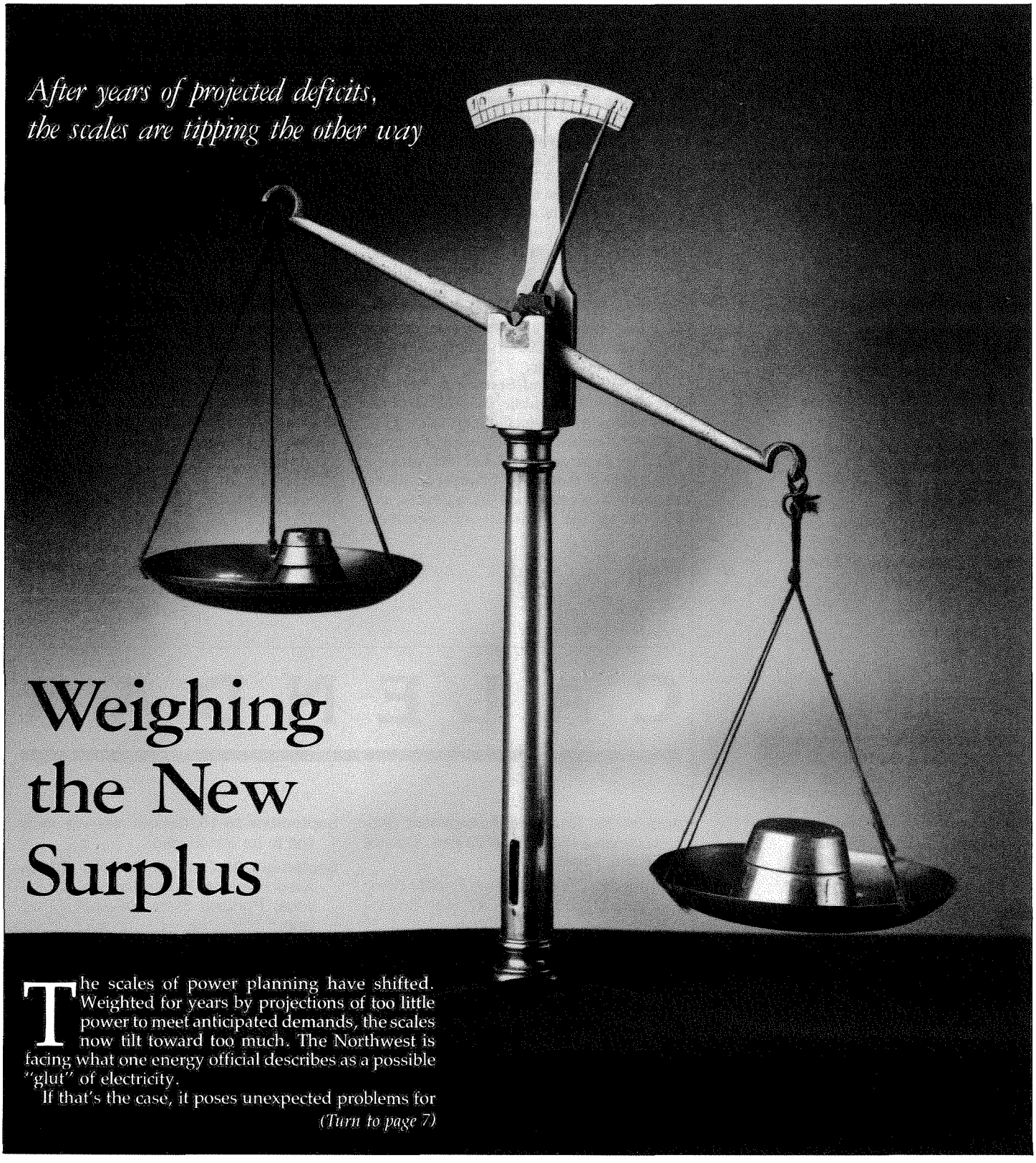
NORTHWEST
ENERGY NEWS

Volume 1, No. 5 Northwest Power Planning Council *August, 1982*



After years of projected deficits, the scales are tipping the other way

Weighing the New Surplus

The scales of power planning have shifted. Weighted for years by projections of too little power to meet anticipated demands, the scales now tilt toward too much. The Northwest is facing what one energy official describes as a possible "glut" of electricity.

If that's the case, it poses unexpected problems for

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NORTHWEST
ENERGY NEWS

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

NOTICES

Council seeks mailing list additions

The Northwest Power Planning Council is in the process of revising and updating its mailing list. Members of the public who would like their names added to the list should contact Beata Teberg at the Council's central office, 1-800-547-0134 (in Oregon, call 222-5161 collect).

The mailing list is divided into several categories. Names on the general mailing list receive notices of Council meetings, the Council's monthly newsletter, *Northwest Energy News*, and other general information mailings. Minutes of Council meetings are mailed to names on a second list. There is also a separate list for those who would like to receive only the monthly newsletter.

The Scientific and Statistical Advisory Committee has public mailing lists for each subcommittee: Conservation, Resource Assessment, Forecasting, Fish and Wildlife, Reserves and Reliability, and the Executive Committee. Names on these lists receive meeting notices, agendas, and minutes for the particular subcommittee.

Solar conference to be held

The Solar Energy Association of Oregon will sponsor a regional conference September 30-October 2 in Portland. Workshops will address current institutional and commercial programs, the latest renewable energy technologies, and policies that are shaping future energy use in the Northwest. Particular attention will be given to the implementation of the conservation and renewable energy portions of the Northwest Power Act.

Featured speakers at the conference will include Ralph Cavanagh, author of the Natural Resource's Defense Council's "Northwest Model Power Plan;" Roy Hemmingway, a member of the Northwest Power Planning Council; Steve Hickok, Assistant Administrator of Conservation for the Bonneville Power Administration; and Randy Hardy, Director of the Pacific Northwest Utilities Conference Committee.

For more information, contact conference coordinator Nancy Cosper at RAIN, 2270 NW Irving, Portland, OR 97210, (503) 224-7238.

CALENDAR

August 20, Resource Assessment Subcommittee (SSAC), 10:00 a.m., Council offices, Portland.

August 20, Oregon Energy Facility Siting Council, 9:00 a.m., City Hall Council Chambers, Medford, Oregon.

August 26, Forecasting Subcommittee (SSAC), 9:00 a.m., Council offices, Portland.

September 1-2, Council meeting, Portland.

September 14, Conservation Subcommittee (SSAC), 9:30 a.m., Council offices, Portland.

September 15-16, Council meeting, location to be announced.

September 30-October 2, Solar Energy Association of Oregon regional conference, Portland State University, Portland.

October 1, Council final Annual Report available for public circulation.

October 18-19, PNUCC Model Input Workshop, Red Lion Inn/Jantzen Beach, Portland.

For the fish: The Northwest Power Planning Council hears a witness during a recent meeting previewing parts of a draft program to help save the Columbia's fish.

Council floats 'water budget' for fish

Plan would set aside block of water to aid fish downstream journey

The development of the dams along the Columbia and Snake Rivers has given man some degree of control over nature and provided us with years of cheap electricity. Yet, as the rivers have been altered and manipulated to garner the most power, something else has been traded: the once bountiful natural runs of salmon and steelhead.

Congress recognized the price nature paid for turning the Columbia River System into perhaps the world's largest renewable energy power machine. With passage of the Northwest Power Act of 1980, it directed the new Northwest Power Planning Council to develop a program to "protect, mitigate, and enhance" the fish and wildlife along the once free-flowing Columbia. At the same time, the Council was to assure the region of "an adequate, efficient, economical and reliable power supply."

The task is not easy, for it requires a delicate balancing of the needs for power and the needs of the fish. The goal, as the law laid out, is how to use the river most efficiently for power *and* fish.

Since receiving more than 2,200 pages of recommendations for its fish and wildlife program last November, the Council has been working to achieve that balance. Last month, the four-state power planning panel unveiled one of the program's central components, a river management technique that budgets the Columbia's uses.

This water budgeting attempts to address one of the critical fisheries problems: adequate river flows to carry young fish past the dams and out to sea. For the salmon and steelhead — which begin their lives in the fresh water of the Columbia and Snake and spend their adulthood in the salt water of the Pacific — the journey from the spawning grounds to the sea is critical. Once their biological clock starts, the fish have roughly a month to reach salt water — or they will never make it to sea.

But the harnessing of the Columbia for power production has greatly changed the natural flows that once carried the young fish seaward. The dams have turned the Columbia into a 1,200 mile long series of lakes, one lake flushing to another as water is released to spin power turbines. The Columbia no longer flows swiftly enough for

Ralph Perry photo

many fish to beat the biological clock. Reservoirs store spring runoff water to be used later in the year for power generation. The river flows have been adjusted to meet seasonal shifts in power demands.

To compensate for man's intervention, the various fisheries agencies and tribes wanted certain year-round river flow requirements. The proposed flows, however, would greatly reduce the power production ability of the dams and the refilling of the reservoirs. In succeeding years, the failure to refill the reservoirs would not only cut future power generation but also eliminate water available for fish flows.

Given the physical constraints of the hydro system, Council members concluded after discussions with fisheries experts that it was most important to have adequate river flows when the fish actually begin their downstream migration.

With that in mind, the Council has been discussing the concept of a water budget — allocating a specific amount of water to fisheries agencies and tribes to be used during the migration period for the benefit of the migrating juvenile fish (smolts). Under the concept, the fisheries agencies and tribes could use this block of water to increase the river flows during the critical migration period, generally April 15 to June 15. A "water budget" would be established for both Priest Rapids Dam on the Columbia and Lower Granite Dam on the Snake, two key hydro facilities which would serve as checkpoints above the meeting point of the two rivers.

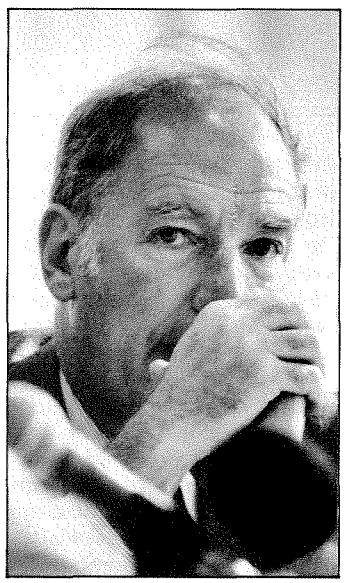
The water budget would be directly controlled by the fisheries and tribal officials, allowing them to specify the amount and schedule of flows during the migration period. This would allow the fisheries managers to increase the river flows when the greatest number of smolts appeared to be headed downstream. In addition, the water budget would be set aside regardless of the rivers' runoff conditions so that even in low-water years the block of water for the migrating fish would float atop the adjusted stream flows. This would aid fish survival even in periods of greatly reduced river flows.

Although the Council has not yet set the size of the water budget, Al Hampson, an Oregon Council member, says the concept has a number of advantages. First, it promotes the most efficient use of the river for the twin demands of power and fish, says Hampson. By setting aside water for when the young fish are headed downstream, it makes sure there are adequate flows without jeopardizing refill of the reservoirs for future fish flows and power generation.

In addition, Hampson says, the water budget concept finally gives fisheries and tribal officials a seat at the table where power operation decisions are made about the river.

