agreement — was rejected by all the private utilities and some public utilities, including Seattle and Tacoma. Thus, the limited reach of BPA's electricity sales and conservation programs leads many to question which local governments will actually benefit from fi-

nancial assistance and how utilities could be surcharged, if jurisdictions in their areas chose not to adopt the standards.

BPA agrees that conservation and the model standards are the centerpiece of the Council's approach to new energy development in the Northwest, Berwager said. The agency, though, should not exclusively be responsible for making the plan a reality, and the Council should continue to work to bring the private utilities into the fold, he added.

As the Northwest continues to wrestle with these problems, one thing remains certain: it still makes sense to build a new building right the first time. Montana Council member Gerald Mueller remarked at the Council's Coeur d'Alene meeting that the model standards are a wise investment for the region, despite the temporary glut of power in the Northwest.

"When you build a house, you get one shot to build it right," and the home continues to use energy for an average 54 years, Mueller said. "Is the surplus going to last that long? I don't think so," he added. ■

**Attention architects,
builders, code officials, etc.**

Do you have a technical question about the standards? Send your question(s) into *Energy News* (see address inside front cover). The Council staff is currently preparing a technical question and answer sheet on the Model Conservation Standards. We will include your question and will see that you receive a copy of the Q&A sheet.

Watch your state papers for announcements of meetings in your state designed to provide you with information on the standards or call the Northwest Power Planning Council office in your state (see inside cover).

For sample designs of energy-efficient homes designed specifically for the Northwest, write to the National Center for Appropriate Technology, P.O. Box 3838, Butte, Montana 59702. Ask for their "Superinsulated House Plans."

This new house could fit into an older neighborhood, but it still meets the model conservation standards. Built by Sun's Touch Corporation in Olympia, Washington, the house features R-26 walls, R-45 ceilings and R-19 under the floor.



Washington state had the first early adoption of the Model Conservation Standards. The City of Tacoma was able to take that action because Washington law allows local jurisdictions to pass codes that are stricter than the state's. All but three percent of the population live in areas that have some type of energy code.

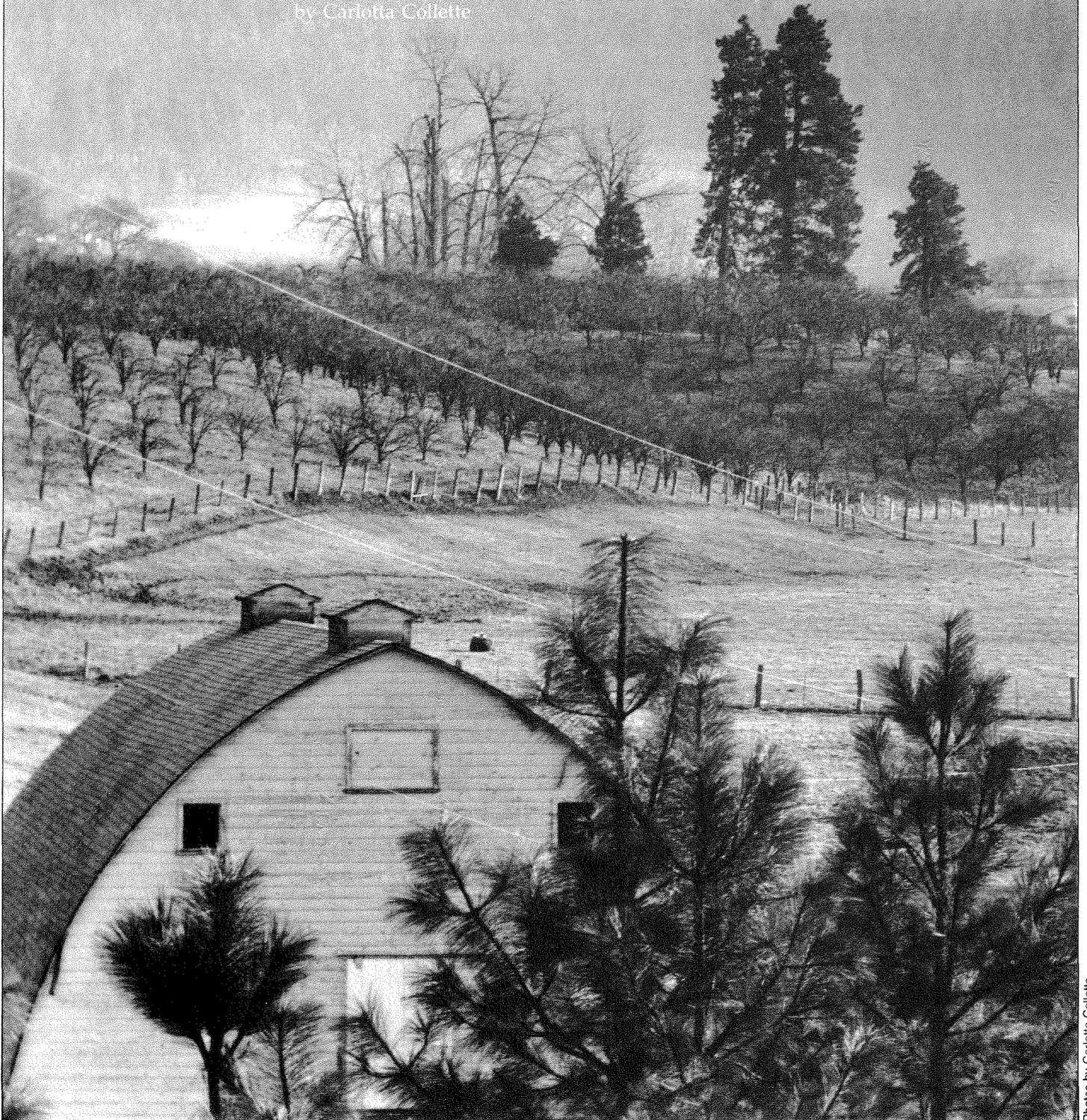
There is conflict over whether the state building code should be created through the administrative or statutory process. In the current legislative session action may be taken to clarify the process for code adoption. This will clear the way for adopting the Model Conservation Standards.