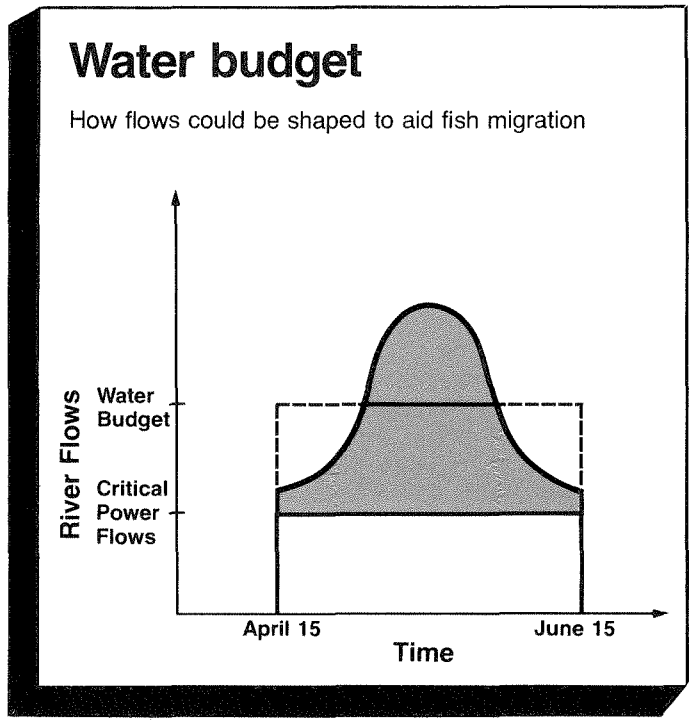
Council Chairman Dan Evans, a Washington member, says the water budget will also make fisheries officials more accountable for how the river is reshaped to accommodate the young salmon and steelhead. The budget gives them a fixed amount of water, says Evans, requiring them to use it with care so the greatest number of fish do indeed get out to sea.

The Council will release a draft fish and wildlife program in September with public hearings to be held around the region in October. A final program must be adopted by November 15 and then incorporated into the Council's long-range energy plan.



Fighting chance: Al Hampson, Oregon Council member, says the water budget concept would give salmon and steelhead a fighting chance as they try to overcome the Columbia's dams.

Ralph Perry photo (left)



Council releases Mid-Columbia staff draft

The Northwest Power Planning Council, focusing on fisheries problems tied to dams along the mid-Columbia River, approved last month release of initial parts of a staff draft fish and wildlife program for the Columbia and its tributaries.

The staff draft, based on recommendations from federal, state, and tribal fisheries officials and various utilities, calls for construction of fish passageways around several dams located on the mid-Columbia River in central Washington, testing of experimental fish transportation systems, and the establishment of certain interim spill requirements over the dams. These measures are aimed at helping young fish travel downstream without going through the power turbines.

The Council, along with developing a comprehensive energy plan, is required by the Northwest Power Act to produce a program to "protect, mitigate, and enhance" the Columbia's fish runs and wildlife which have been

damaged by federal hydroelectric projects along the river.

The five mid-Columbia dams are owned by Douglas, Chelan, and Grant County Public Utility Districts (PUDs). Douglas PUD owns Wells Dam in North Central Washington. Chelan PUD owns Rock Island and Rocky Reach Dams near Wenatchee, and the Grant PUD owns Wanapum and Priest Rapid Dams just above the Tri-Cities on the Columbia.

The staff proposal calls for immediate testing of prototype fish passage systems at all five dams, with results reported to the Council by March 20, 1984. The Council would evaluate the passage systems or alternatives which, as called for in the draft, would be installed by March, 1986.

In tandem with prototype testing at Priest Rapids Dam, the program calls for initial testing of short-haul transportation (literally trucking or barging) migrating salmon and steelhead from points above the dam to just below.

The staff draft calls for two-phase testing of the transportation program. After the first phase, at the end of 1985, the Council would analyze the survival of the young fish. Depending on the results, the Council could then either approve a second phase of testing to evaluate the number of adult fish successfully returning from transportation or cancel transportation and order construction of passage facilities at Priest Rapids Dam.

PUD officials estimate passage facilities could cost $14 to $20 million a dam. Grant PUD officials have argued that they can protect just as many salmon and steelhead by shuttling them around the dam — at a considerably cheaper cost.

In addition to the passage facilities and transportation studies, the draft program also calls for establishing certain spills for downstream fish migration until the bypass systems are completed. In addition, the draft program would establish the Council as the mediator of related disputes between the utilities and the fisheries agencies, including the tribes.

The Council found some immediate criticism of the proposal at its July 21 meeting.

Tim Wapato, Executive Director of the Columbia River Inter-Tribal Fish Commission, which represents four of the Columbia River treaty tribes, asked the Council to reconsider the staff draft before releasing it. Wapato said that the draft contained serious flaws, including inconsistency with Indian treaty rights, and that it failed to adequately consider information submitted at the public hearings held by the Council in March.

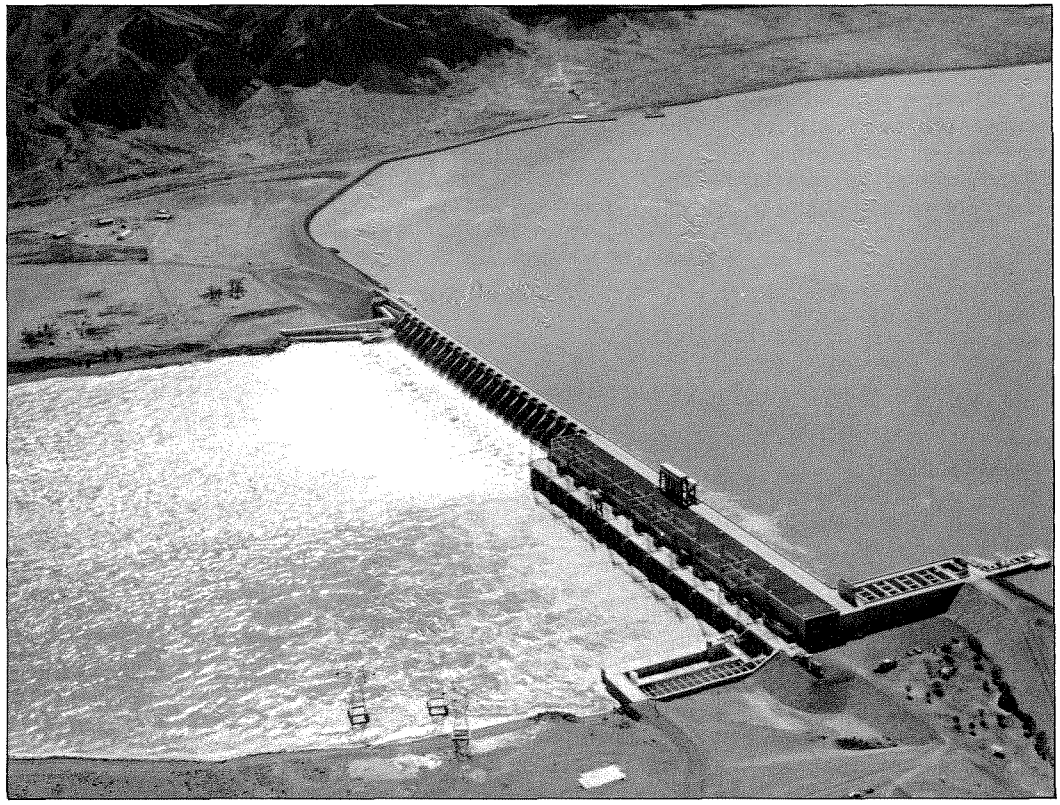
Council Chairman Dan Evans replied that the Council is "trying to be as public as we can in developing a fish and wildlife program." Evans said that release of the staff draft would provide an early opportunity for comment on possible program alternatives.

Bill Bakke, representing the Columbia River Citizens' Compact Group, argued that the draft did not provide fish equal status with power needs as Congress intended.

The Council's draft fish and wildlife program will be released for public comment in September, with public hearings around the region in October.

The Council is required to adopt a fish and wildlife program by November 15, which will then be incorporated into the long-range regional energy plan for development of new resources sponsored by the Bonneville Power Administration. The Council's energy plan is due April, 1983.

The staff draft of the mid-Columbia portion of the fish and wildlife program may be obtained by calling 1-800-547-0134 (in Oregon, call collect, 222-5161).



Man-made hurdles: While dams along the Mid-Columbia River, such as Priest Rapids, have provided years of cheap power, they've helped block downstream passage of young salmon and steelhead headed to sea.

BPA seeks new savings

The Bonneville Power Administration is offering to fund innovative ways to save electricity in agricultural, commercial, and industrial operations.

Proposals for studies or research and demonstration projects must be submitted to BPA by October 1 to be eligible for funding in fiscal year 1983.

The goal of the program is to develop promising technology, said C. Douglas Auburg, chief of BPA's branch of conservation engineering. BPA is interested in, for example, proposals to reduce the consumption of electricity for space and water heating, ventilating and lighting, electric motors, or industrial processes. Proposals may also suggest using renewable resources to reduce overall electricity use.

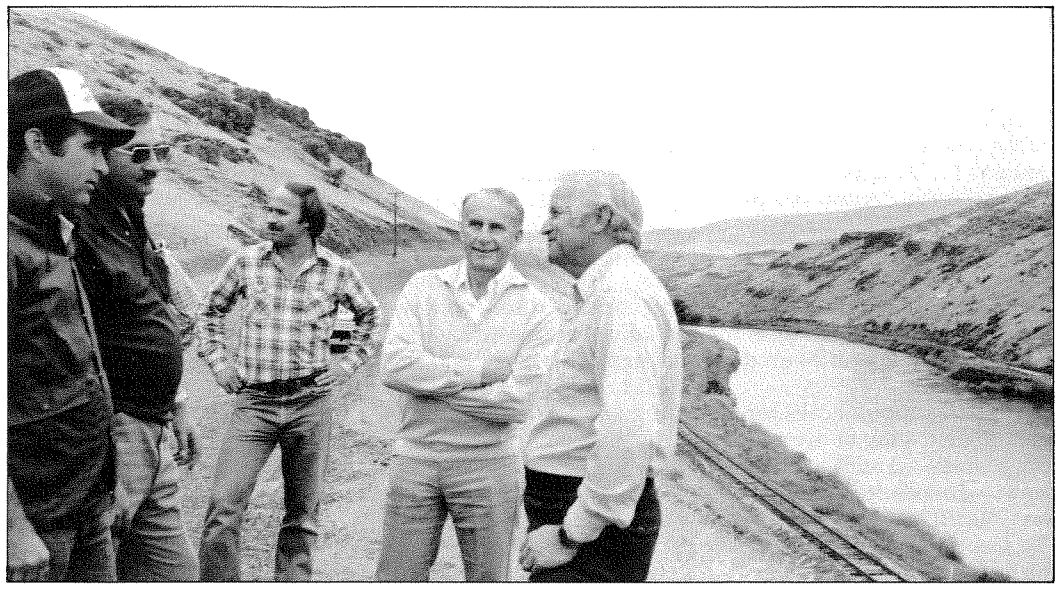
Information on submitting proposals may be obtained from C. Douglas Auburg, Branch of Conservation Engineering, P. O. Box 3621, Portland, Oregon 97208.