YESTERDAY'S HOMES MEET TOMORROW'S TECHNOLOGY

by Carlotta Collette

The Hood River Conservation Project is about to weatherize every electrically heated home in Hood River County at no expense to the residents of those homes. The goal of this ambitious effort is to gather hard data about the actual cost effectiveness of serious conservation measures.

The houses in Hood River will be tightly insulated and rigorously monitored for two years. The project is a joint effort of the Natural Resources Defense Council, Pacific Power and Light, Northwest Power Planning Council, Northwest Public Power Association, Hood River Electric Coop, and the Pacific Northwest Utilities Conference Committee. The Bonneville Power Administration is funding the project.



Photos by Carlotta Collette

T

here's a lookout point in Hood River

County where you can stand and observe as many as three different kinds of weather all at once.

If you start in town, down by the Columbia River at sea level and make your way up the valley towards the top of the county near Parkdale, you gain about 2,500 feet in elevation and an inch a mile in annual rainfall. Traveling east towards The Dalles, you lose an inch each mile as you make your way from the maritime climate west of the Cascades to the semi-arid higher country of Eastern Oregon.

In the Hood River Valley, one of America's finest fruit growing areas, the year is divided into bloom seasons and harvest seasons. Each slope of mountain and bend of river can create a new microclimate, frustrating any effort to generalize about "prevailing conditions." This is what's known as a "transition zone," and it was just this diversity that attracted the team of Hood River Conservation Project planners.

Hood River County's heterogeneity makes it seem a lot like other parts of the Northwest. It just depends on where in the valley you're standing at any given moment. If you're interested in learning about the effects of conservation on overall energy use in different Northwest climates, Hood River County is a good place to monitor. It's got a little bit of everywhere in one small area.

Hood River's diversity goes beyond its climate. Houses range from high Victorian to modern ranch, and the population is spread out in an urban, suburban and rural configuration that fairly mirrors the rest of Bonneville's territory.

Hood River County was about as perfect a test site as could be found for quantifying a lot of assumptions that had been made in an effort to plan for the energy future of this region. With \$20 million on the table and a brainstorm of "what ifs" to answer, the team that is coordinating this ambitious demonstration project has more than a dozen separate research studies going on at once.

These studies are predicated on a set of major objectives: to determine how much of a community will participate in a

weatherization effort when ability to pay is not a factor; to analyze energy savings in response to high conservation standards and to compare these actual savings with projected or computer-modeled ones; to determine what effect conservation on such a grand scale will have on regional capacity and distribution; and to refine a process for carrying out projects of this magnitude in other small communities.

"Process" was an issue from the beginning, and in Hood River there are two distinct aspects to the question. On the one hand, there is the coalition of organizations who are sponsoring the project and their often very different points of view. The notion of progressive environmentalists, utility representatives, and BPA all sitting down together to scope out and implement one enormous task as a working team would have boggled anyone's imagination only a few years ago. But in Hood River, it's happening. A slow and deliberate working through of differences is taking place that is itself a model for the region.

Beyond this there is the question of the big bureaucracy and the small town. Just how do you approach a town like Hood River with an idea as big as the Hood River Conservation Project?

"No one has ever tried to quantify the subjective inference that we've drawn about who works in communities and how you work *with* them," explains John Jones, the project's administrator and a PP&L employee. "How do you communicate to the rather small community? We did a community assessment before the project . . . and found that, as in most communities, there's a distrust for big government, big business and outsiders. We're all three. So we made a commitment early on to employ local people as much as possible, behave like local people and live in Hood River."

Over the next two years, everyone involved in the project will be surveyed in an ongoing effort to gauge any changes in attitude on the part of either the citizenry or the staff of the project. One good indicator of the acceptance of the project by the community is that 60 percent of the eligible residents have already signed up — and there's been almost no marketing done.

So, from its downtown Hood River storefront, the biggest and most comprehensive conservation demonstration project in the country is beginning to hum. Over 3,000 homes will be very well insulated, and 320 of them will be closely monitored for their energy performance.

It is this aspect of the project, the actual energy use changes in households and neighborhoods, that will employ some of the most technically sophisticated equipment available. Three sources of data will be recorded in synchronized 15-minute segments over the next two years. Each of the 320 randomly selected monitored homes will have a four-channel temperature and kilowatt-hours-use tracking device installed in it.

For before and after comparison, these houses will not be insulated until Year II of the project. Throughout Year I the devices will measure the typical energy use of a Hood River County home without weatherization or with only a minimum of existing weatherization in place.

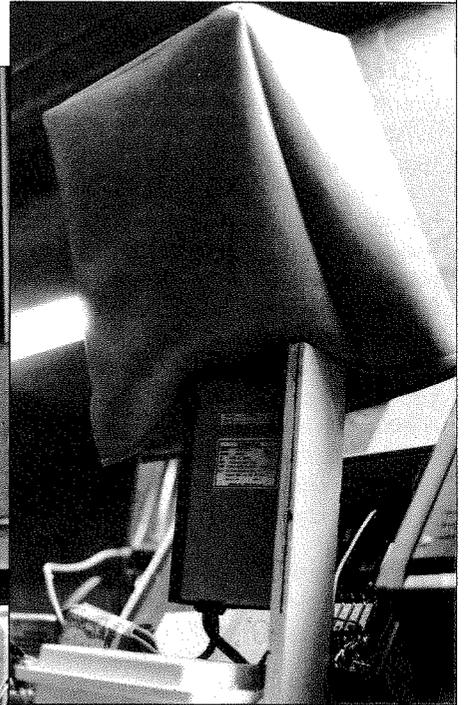
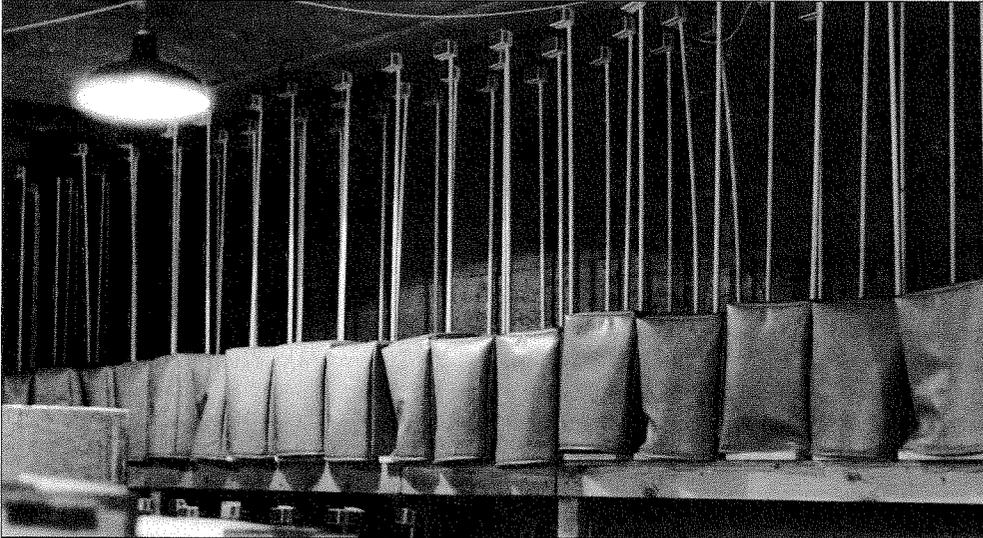
Corresponding to the data from the houses themselves will be weather statistics recorded at three different sites in three different microclimates. The sites have been chosen for their proximity to the houses being monitored and for their ability to reflect very different weather conditions throughout the country. Data collected at these stations will include solar radiation, wind velocity and direction, air and soil temperature and barometric pressure.