Grant County PUD photo

BPA sets rate hike

The Bonneville Power Administration announced its proposed wholesale rate increase August 13. BPA proposes a 60 percent increase — from 1.13 to 1.8 cents per kilowatt-hour — for public utilities and for private utilities' small farm and residential customers. The proposed increase for directly served industrial customers is 50 percent — from 1.73 to 2.59 cents per kilowatt-hour.

The proposed rates have been sent to the Federal Energy Regulatory Commission. Pending interim approval, the new rates will go into effect October 1.



Idaho Council members tour possible dam site

Idaho Council members Larry Mills and Bob Saxvik (both right) recently visited a site on the Weiser River in west-central Idaho considered a potential dam site. Water backed up by the dam could be used for downstream fish flows, flood control, and some power production.

Council contractor reports available to public

The Northwest Power Planning Council's technical contractors are nearing the end of their work.

Last fall the Council hired several different contractors to conduct technical studies for the Council to use in making the regional energy plan. The contractors and studies are listed below:

Study Module I: Forecasting Models

This study area focused on developing computer models for forecasting regional energy demand. The primary contractor is Charles River Associates, with assistance from other contractors in the residential and commercial sectors.

The draft final report on documentation of computer models is due August 23 from Charles River Associates. Jerry Jackson and Associates' draft final report on the commercial sector model and Cambridge Systematics' draft final report on the residential sector model are also due August 23.

Study Module II: Resource Assessment

This study looked at alternatives for electrical energy supply, assessing a variety of resources for their availability, cost, performance, environmental and fisheries impacts, and major barriers to their use.

The contractor, Battelle Northwest, has completed its draft final reports. The reports, now available, focus on the following areas:

Volume I: Residential Conservation
Volume II: Commercial Conservation
Volume III: Industrial Conservation
Volume IV: Agricultural Conservation
Volume V: Biomass
Volume VI: Geothermal Electric
Volume VII: Geothermal District Heating
Volume VIII: Hydro
Volume IX: Solar
Volume X: Wind
Volume XI: Coal
Volume XII: Natural Gas
Volume XIII: Petroleum
Volume XIV: Nuclear
Volume XV: Interregional Transfers
Volume XVI: Cogeneration

Study Module III: Conservation Programs and Model Standards

This study explored possible conservation programs, strategies to implement the programs, and model conservation standards. Applied Management Sciences' draft report, now available, provides recommendations for all programs and standards. The final report is due August 31.

Study Module IV: Rate Design

This study focused on designing electricity rate structures that will promote conservation. The draft final report from ICF is now available, and the final report is due August 23.

Study Module V: Reserves and System Reliability

This study focused on the way the regional electricity generating system is used to assure reliable electric power supply. The draft final report from ICF has been received, and the final report is due August 23.

Study Module VI: Quantification of Environmental Costs & Benefits

The goal of this study was to develop a method to assess environmental costs and benefits of conservation and other energy resources. NERO and Associates' interim report is now available. The final report is due August 31.

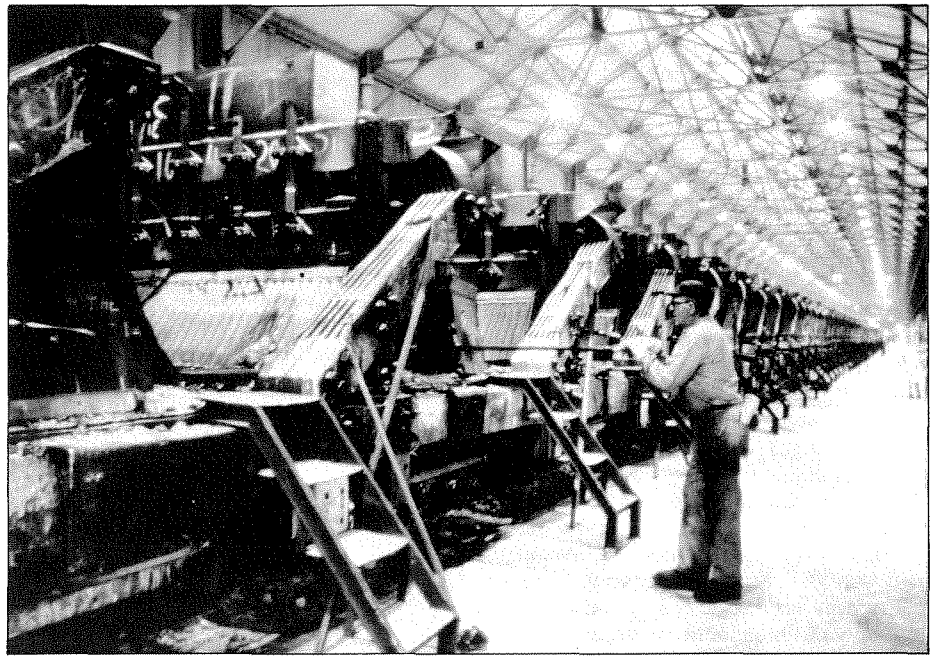
For information about obtaining copies of contractor reports, contact Ruth Curtis at the Council's central office, 1-800-547-0134 (in Oregon, call collect, 222-5161).

. . . Surplus

(From page 1)
the Northwest Power Planning Council, the new regional agency charged with developing a master energy plan for the states of Washington, Oregon, Idaho, and Montana.

The Northwest Power Act, which established the Council, laid down a new order for development of electric resources, giving conservation top priority. But when the Act was passed in 1980, it was debated against the backdrop of projected deepening power deficits, perhaps a power shortage big enough to run four cities the size of Seattle. Instead, the Council finds itself working at a time when many forecasts predict a surplus into the 1990s.

This isn't necessarily bad news. But like a new pair of shoes, the surplus takes a little getting used to. For example, what do you do about conservation when you have more power than you need? Do you push ahead aggressively? Or do you gradually hit your conservation stride only pushing the final kick when you see demand about to overcome existing supplies? Given the nature of the Northwest's power system, what are the financial advantages — and disadvantages — of having extra power? Can a surplus end up costing consumers more for electricity than they needed to spend?



Aluminum for warplanes: With the need for aluminum for World War II planes, the aluminum industry came to the Northwest, drawn by abundant cheap power.

All these questions may seem strange to old timers who remember the high-rolling days after Grand Coulee Dam was completed in 1941. As it seemed then, there was almost no limit to the Northwest's power. The rain and the snowfall provided the fuel and the Columbia River's dams generated abundant amounts of cheap power. Electricity finally came to many of the region's farms. The plentiful supply of electricity at a cheap price drew the energy-intensive aluminum industry to the region to contribute to the nation's war effort. The fledgling Bonneville Power Administration briefly hired folk singer Woody Guthrie to roam the region to hawk power. The region prospered in the post-war years, shifting from an economy closely tied to the land to a more diversified, industrial one. People came, and with them, ever increasing demands for electricity.

By the 1960s, most of the region's economically and environmentally suitable sites for major hydroelectric projects had been used. Growth in demand could almost be tracked using graph paper and a ruler. It was running at more than 6 percent a year — a doubling of power supplies required every 10-12 years. As other regions not blessed with a Columbia had done before them, Northwest utilities turned to "thermal" power plants, plants which used steam to spin power turbines instead of falling water. In the mid-1960s, the region embarked on the Hydro-Thermal Power Program, the first phase of which called for the construction of 20 nuclear and two coal plants by 1990. The program would add 22,000 megawatts, a near doubling of the amount of power then produced.

The plants were needed, utility officials said, because the hydro system had reached its limit and demand was still galloping along. In 1976 in response to the demand projections, Don Hodel, the BPA Administrator, issued a "Notice of Insufficiency" to the federal power marketer's customers, saying that after 1983 there were no guarantees all their power demands could be met from the federal power system. The Bonneville Power Act of 1937 prohibited the agency from building its own power facilities, and a mid-1970s Treasury Department ruling had precluded BPA financial backing of any power plants beyond the first three Washington Public Power Supply System projects.

BPA officials believed demand would soon outstrip supplies. The demand-supply equilibrium would be pitched hopelessly out of balance. To avoid this potential chaos, the public and private utilities, BPA, and its industrial customers asked Congress for help. The result was the Northwest Power Act of 1980.

The legislation allowed the four states to enter into an interstate compact, creating a council of two members from each state to develop a 20-year plan for the power needs of BPA's customer utilities and industries. New energy resources, the law spelled out, would have to be needed and the cheapest resource available. The law set up a priority system for choosing new resources: conservation first; next renewable resources from wind, sun or water; then cogeneration or resources with high

BPA photo

Historically most utilities and BPA have developed enough resources to have sufficient power even in a low-water year. This hedge has created a surplus.

fuel efficiencies; and finally conventional resources such as coal or nuclear. The law, backers said, would bring order to power development as the region looked to adding large chunks of new power.

Today, the Act is colored by a degree of legislative irony. Conceived to deal with projected deficits, the Council now confronts various projections dramatically lower than those which launched the Hydro-Thermal Power Program. Today, things point to a different supply-demand imbalance altogether: a surplus.

An energy surplus, like those new shoes, comes in different shapes and sizes.

Right now, thanks to above average rain and snowfall and slack economic times, the region has a seasonal surplus. With so much water available to produce cheap electricity, most of the region's more expensive thermal plants are shut down in favor of hydropower. Even so, there's enough electricity surplus to sell to California utilities over the Pacific Intertie system of power transmission lines.

This surplus has produced an unexpected windfall for BPA, bringing it millions of California dollars for the region's excess electricity. For California utilities, always looking for electricity less expensive than their oil-fired power, it's a chance to tap into the Northwest's dirt-cheap hydro.

But the uncertainties of high-water surpluses are pivotal to some of our region's present energy problems. You can't count on every year being a high-water year. Rain and snowfalls vary dramatically. As good as 1982 is, 1977 was bad. The Columbia's flows were half of the average flows. The region scrambled to make up the shortfall. Such is the nature of a hydro-dominated power system: the fuel is free, the power cheap, its availability uncertain.

Utility officials call this phenomenon "critical water." Historically most utilities and BPA have developed enough resources to have sufficient power even if a low-water period runs several consecutive years. This "critical water" planning has led utilities to overbuild to hedge against dry years. This hedge, combined with other factors, has created the second type of surplus, what planners call a "planning" surplus.

In the case of the Northwest, projections of a planning surplus can be attributed to a number of reasons.

For years, utilities have overbuilt power generation capacity, figuring either demand would soon catch up or there was a willing customer — California — for any surplus. That was true of hydropower, which cost less than one-third of a cent per kilowatt-hour to generate. It hasn't been true of new coal or nuclear plants, which can cost 10 to 30 times more. Some WPPSS 4 and 5 participants found that out a few

High water = big surplus

This is such a bountiful year for Northwest hydropower that there is nearly enough surplus power to supply the Portland General Electric service area for 23 months.

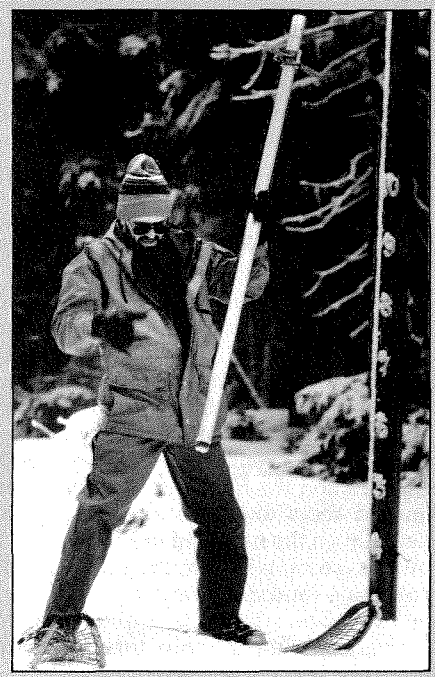
"When the Northwest has a good water year, it's great for generating electricity. But when it's bad, it's really bad. The swings in the Columbia River System's ability to generate power are really dramatic," says Merrill Schultz, of the private utilities' Intercompany Pool.