In addition to these two bodies of information, load monitoring equipment will be placed on the neighborhood feeder lines that serve clusters of monitored homes. This equipment will, as much as possible, exclude commercial and industrial customers, thus affording the project one of the first clean measurements of conservation's impact on distribution loads.

The theory is if you reduce energy consumption dramatically along a feeder line, you will see a drop in overall energy draw on that line. Terry Oliver, Bonneville's coordinator on the project, described the potential significance of this study.

"What we're doing is taking the change in an individual household load and trying to relate that to change in the requirements for a distribution system. A utility faced with load growth on a distribution system might be required to reconductor a whole system at a pretty high cost, or rebuild it totally, completely reconfigure it. We're hoping we might instead do some serious conservation and have the same

The biggest and most comprehensive conservation demonstration project in the country is beginning to hum.



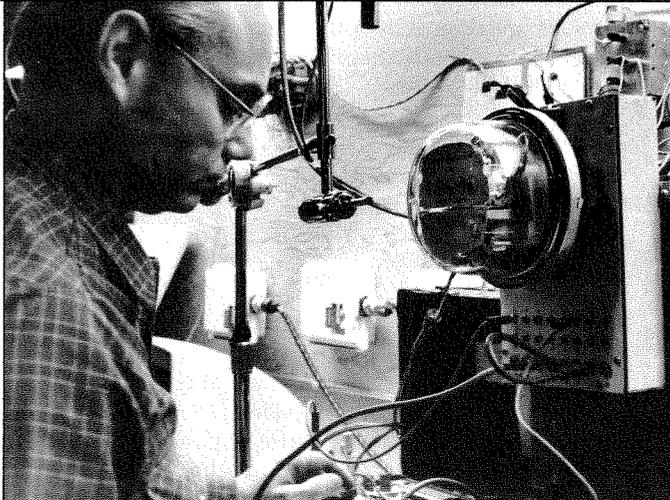
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1. "ETs" (electronic temperature monitors) lined up and awaiting deployment.

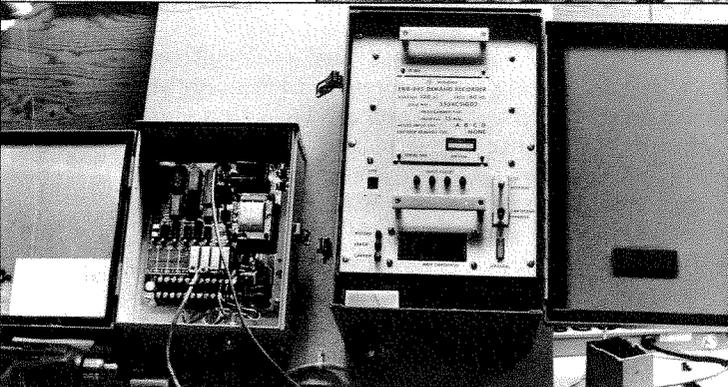
2. The beauty of the ET is that it can be plugged into an outlet in the home to measure the ambient temperature and transmit that to the receiver.

3. John Shaw, PP&L's meterman in Hood River, assembles and tests the monitoring equipment in his basement workshop.



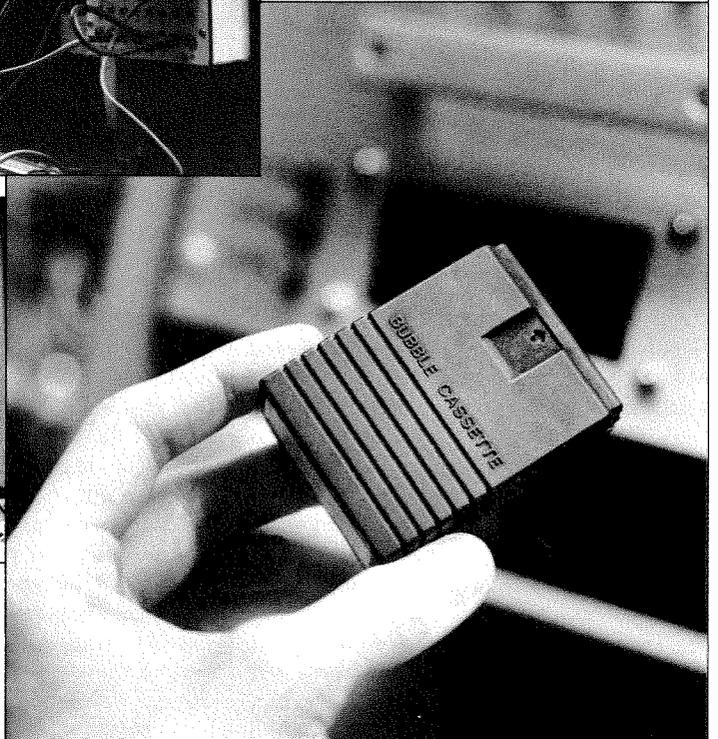
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5. The bubble cassette (memory) stores up to 57 days of information. At regular intervals the cassettes are collected and brought to downtown Portland where PP&L staff enter data into their computers for interpretation by the consultants at Oak Ridge, Tennessee.



4

4. Monitoring receiver (left) and recorder. Four devices (transponders) in the home send temperature and energy use data over the household current to the receiver mounted outside the home. The receiver accepts data and transfers it to the recorder where it is stored in the bubble memory.



The notion of progressive environmentalists, utility representatives, and BPA all sitting down together as a working team would have boggled anyone's imagination a few years ago. But in Hood River, it's happening.

impact (reduced load on the system) at a reduced cost," he explains.

The overall coordination of these three synchronized sets of data is the responsibility of PP&L's H. Gil Peach and his co-worker Danielle Engels. They are in charge of culling the information and keeping each separate concern on schedule. So far, the size of the project itself is all that has slowed them down.

To carry out the monitoring of the weather data, energy use and feeder line loads in their matched 15-minute cycles from homes and weather stations spread out all over Hood River County, PP&L wanted the most advanced equipment it could get. Several companies proposed prototypes that would be designed specifically for this project, but PP&L wanted to test energy use, *not* monitoring equipment, so beyond just state of the art technology they wanted reliability.

"We're using *proven* state of the art equipment," says Peach. "There is newer equipment out, but we wanted good practical technology that works automatically by itself and is resilient. This stuff will be mounted on the outside of people's homes."

The team decided to use a type of equipment that they had already tested in a smaller project in Albany and Bend, Oregon. The monitoring package incorporates advanced solid state "bubble mem-

ory" recorders rather than the more standard recording tapes system. The bubble is much more reliable than the old tapes. If it fails at all, it fails right away not later, like the tapes.

There are no gaps in the data, no slow-downs or speed-ups, because there are no moving parts, and the bubble's capacity is greater for a longer recording period than more conventional technology. The bubble equipment when coupled with the four sensors in the home will be able to separate electric space heat (by degrees and kilowatt-hours) from hot water or wood heat and each of these from the total household load. Moreover, the equipment can be plugged into a home's outlets — no holes need to be drilled for special wiring.