The Army Corps of Engineers estimates that the January-July flow of the Columbia River at The Dalles will be 121 percent of normal, or about 133 million acre feet of water per second.

Many Northwesterners will remember the *bad* year of 1977. A serious drought cut runoff to about 50 percent of normal, creating a shortage of hydropower and forcing all the region's available thermal (coal and nuclear) plants to run full-tilt to supply enough power. But this year, with an abundance of hydropower, the expensive thermal plants can be shut down, their power substituted with low-cost hydropower.

Actually, this year the region is making a profit as excess hydropower not needed in the region is being sold to California at a record rate. The Bonneville Power Administration announced last month that power sales to California hit a record for the first six months of 1982.

From January through June of this year, 11.9 million megawatt-hours of electricity were sold to California utilities, 13 percent ahead of 1976, the record year. Federal law requires that all surplus electricity generated at federal dams must first be sold within the Northwest. After that, if there is still surplus power, it may be sold to customers outside the region.



Good snowpack: A Soil Conservation Service official checks the snowfall on Mt. Hood, which helps determine the Columbia's spring runoff.

Ralph Perry photo

Right mix: It's not whether to overbuild or underbuild, says Roy Hemmingway, Oregon Council member; it's getting the cheapest power resources.

months ago when they were seeking out-of-region buyers for the plants, estimated to cost $13 billion. California utilities reportedly turned thumbs down, saying they weren't interested in the Northwest's costly thermal projects. They wanted cheap hydro. The participants, facing financing problems, finally stopped work on the plants.

The cost of the WPPSS projects — which ballooned from the original $4 billion estimate for the five plants to nearly $23.8 billion — has also contributed to the lower demand projections. In the late 1960s, when the WPPSS projects were conceived as part of the Hydro-Thermal program, electricity demand was estimated to grow by 6.4 percent annually. Today, BPA's own forecast, partially affected by rising electric rates, pegs base case growth at 1.6 percent. BPA's wholesale rate has gone from 0.3 cents per kilowatt in 1979 to more than 1.8 cents proposed for this year. Rising rates have spurred many Northwest consumers to conserve or to switch to gas or wood heat, further adding to a planning surplus. In addition, recessionary times for the wood products and aluminum industries have contributed to the surplus. Furthermore, the incoming industries, such as the electronics field, are far less energy-intensive than heavy manufacturing or metals production.

Recent events reflect the changing energy realities — the cancellation of two WPPSS plants and delay of a third, the withdrawal of the license application for Portland General Electric's Pebble Springs Nuclear Plants, and the temporary shelving by Puget Sound Power & Light of two nuclear plants on the Hanford Reservation. These projects alone have cost more than $2.5 billion to date, the costs to be passed on to ratepayers and/or stockholders.

Still, given the uncertain nature of energy forecasts, any long-term surplus has an ephemeral quality. BPA's forecast, for example, anticipates an economic upturn but nevertheless ranges from 0.9 percent annual electricity growth to 2.4 percent. (As a rule of thumb, each 0.3 percent of growth compounded over 10 years equals the demand of another 600 megawatts of electricity). And the duration and size of any surplus could be altered by any number of forces such as a robust turnaround in the region's economy or voter denial of bonds to complete the remaining WPPSS projects.

It is within this swirl of events that the Northwest Power Planning Council must develop a program to protect the Columbia's fish and wildlife, prepare an electric energy demand forecast for the next 20 years, and write a plan to meet BPA's power requirements during that period.

Over the past decade, energy realities have turned upside-down. New large power plants take billions of dollars and years to complete. And utilities that overbuild such expensive resources may find

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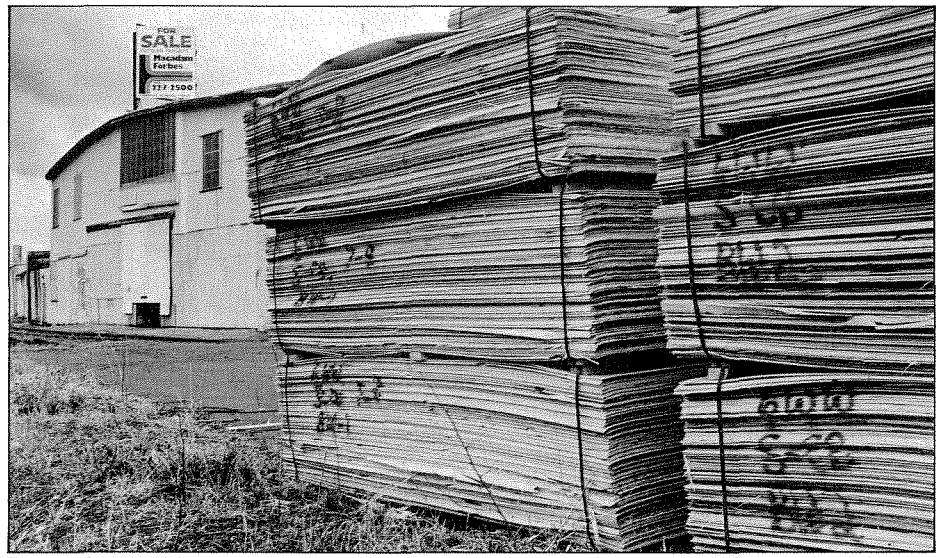
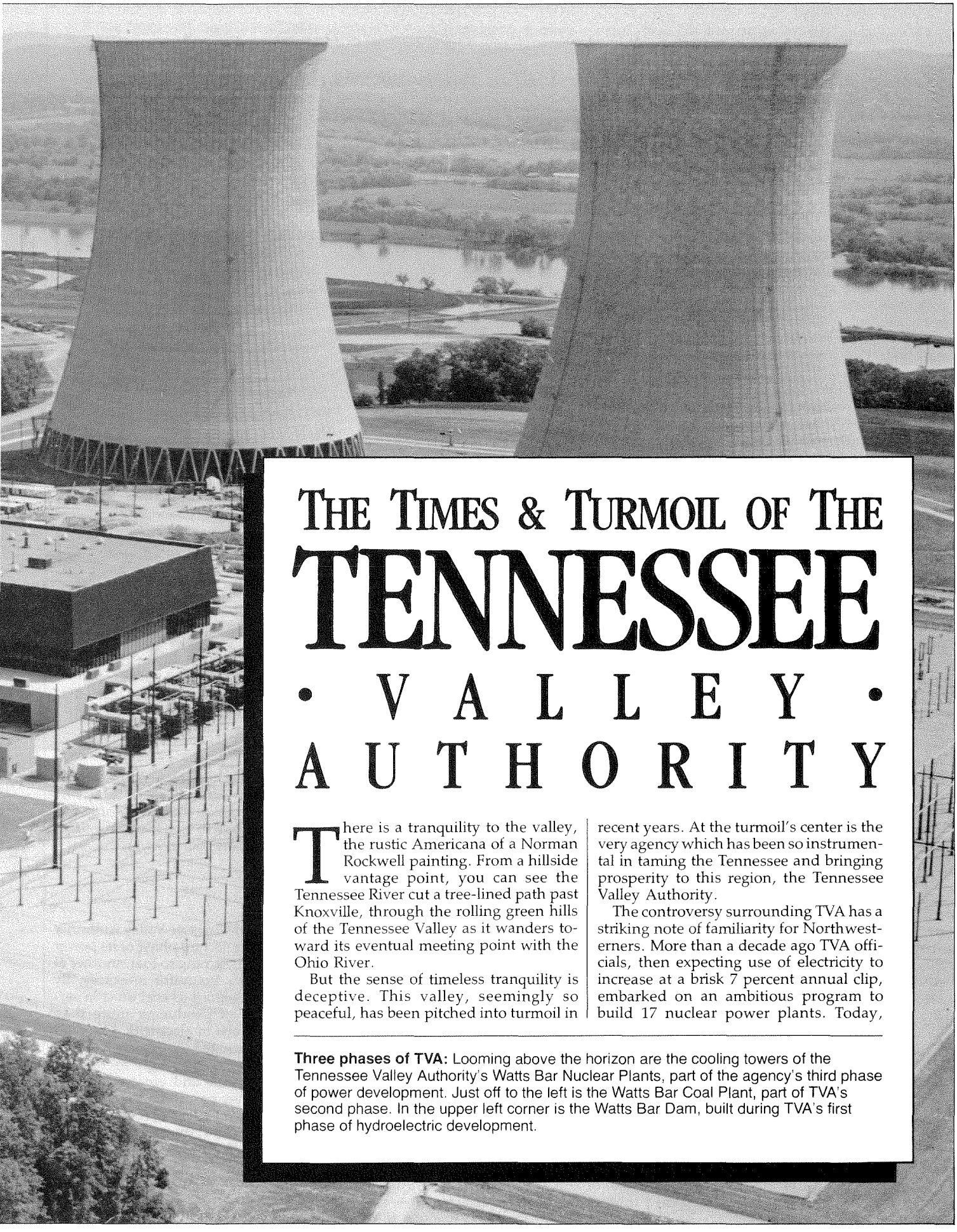


Down times: With the recession sending new construction reeling, the wood products industry is facing troubled times — and using less power.

Photos: Ralph Perry (top); Cathy Cheney (bottom)


TVA



THE TIMES & TURMOIL OF THE TENNESSEE • VALLEY • AUTHORITY

There is a tranquility to the valley, the rustic Americana of a Norman Rockwell painting. From a hillside vantage point, you can see the Tennessee River cut a tree-lined path past Knoxville, through the rolling green hills of the Tennessee Valley as it wanders toward its eventual meeting point with the Ohio River.

But the sense of timeless tranquility is deceptive. This valley, seemingly so peaceful, has been pitched into turmoil in recent years. At the turmoil's center is the very agency which has been so instrumental in taming the Tennessee and bringing prosperity to this region, the Tennessee Valley Authority.