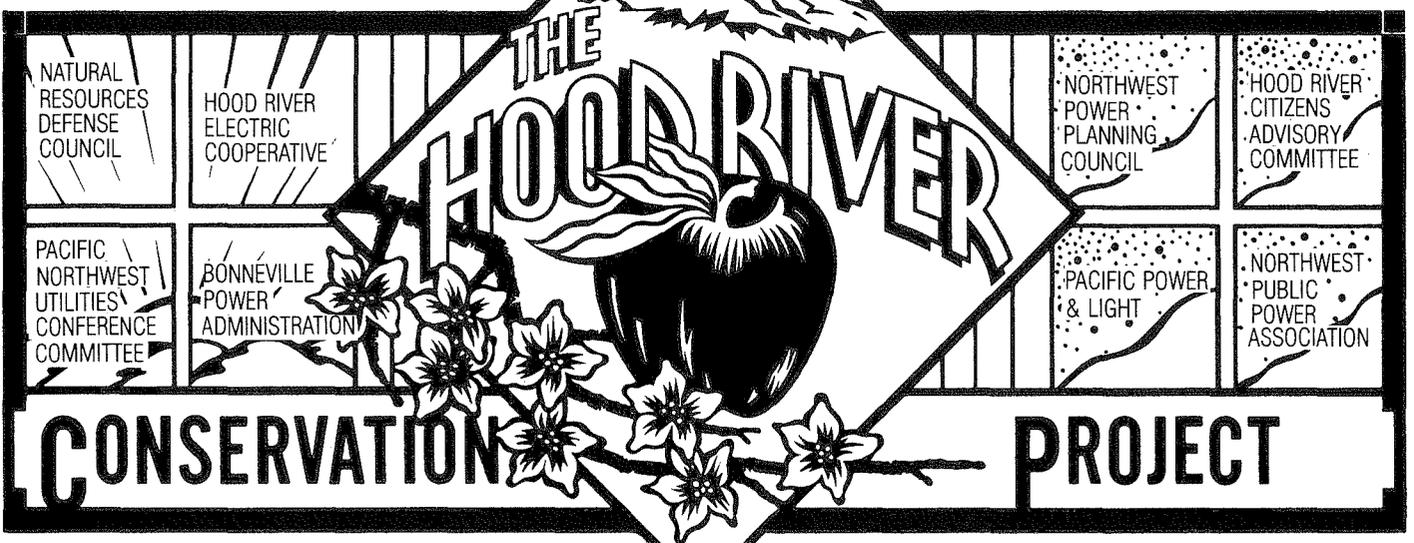
Once collected in the bubble (more like a small cassette) and transferred to a PP&L computer, the information can be compared to the same cycle of weather data and feeder line loads. This will be sent to Oak Ridge National Laboratory in Tennessee for study and interpretation. At Oak Ridge the project will be the responsibility of Dr. Eric Hirst and his staff. They were asked to evaluate the data because they are outside the region, non-biased, and, according to Peach, "probably the top conservation evaluation team in the country."

For various reasons, all of them relating to the unwieldy size and nature of this project, things are already off schedule. The equipment PP&L is using is manufactured by a small high-tech business called Robbinton Products, Inc., in Sunnyvale, California.

"We placed the largest order their company had had so far," Peach noted. "The order and associated timeline bottlenecked them." To date only about 130 houses are fully hooked up and recording, and the first year's winter is almost over.

In the basement workshop of PP&L's meterman in Hood River, John Shaw, there are rows of electronic temperature monitors (known affectionately as "ET's") and boxes of receivers and recorders being assembled, tested and readied for installation. As each of these comes on line and the body of collected data grows from Year I into Year II, comparisons will be drawn to other communities in the Northwest. If all goes well, there will be enough preliminary data to be useful in the next regional planning process.

Eventually, the many studies going on in Hood River should coalesce into vital information about practical energy economics in our region. The 3,000 snug and sturdy homes scattered up and down the valley between the Columbia and Mount Hood will have answered some of the questions for us. ■



Advisory committees play vital role for Council

When the Northwest Power Planning Council was created in 1980, Congress wanted the people of the Pacific Northwest to be involved in the formation of regional policy. Responding to this wish, the Council has built in several ways to get the people of the Northwest involved and to solicit their opinion.

Advisory committees have always played a large role in this public process. Recently the Council's committee structure was revised to allow parties that are directly concerned with an issue to have more impact on the Council's decisions. The new structure is intended to be fluid, allowing task forces to be created to deal with specific problems and then be dissolved when their work is finished. Together, these committees make up the Scientific and Statistical Advisory Committee.

Members of most advisory committees are selected to represent the various governments, agencies, public interest groups, and Bonneville Power Administration customers that are affected by the issues being examined.

All of the committee meetings are open to anyone who would like to attend, and time is provided for public comment. (Contact the Council's central office to find out when and where meetings are being held.)

Hydropower Assessment Steering Committee

This committee is part of the Council's effort to assess the Northwest's existing and potential hydropower sites and to keep future hydroelectric dams from harming fish and wildlife resources. It will be advising the Council on a study of the cumulative effects of building dams.