The controversy surrounding TVA has a striking note of familiarity for Northwesterners. More than a decade ago TVA officials, then expecting use of electricity to increase at a brisk 7 percent annual clip, embarked on an ambitious program to build 17 nuclear power plants. Today,

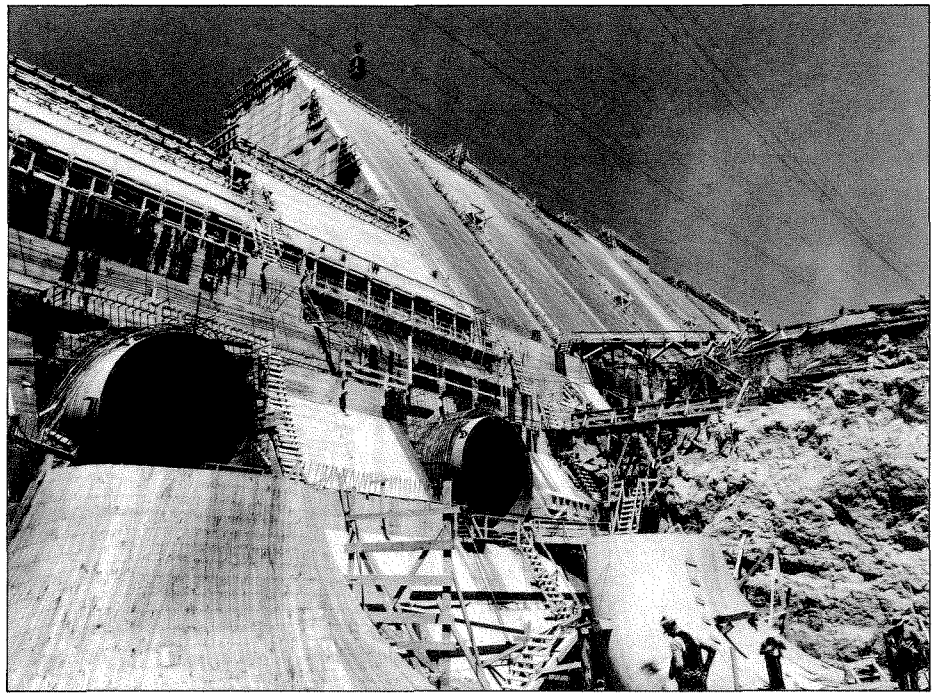
Three phases of TVA: Looming above the horizon are the cooling towers of the Tennessee Valley Authority's Watts Bar Nuclear Plants, part of the agency's third phase of power development. Just off to the left is the Watts Bar Coal Plant, part of TVA's second phase. In the upper left corner is the Watts Bar Dam, built during TVA's first phase of hydroelectric development.

Photos courtesy of TVA

The Tennessee Valley Authority and the Bonneville Power Administration are New Deal cousins, both focused on the major rivers of their regions.

after TVA's wholesale rates have more than doubled and thousands of valley residents have taken advantage of one of the nation's most aggressive conservation programs, nearly half of those plants have been shelved, billions spent for power plants which may never be completed. And now, TVA officials are trying to figure out what to do with more electricity than they need.

For Northwesterners, the troubles of the Tennessee Valley Authority offer an example of how another region has dealt with its supply and demand dilemma and, perhaps, a glimpse into some of the possible paths from times of turmoil.



The first: The Tennessee Valley Authority began with Norris Dam, just northeast of Knoxville. The project, like the many which followed, put thousands of Valley residents back to work and produced some of the nation's cheapest electricity.

The Tennessee Valley Authority and our region's Bonneville Power Administration are New Deal cousins, coming from common ancestors but different branches of the public power family.

Both agencies focused on the major rivers of their regions and how to harness the free-flowing streams for the good of all. Like the Northwest, the Tennessee Valley was an area closely tied to the land. But farming had extracted its toll from the valley, leaving the land overworked and unproductive. During droughts, the land would turn to dust and blow away. During floods, as the Tennessee and its tributaries swelled and spilled over their banks, precious topsoil washed away.

But some had a vision for the river, seeing that it could be used for navigation to provide inland commerce, for flood control to tame the Tennessee, and for power production to provide electricity.

With the 1932 election of Franklin Delano Roosevelt, the visions soon became reality. Within the first 100 days of the New Deal, the president signed into law the Tennessee Valley Authority Act of 1933. The TVA was one of the New Deal's super agencies — "a corporation," Roosevelt said, "clothed with the power of government but possessed of the flexibility and initiative of private enterprise." Under the TVA Act, the new federal agency was responsible for navigation along the Tennessee River, flood control to aid farmers and riverside communities, hydroelectric power production, reforestation of the barren rolling hills of the Tennessee Valley, and fertilizer research and production from leftover World War I synthetic nitrate facilities in Alabama.

TVA's charge was clear and sweeping — bring prosperity to the valley.

Prosperity had been something long missing from the Tennessee Valley. With land overfarmed, agriculture fell on hard times and less than 5 percent of the farms had electricity. The region's per capita income was less than half the national average, and unemployment haunted thousands of valley residents.

TVA offered hope. The construction of the dams provided jobs for thousands and the promise of cheap electricity for farms and industry. And as World War II began, there was need for even more electricity for the valley's war-related industries and for a super-secret project that would tie the Tennessee Valley and the Northwest, the Manhattan Project.

By Northwest standards, TVA dams — nine on the Tennessee itself and more than two dozen others on its tributaries throughout the seven state region — were small. There was nothing of the mammoth scale of Grand Coulee Dam. In turn, TVA found much sooner than the Northwest that it would have to turn to other sources of electricity than falling water.

In 1940 the Tennessee Valley Authority entered the second phase of its power generation, turning to coal, another of the region's bountiful resources. By 1970 TVA had placed 63 coal units in service, capable of producing more than 17,000 megawatts of electricity. The coal-fired plants brought the region two-fold prosperity. First, through increasing economies of scale and greater electrical production, they paved the way for more industry. Second, by using coal they were providing an extra shot in the region's economic arm. For the Eastern coal industry, bumped off the railroad market by diesel engines, TVA was a welcomed new customer.

But there were also problems with coal. The billowing plumes of smoke — which once symbolized power for new industries for new jobs — also meant air pollution and acid rain. And as the cost of coal began to soar, so did electric rates.

So as the 1960s progressed, TVA began looking at a third phase of power generation: nuclear power.

Perhaps these first three phases of TVA's power development are best illustrated by a short stretch of the Tennessee River midway between Knoxville and Chattanooga. Straddling the river is the Watts Bar Dam, finished in 1942. The dam cost $35 million and can produce up to 166 megawatts of electricity. Downriver a few hundred yards on the western bank stands the Watts Bar coal plant. The four units, started in 1940 and costing $22 million, were TVA's first ventures into coal-fired electricity. Today, the Watts Bar coal plant stands silent, shut down for more efficient, more modern power plants.

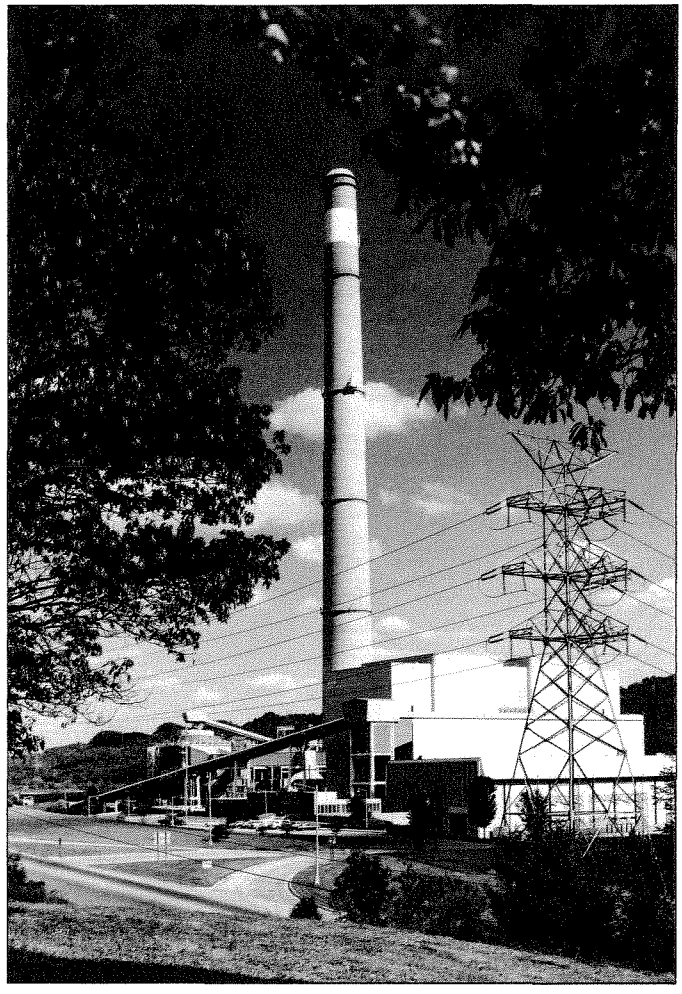
From the same spot, looking a bit farther downriver, one is struck by two mammoth concrete structures which rise from the river bank high above the deciduous trees. These are the cooling towers of the Watts Bar nuclear plants. Construction workers are preparing the first of the twin reactors to go into operation in early 1984 at a cost of nearly $2.5 billion. One cannot help but be struck by the awesome scale of these plants when compared to either the Watts Bar coal or hydro facilities. The cooling towers, great gray shells, stand out on the horizon from miles away.

The physical proportions of the Watts Bar Nuclear Projects are also a symbol of TVA's one-time commitment to nuclear power.

By the early 1970s, TVA officials were projecting that the demand for electricity would increase 7 percent a year. Power was cheap. In 1971, coal was running $6 a ton and nuclear fuel was even cheaper. Retail rates were among the nation's cheapest. TVA consumers, like BPA consumers in the Pacific Northwest, used nearly double the national per capita amount of electricity. To meet the projected demand, TVA turned to the atom. By 1974, the federal agency had committed to build 17 nuclear plants at 7 sites around the valley. TVA's first plant, Browns Ferry, was completed in 1973, costing a total of $909 million or $276 per kilowatt of power capacity.

But the events of the 1970s, as they did with the Bonneville Power Administration, badly buffeted the Tennessee Valley Authority. TVA's wholesale rates were already headed upward thanks to the rising cost of coal. In 1981, TVA paid an average of $38 dollars a ton, more than six times the 1971 cost. In addition, years of double-digit inflation, combined with escalating interest rates, steadily pushed up the completion costs of TVA's ambitious nuclear program.

As the projects' costs went up, so did TVA's wholesale rates and, ultimately, the retail rates of millions of ratepayers dependent on TVA power. From 1971 to 1981 average residential rates went from just over a penny a kilowatt hour to nearly 4 cents a kilowatt hour. When TVA's Sequoyah Nuclear Plant Unit 1 came on line last year, it cost more than $800 per kilowatt of capacity, or nearly three times the cost of TVA's first nuclear plant, Browns Ferry. Ratepayer outcry over the rising rate spread across the Tennessee Valley like the winter flood waters. Citizens worried about how to deal with their rapidly escalating monthly utility bill. "We got 'em into this mess," said a TVA official. "We had to do something to help them out."



Big coal: When TVA ran out of hydro, they turned to coal power in a big way. This plant, Bull Run near Oak Ridge, is one of the largest coal units in the world, the smoke stack climbing 800 feet.

With the 1977 appointment of S. David Freeman to the three-member board of directors, TVA changed course and began to push one of the nation's most aggressive conservation programs. Its home insulation program offered free energy audits to nearly 500,000 valley residents and provided no-interest loans to more than 200,000 to weatherize their homes and increase the efficiency of their electrical use.

"We made, as a matter of policy, conservation our highest priority in terms of being our most economical source of energy," Freeman told KING Broadcasting reporters earlier this year.

"A well-insulated home is the equivalent of a generator

TVA officials estimate they can produce a new kilowatt of electricity through conservation for $600 per kilowatt. By comparison, a new nuclear plant can cost an estimated $2,000 to $3,000 per kilowatt.

that generates a couple of kilowatts of electricity around the clock. It never breaks down, it doesn't pollute, and on the basis of the cost, it's a whole lot cheaper than building new power plants."

TVA officials estimate that they can produce a new kilowatt of electricity through conservation for $600 per kilowatt. By comparison, power from a new nuclear plant can cost an estimated $2,000-$3,000 per kilowatt. In light of the cost and slackening demand, TVA officials have delayed eight of the 17 nuclear projects under construction, and recently TVA staff urged the board to scrap four of those reactors altogether.

But the TVA's shift from nuclear to conservation hasn't been a snap.

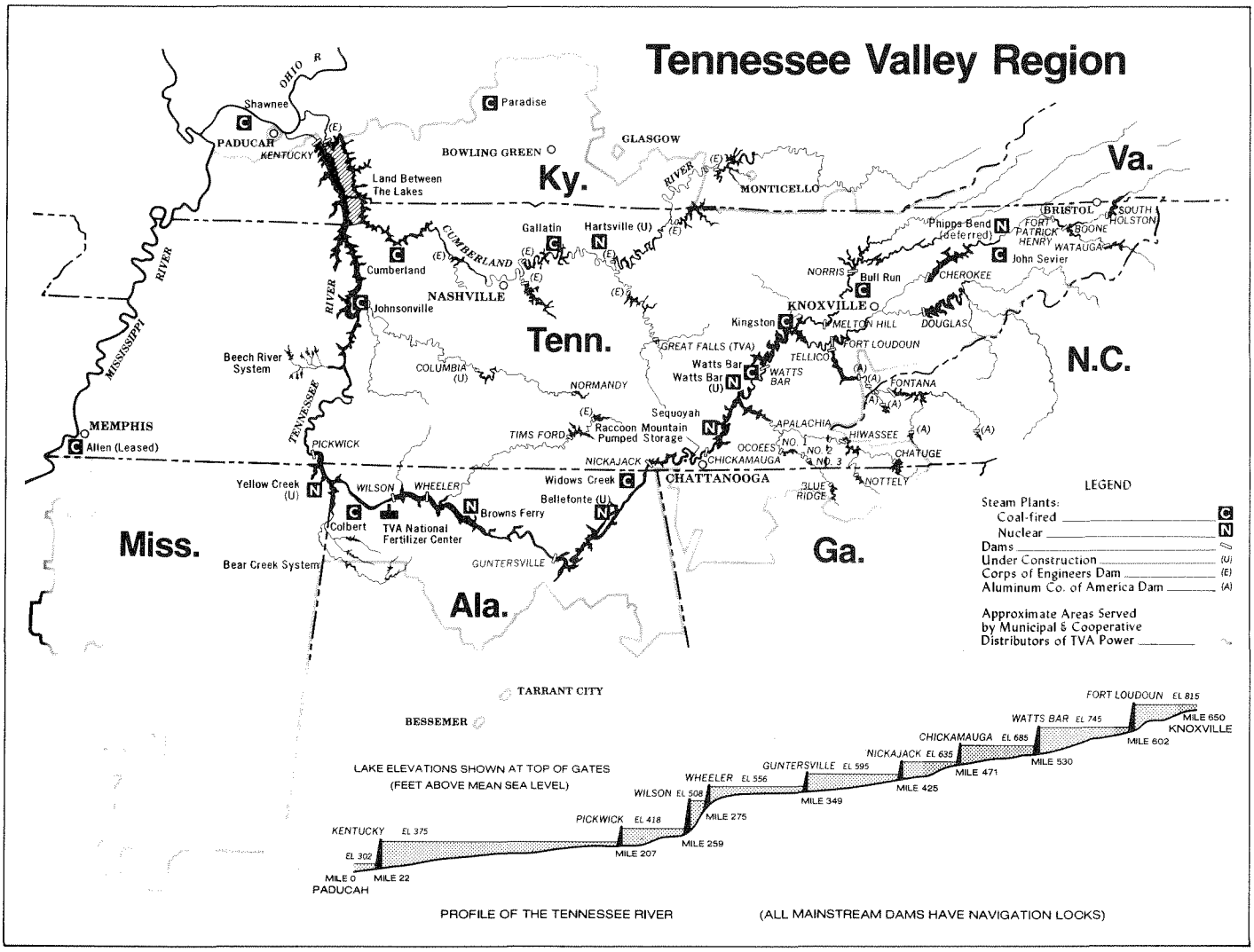
"You have to realize that Oak Ridge (Tennessee, just outside of TVA's headquarters in Knoxville) is the home of nuclear power," says Freeman. "It's like going to Houston and saying we don't need to use oil anymore."

The fallout from the deferral decisions has not been unlike the problems surrounding the deferral or termination of various Washington Public Power Supply System plants. Some citizens have complained about lost jobs during a time of high unemployment. Small communities near the mammoth projects have been rocked by the economic disruption of having the plants suddenly stopped.

And after the construction workers have left and the plants stand silent, one thing remains — the projects' multi-billion dollar debt. TVA has spent $1.85 billion on the four reactors proposed for cancellation. And this cost, whether a kilowatt of power is ever produced, will ultimately be picked up by the valley's ratepayers.

Yet beyond the direct ramifications of the plant deferrals, TVA's conservation programs have not been without problems.

Some of the problems have been simple institutional inertia. Internally, the engineer-dominated TVA has struggled with the shift from complex plans for power generation to the equivalent but different



complexities of power conservation. In addition, some of TVA's retail power distributors, 160 public utilities scattered throughout the valley, were unsure about the reliability of conservation and resistant to the push for it by the powerful federal agency.

TVA has also encountered problems implementing conservation programs and making sure there are enough trained contractors to install the measures and qualified inspectors to make sure they were installed correctly. TVA estimates that 20 to 25 percent of the weatherization jobs fail inspection.

There have also been public perception problems. As happens with conservation programs, while ratepayers have taken energy-saving steps they have still seen their rates go up. And the program has not been immune to cost escalation. As TVA's cost of borrowing money has increased, so has the cost of conservation.

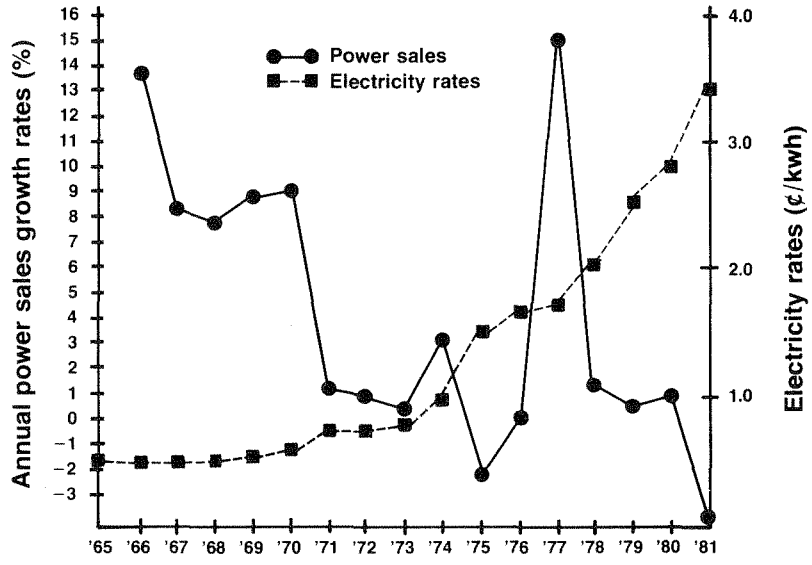
Still, despite the problems, the savings from TVA's sweeping conservation effort have been impressive. Officials estimate that the home insulation program has allowed TVA to defer more than 1,000 megawatts in new power producing capability which could have cost billions to produce from a conventional power plant.

Today, TVA faces a different dilemma.

The times have changed. The forecasts, which once projected 7 percent annual growth, now range from 3 percent to less than 1 percent. The economies of scale, which pushed towards increasingly larger dams, coal and nuclear facilities, have been shattered. TVA has found that bigger is not necessarily better. Indeed, the more you build, the more it costs. And now TVA planners use terms that have an increasingly familiar ring — "planning uncertainty" and "resource flexibility."

The past decade has been, as it has for the Pacific Northwest, a traumatic one for the TVA. The rapidly escalating rates, which have since plateaued, have shaken some of the public's faith in the agency, TVA officials acknowledge. For David Freeman, considered one of the sharpest utility executives in the nation, there has also been a personal political price. Free-

TVA's power sales and rates



Power sales growth rates derived from TVA total kwh sales by fiscal year. Figures include all TVA sales with the exception of deliveries to federal agencies. (According to TVA, the large 1977 increase resulted from winter and summer temperature extremes and a better business climate.)

Electricity rates are TVA area average wholesale power rates by calendar year.

TVA conservation programs

When the cost of building conventional power plants started skyward, the Tennessee Valley Authority responded with one of the nation's model conservation programs. The TVA board of directors decided in 1977 that conservation was an energy resource and could be developed as such on a region-wide scale.

Basically, TVA developed three energy-efficient programs which were marketed by most of their 160 retail publicly-owned utilities throughout the Tennessee Valley. The programs are:

1) Home Insulation Program. Under this program, free TVA-sponsored energy audits were provided to all homeowners in the region. For those customers with either electric heat or air conditioning, they were offered no-interest loans up to $2,000. The loans were repaid by the customer on his or her monthly utility bill, divided evenly over a seven-year period.

To date, more than 500,000 energy audits have been conducted, with nearly 210,000 loans made for $185 million. For the investment, TVA has managed to nail down more than 1,000 megawatts of electricity, or roughly the equivalent of one and one-half nuclear plants.

2) Heat Pumps. In addition to the home insulation program, consumers were also presented with the chance to install a modern, energy-efficient electric heat pump system if their home or residence had a central electric heating or cooling system.

To date, TVA officials have recommended the installation of more than 24,000 heat pumps with 12,000 units actually installed at a cost a little over $39 million. Consumers are allowed to borrow the money at TVA's cost with up to ten years to repay. The average loan is $3,100 per installation. The program has saved 65 megawatts.

3) Low-Income Program. To nail down energy conservation savings from low-income ratepayers, TVA has worked with a variety of people. The programs include installing conservation in public housing units, working with the Federal Department of Housing and Urban Development; a program directed toward private rental properties of low or moderate income renters; a neighborhood weatherization program targeted at low-income or minority neighborhoods; and training of auditors for local community action agencies to conduct energy efficiency programs.

man, appointed chairman of TVA during the Carter administration in 1978, was replaced last year as chairman by Reagan appointee Charles Dean. "Dean was appointed because there were indications Dave was going too far," one local official told the *Knoxville Journal* recently.

And if TVA has gone too far, it now finds itself in a rather ironic situation. With nearly half of the original nuclear projects now deferred, TVA officials are wondering what to do with more power than they can use. Under the agency's current estimates, it will not need any new generating resources until sometime in the next decade. TVA officials say they've been stymied in attempts to sell their surplus power outside the valley region, perhaps to oil-fired utilities along the Gulf.

In turn, they are rethinking the agency's conservation efforts. Conservation may simply not be cost-effective, says Robert Steffy, chief of TVA's conservation and rates division, when you already have a power surplus.

Still, Steffy and other TVA officials seem convinced of one thing: when the agency comes to add its next phase of power development, the cheapest generator may well be the most unassuming — the energy-efficient home.

The next generation: TVA officials say when agency needs new power sometime in the 1990s they will turn to this as the fourth phase of power generation: the energy-efficient home.