Most projects currently under construction are very small and may have no significant effect on fish and wildlife individually. However, the cumulative impact of several of these dams on a river basin may be considerable. The study will develop methods to measure that impact and to incorporate the results into the federal procedures for authorizing new hydroelectric projects. The committee is also involved in a study that will identify streams and wildlife habitats that should be protected from future hydroelectric projects.

Fish Propagation Panel

The Fish Propagation Panel differs from the other committees in that its members were not chosen to represent specific parties in the region but for their special knowledge of fish. The seven members are nationally and internationally known and have a combined total of 160 years of experience in fisheries science.

These experts help the Council coordinate its efforts to improve the propagation of wild, natural and hatchery fish. Natural reproduction maintains strong, genetically resilient fish populations. Hatchery produced fish can supplement dwindling runs of naturally spawning fish but must be carefully integrated with natural production. The Panel is establishing priorities for projects to improve fish populations and is working to improve the effectiveness of hatchery activities in the Northwest states.

Options Steering Committee

Part of the foundation of the Council's Energy Plan is the concept of acquiring options on resources. This concept involves developing a resource, such as a coal plant, in stages with the understanding that at certain key decision points, construction may be accelerated, delayed or cancelled depending upon the region's growth.

This moves the final decision to construct a resource nearer to the time when its power is actually needed, reduces the risk of building a power plant that will not be needed, and increases the flexibility of the Northwest's electricity supply. Despite its advantages, the options concept is new and will require demonstrations and further development before it can be depended upon. More technical information may be needed in an area or conflicting regula-

tions from government agencies may arise. To study and deal with potential problems, a series of task forces has been created, each dealing with a different resource.

The Options Steering Committee is to oversee these individual task forces and coordinate their work when their interest areas overlap. These task forces are Hydropower Options, Coal Options, and Cogeneration Options.

The Options Steering Committee also oversees the Options Evaluation Task Force, which is looking at the value of options and their use in regional power planning. It is concerned with when and under what conditions the Northwest would benefit from beginning the process to develop a new dam, power plant or conservation program.

Industrial Conservation Advisory Committee

When the Council was compiling the energy plan, it discovered the information on the conservation potential of the industries of the Northwest was inadequate. The Council has hired Synergic Resources Corporation (SRC) to conduct a survey of the industrial sector and assess its potential for conserving electricity.

The Industrial Conservation Advisory Committee, composed of people who actually work for industries, is working with SRC to develop the survey and will be helping the Council develop a conservation program that will prove practical and effective for industries.

by Ruth Curtis

Hearings open on Fish and Wildlife

Finetuning of what many consider the most important regional program to save a great natural resource has begun in earnest. The Northwest Power Planning Council will be spending the next few months absorbing public comment on proposed changes in its Columbia River Basin Fish and Wildlife Program.

The process began last August when the Council issued a public announcement that it would be taking applications for amendments to its program. Deadline for the applications was November 15, 1983, the first anniversary of the program. In all, there are 142 amendment proposals.

The Fish and Wildlife Program grew out of Congress' charge to the Council to develop a program to "protect, mitigate, and enhance" the fish and wildlife populations of the Columbia Basin. Those populations had been so seriously depleted in the last half century that it was not overly dramatic to talk of losing a natural resource.

A major reason for this decline had been hydroelectric development and operations in the basin. While there was little disagreement that something had to be done, correcting the problem wasn't easy. A major obstacle was the fact that the rivers and tributaries of the basin run through numerous jurisdictions.

As a regional body, the Council was in a unique position to take up the task of preventing further destruction and of restoring the fish and wildlife. For the first time, a major policy-making body with responsibility for power planning also had responsibility for the impact of that development on fish and wildlife. In another significant move, Congress made the two responsibilities co-equal.

The idea of amendments was an integral part of the developing program from the start. For one thing, the Council had only

one year to develop its Fish and Wildlife Program. No one pretended that would be time enough to correct all the problems that had taken decades to develop.

"Because of this, we don't see the amendment process as an expression of dissatisfaction with the program," says Jan Chrisman, the Council's director of fish and wildlife. "We see it as an opportunity to refine and improve what we started. Everyone who helped us develop this program did a monumental job. But all of us also knew our work was just beginning."

The amendment process is important from another standpoint. Like the Council's power plan, the fish and wildlife program was specifically designed to be changed so that it can easily respond to new information and technologies.