TVA's nuclear program and plant deferrals

Plant	Unit	Capacity (MW)	Units Ordered	Construction Complete	Commercial Operation	Estimated Project Cost (millions)
Browns Ferry	1	1152	1966	—	1974	$909
	2	1152		—	1975	
	3	1152		—	1977	
Sequoyah	1	1221	1968	—	1981	$1960-$2070
	2	1221		—	June 1, 1982	
Watts Bar	1	1270	1970	81%	1983-84	$2365-$2550
	2	1270		52%	1984-85	
Bellefonte	1	1332	1970	79%	1984-87	$3030-$3585
	2	1332		65%	1985-88	
Hartsville	A1	1287	1972	44%	Deferred (1982)	N/A
	A2	1287		34%	Deferred (1982)	N/A
	B1	1287		17%	Deferred (1979)*	N/A
	B2	1287		7%	Deferred (1979)*	N/A
Phipps Bend	1	1287	1974	27%	Deferred (1981)*	N/A
	2	1287		5%	Deferred (1979)*	N/A
Yellow Creek	1	1375	1974	35%	Deferred (1982)	N/A
	2	1375		3%	Deferred (1979)	N/A

* *Being considered for cancellation.*

. . . Surplus

(From page 9)
themselves left holding large blocks of power with no place to sell them.

"It's not whether to overbuild or underbuild," says Roy Hemmingway, an Oregon Council member. "It's how do we get the cheapest mix of resources?"

One avenue is to develop an array of resources which can be built quickly and in flexible increments with emphasis placed on conservation programs and small renewable resources. In May, the Council adopted a planning philosophy aimed in just that direction — focusing on flexible small resources while developing options (such as pre-siting a hydro facility) which could give the region the ability to meet a wide range of growth scenarios, at a lower cost.

So what do you do about conservation and renewable resources — the first two priorities of the Northwest Power Act — when you're confronting a surplus?

The Natural Resources Defense Council, in a recent paper discussing the current surplus, suggests it might be better to pursue more long-term conservation steps than those relatively inexpensive measures which can be easily installed at any time.

"The region can save more . . . by concentrating on the long-run measures," says the NRDC.

"There are also technical reasons to prefer long-run measures. Many of the long-run conservation measures involve irreversibilities: conservation not purchased today is much more expensive or even impossible later.

"For example, a house built with bad (solar) orientation now will be impossible to correct later; a house with double-paned windows where triple would have been optimal will not be cost-effective to retrofit; an office built with a shell and HVAC (heating, ventilation and air conditioning) system designed around high lighting will be hard to retrofit for a daylighting or low-lighting case."

The lost opportunities can also apply to other resources. For example, a business modernizing its plant may be weighing whether to install a cogenerator to use waste industrial steam to produce electricity, which could be sold to the local utility. If the investment isn't made then, it may

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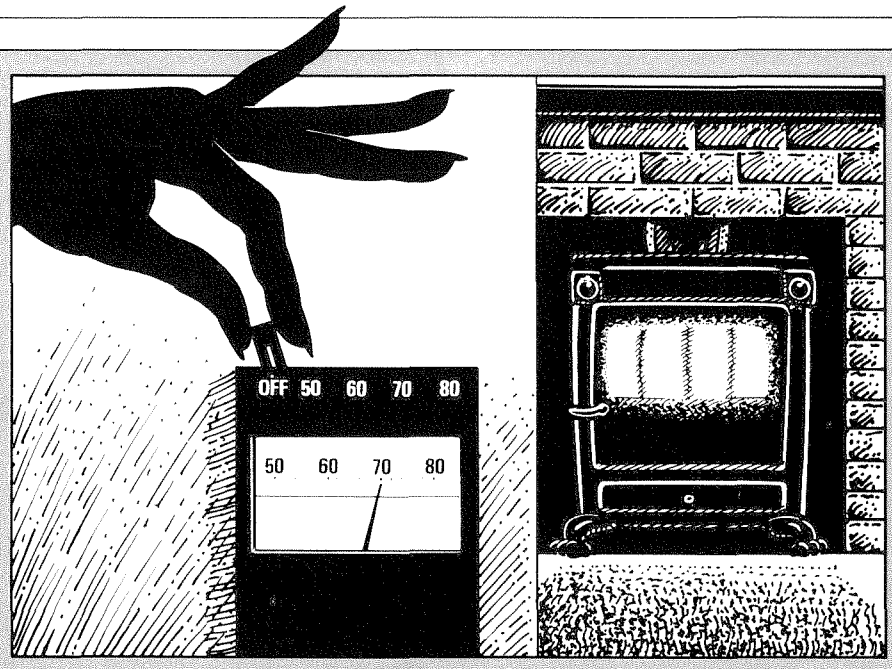


Dan Mandish illustration

Turning off the juice

You've got electric heat and you're tired of high utility bills. Out back, there are several big trees on your land. And you can get a good wood stove installed for between $400 and $1,000. Should you . . . ?

With lots of wood in the Northwest and high unemployment, many people have exercised or are considering the wood heat option. As electric rates have gone up and continue to rise, many people have sought ways to hold down their heating bills.

"There was a lot of switching to wood down in Southern Oregon, particularly in Jackson County around Medford," said Bill Sanderson of the Oregon Department of Energy. "It's occurring," said Jerry Beck, Grays Harbor County (Washington) Public Utility District. "You can see the stacks of wood as you drive down the street, where there were no stacks before."

In studies for Washington Water Power, Spokane, and Puget Sound Power and Light, Bellevue, two investor-owned utilities in eastern and western Washington respectively, approximately 12 percent of residential customers used wood as their primary heating fuel.

Is wood heat a cheap solution to higher electric bills? Unfortunately, the answer is not a simple one.

Wood heat may offer some price advantages to those who have easy access to it, such as a stand of trees on their land or a nearby site with available wood. Cutting, hauling, stacking, and stoking a furnace: the handling of wood is labor-intensive. Some free wood is available on federal lands, but the depressed state of the timber industry has cut down on the supply of slash, a source of much of the free wood once available. Costs for wood cut and delivered have run as high as $100 per cord. Depending upon how much wood is used, and whether it is "free" or bought, can affect whether it is much cheaper than electricity.

"There are serious safety and air-pollution problems with wood heating," said Sanderson. Fires from improperly installed stoves can be a major hazard, he said. And air pollution can be severe: "Jackson County is going to have to decide whether they're going to breathe or burn wood," he said. "There's a terrific air pollution problem around Medford."

Sanderson said people in rural areas, where unemployment is high and where electricity is going up in price, may be more likely to switch to wood heat. But the shifts from electric to wood heating are uneven. In the Puget Power study, it was shown that most conversions from electric heat were to wood heat. Yet the Water Power study concluded that the percentage of customers switching from electric to wood heat would increase by only 2 percent — from 12 to 14 percent — by 1985.

Sanderson observed that while there may be some "romantic" attachment to wood heat, many people will find it impractical. "But if you're unemployed and can't pay the cost of electric heat, you may switch to wood as a temporary step."

never be made; the chance for electric generation gone.

But in a surplus situation, conservation and certain resources may not always be the best buy for a utility. A 4 cent per kilowatt-hour conservation program in the short run is more expensive than a coal plant with an operating cost of 1 cent per kilowatt-hour. Over the long run, however, that same program could be considerably cheaper than a new coal or nuclear plant.

Pending the Council's guiding forecast and energy plan, the Bonneville Power Administration is trying to sort out what resources to go after.

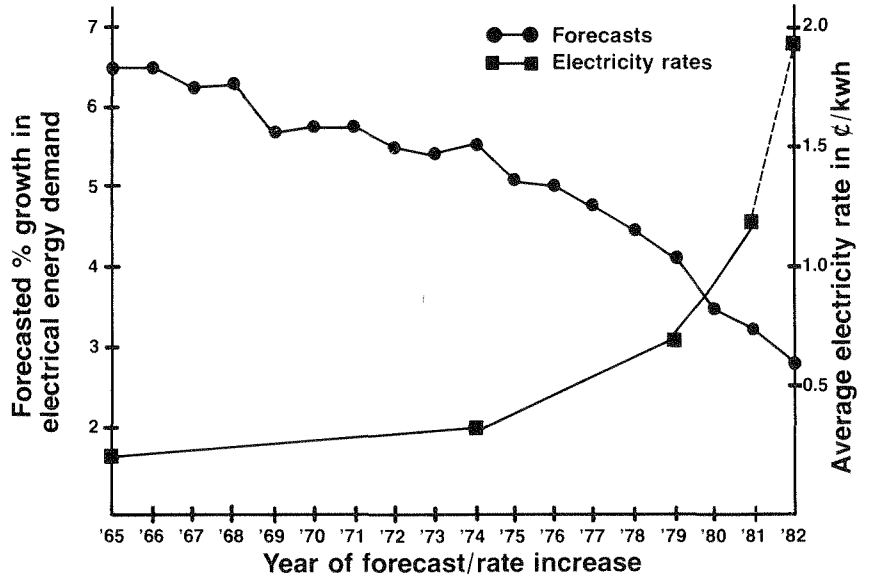
"In general, BPA will focus its resource acquisition efforts at this time on cost-effective resources that will minimize BPA cash flow requirements in excess of the incremental revenue which BPA receives from surplus power sales and that will minimize adverse environmental impacts," the agency said in its recently published "Near Term Resource Policy."

BPA says it will maintain its current conservation program levels and work on developing delivery systems and financing options so they will be ready when additional conservation is needed in the late 1980s.

To acquire new resources before 1985, BPA's proposed policy would set three conditions: the total cost would not exceed 3.5 cents per kilowatt-hour, the majority of the power would be generated or conserved during the time of expected deficits, and it would take several years for the resource to reach full potential.

Bonneville would consider acquiring new resources, however, if "a delay or loss to the region on a long-term basis would result in an increased total system cost associated with the resources used to meet forecasted loads."

Decreasing forecasts and increasing rates



Forecast figures are 11-year compound growth rates from Pacific Northwest Utilities Conference Committee Sum-of-the-Utilities Firm Energy Load Growth Forecasts.

Rate figures are average BPA firm wholesale rates for public utilities. Earlier figures derived from *BPA Generation and Sales Statistics*. 1981 is BPA estimate; 1982 is BPA's proposed rate increase.

The new imbalance comes at a difficult time for BPA. With bills coming due for power plants started in the 1970s, rates are going up rapidly. As backer of the bonds for the first three WPPSS projects, BPA has gone through a series of large double-digit rate increases which are not likely to level until 1984 or 1985. If BPA is cautious about sponsoring new resources, including conservation, it is in part because the agency wants to cap its own revenue needs and thereby hold down consumer rates. Bonneville, like many of the region's utilities, has watched the ratepayers' revolt in Washington, and officials say they are mindful of the hard economic times for individuals and businesses. Given a potential surplus, ratepayers could get stuck paying for comprehensive conservation programs while new multi-billion-dollar plants stand idle, producing neither electricity nor revenues.

Related to this is the question that if new plants are completed and their power not immediately needed, can the power be sold for the cost to produce it? As events have evolved, California — once thought to be a bottomless basin into which the Northwest might pour any surplus at any asking price — might not be a ready answer to the surplus question. California has balked at buying extra power from the WPPSS plants for the actual production costs, preferring to hold out for the considerably cheaper hydro. With California having several sources from which to buy electricity and the Northwest having the Golden State as its only surplus customer, BPA is a hostage seller. Earlier this year, as an example, California utilities were picking up seasonal surplus hydro at 0.6 cents per kilowatt, BPA's so-called "dump" rate charged when the power marketer literally has water spilling over the dams.

If the Southwest won't pay the cost of the Northwest's new nuclear power, is there some way to "firm up" BPA's surplus? Should the region pursue an aggressive conservation effort in the face of the surplus, hoping to recoup the cost of the surplus-extending programs from out-of-region power sales?

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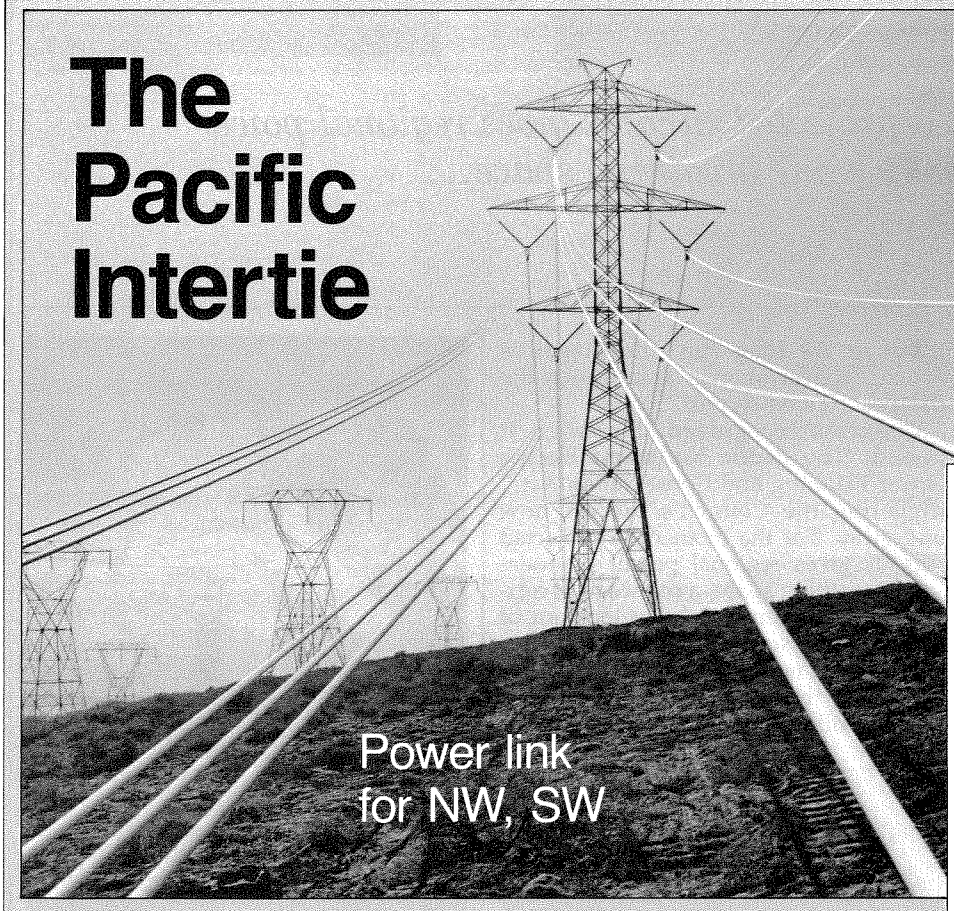
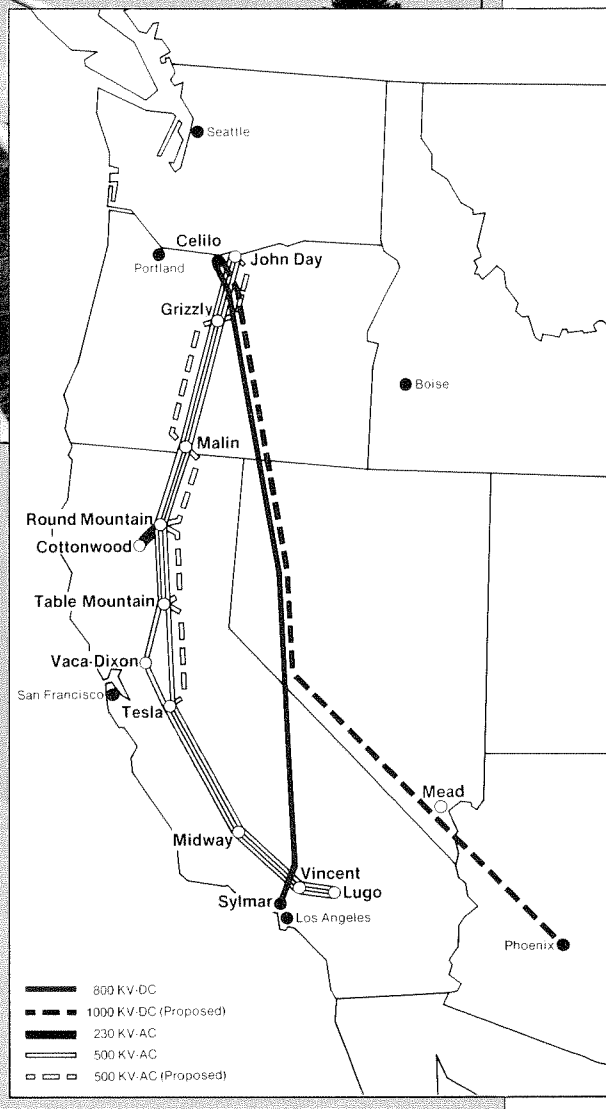
The Pacific Intertie



Power link for NW, SW



It's called the Pacific Intertie, stretching from the Columbia to Southern California to wire together the Northwest and the Southwest. When one area is short of power, the Intertie enables it to tap into the surplus of the other region.

First conceived in 1935 but not built until the 1960s, the Intertie has proved a benefit to each region.

With its 100-degree summer days, California utilities find their heaviest demand for power is when the air conditioners click on. Conveniently, the summer is a slack demand period for the Northwest, and the dams along the Columbia produce more power than the region can use. With much of California's electricity generated from expensive oil, the Intertie offers the Southwest access to the Northwest's cheap surplus hydro power while providing added revenues for BPA and the region's utilities.

In fact, because of high runoffs and a large chunk of surplus power from the Northwest's dams, this year the Bonneville Power Adminstration is selling record amounts of power over the Intertie.

The Intertie consists of three sets of power lines, capable of handling up to 4,000 megawatts of electricity or roughly enough electricity for four cities the size of Seattle. Two of the lines carry alternating current (the same type of electricity used for your household appliances) from a transmission station near The Dalles in Oregon to the Los Angeles area but can be tapped to serve areas such as San Francisco or Sacramento. The third line is direct current and requires DC to AC converters at either end. The DC line has the advantage of less loss of power as electricity is shipped down the line.

While the Pacific Intertie has provided the Northwest with many advantages, the single set of cross-regional transmission lines has created a perhaps unforeseen problem.

The Intertie is the only out-of-region set of transmission wires. In turn, California is the sole buyer of the Northwest's surplus power. The Golden State, however, can buy surplus power from other regions, meaning it can set up a competitive surplus market to drive down the cost of power.

The Northwest can, at times, find itself a hostage marketeer: forced to either sell the power cheap or spill the water and lose the surplus power revenues altogether. For example, in June BPA was selling power to California for the average price of 5.71 mills a kilowatt-hour. California utilities, meanwhile, were using the cheap surplus to offset oil-fired electricity costing as much as 90 mills a kilowatt-hour.

In addition, federal law prohibits BPA from selling large blocks of power outside the region for extended periods without a callback provision, thereby lowering the value.

For Northwest energy planners projected power surpluses pose a problem for even the Pacific Intertie: Given the probable surpluses, is there a way the region can sell its extra power at something more than giveaway prices?

BPA map and photo

'For the moment, a projected surplus gives regional power planners some breathing space...'

(From page 18)

The answers aren't clear-cut. And as one senior private utility executive noted, they vary from utility to utility.

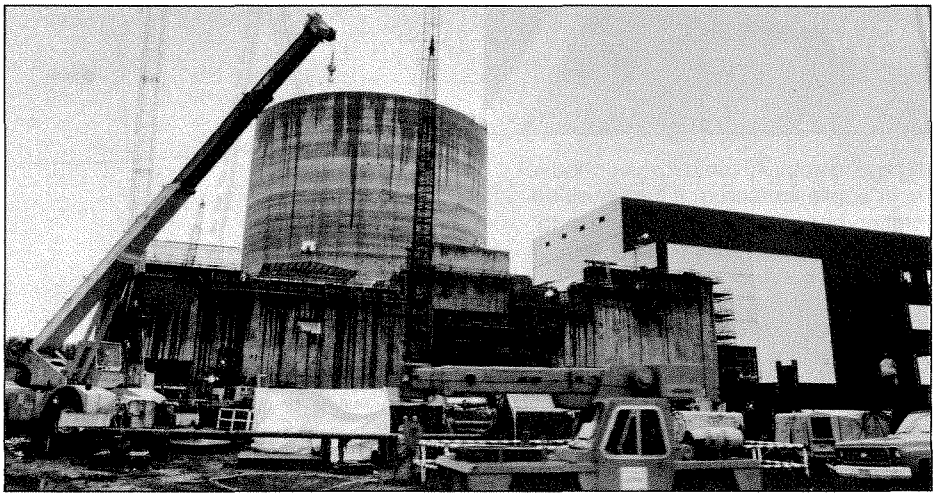
"If a utility is experiencing three or four percent load growth, it makes hellish good sense to develop conservation. You're developing conservation to offset hard path plants.

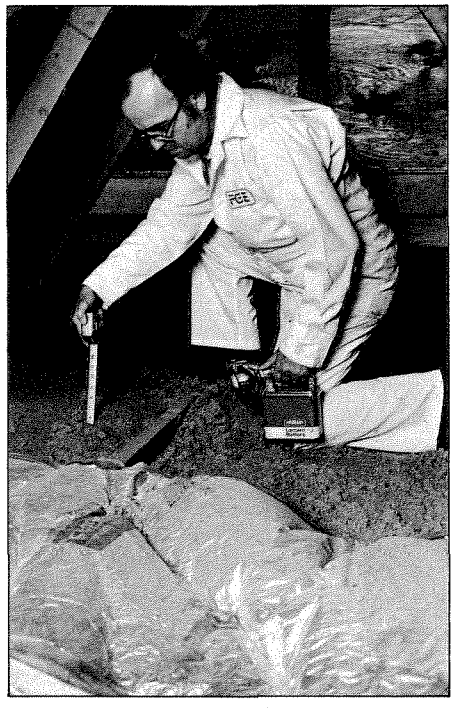
"If a utility has a flat load growth and excess resources and can't sell its surplus, that utility might want to postpone conservation for a time."

But in the long run, the executive added, "conservation is far and away the cheapest. It's no contest."

Congress recognized this when it passed "The Pacific Northwest Electric Power Planning and Conservation Act," triggering the Council's process now underway. For the moment, a projected surplus gives regional power planners some breathing space, a chance to fit conservation programs and development of renewable resources to the changing shape of the region's needs.

For like that new pair of shoes, the surplus will eventually wear out, too.





Changing energy realities: As the costs of nuclear plants like WPPSS 5 have skyrocketed, the region has turned to another resource: conservation.

Photos: Jim Crisman (left); PGE (right)

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