Since the amendment applications arrived last November, Chrisman and her staff have been busy sorting and organizing them into compatible subject areas. They are currently preparing issue papers which are available to the public (see order form in this issue).

The issues raised by the amendment proposals run the gamut from who will do the funding to what will be funded and in what order. The area drawing the most proposals deals with improving habitat and passage facilities for anadromous fish. These are fish, such as salmon and steelhead, which are born in fresh water but mature in the ocean, returning only to spawn.

Resident fish, which do not migrate to the ocean, were the number two issue in terms of the number of applications. Some of the amendments in this area addressed

perceived potential conflicts in the program between resident and anadromous fish.

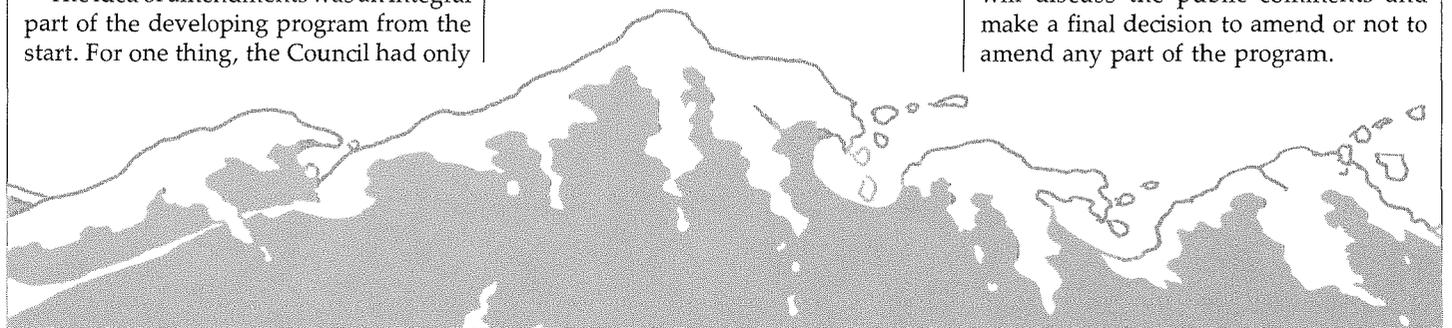
The issue papers deal with funding, ocean survival and harvest controls, anadromous fish research, demonstration research projects, capital construction, off-site enhancement for anadromous fish protected areas, resident fish, wildlife, program scheduling, and technical corrections to the program.

Chrisman notes that the amendments have drawn some new interest groups to the program. "In contrast to the original recommendations for program measures, which came primarily from the fish and wildlife agencies and tribes, the amendment proposals were filed by a far more diverse group of applicants," she reports.

The greatest number were filed by the Columbia Basin Fish and Wildlife Council, an association of federal and state fish and wildlife agencies, and by the U.S. Forest Service. Other major contributors include the Oregon Department of Fish and Wildlife, Army Corps of Engineers, and the Nez Perce Tribe.

Other applicants included the Bureau of Land Management, Crown Zellerbach Corporation, Oregon Division of State Lands, fish and wildlife agencies and groups, utilities, Indian tribes, and several individuals.

Throughout this spring there will be opportunity for public comment on the proposed amendments at all Council meetings. The Council plans to have a completed draft of the amendments by June. An open comment period on the draft will be held throughout the summer with public hearings in all four states in the region. During the fall, the Council will discuss the public comments and make a final decision to amend or not to amend any part of the program.



ISSUE PAPERS

COLUMBIA RIVER BASIN FISH & WILDLIFE ISSUE PAPERS ORDER FORM

Please send me a copy of the following staff issue papers related to amendments to the Council's "Fish and Wildlife Program"

- 1/FUNDING
- 2/OCEAN SURVIVAL/HARVEST CONTROLS
- 3/ANADROMOUS FISH RESEARCH
- 4/DEMONSTRATION RESEARCH PROJECTS
- 5/CAPITAL CONSTRUCTION
- 6/OFFSITE ENHANCEMENT (anadromous fish)
- 7/HATCHERIES (incorporated into other papers)
- 8/PROTECTED AREAS
- 9/RESIDENT FISH
- 10/WILDLIFE
- 11/PROGRAM SCHEDULING
- 12/TECHNICAL CORRECTIONS

Name _____

Organization _____

Street Address _____

Northwest Power Planning Council
700 S.W. Taylor, Suite 200
Portland, Oregon 97205

