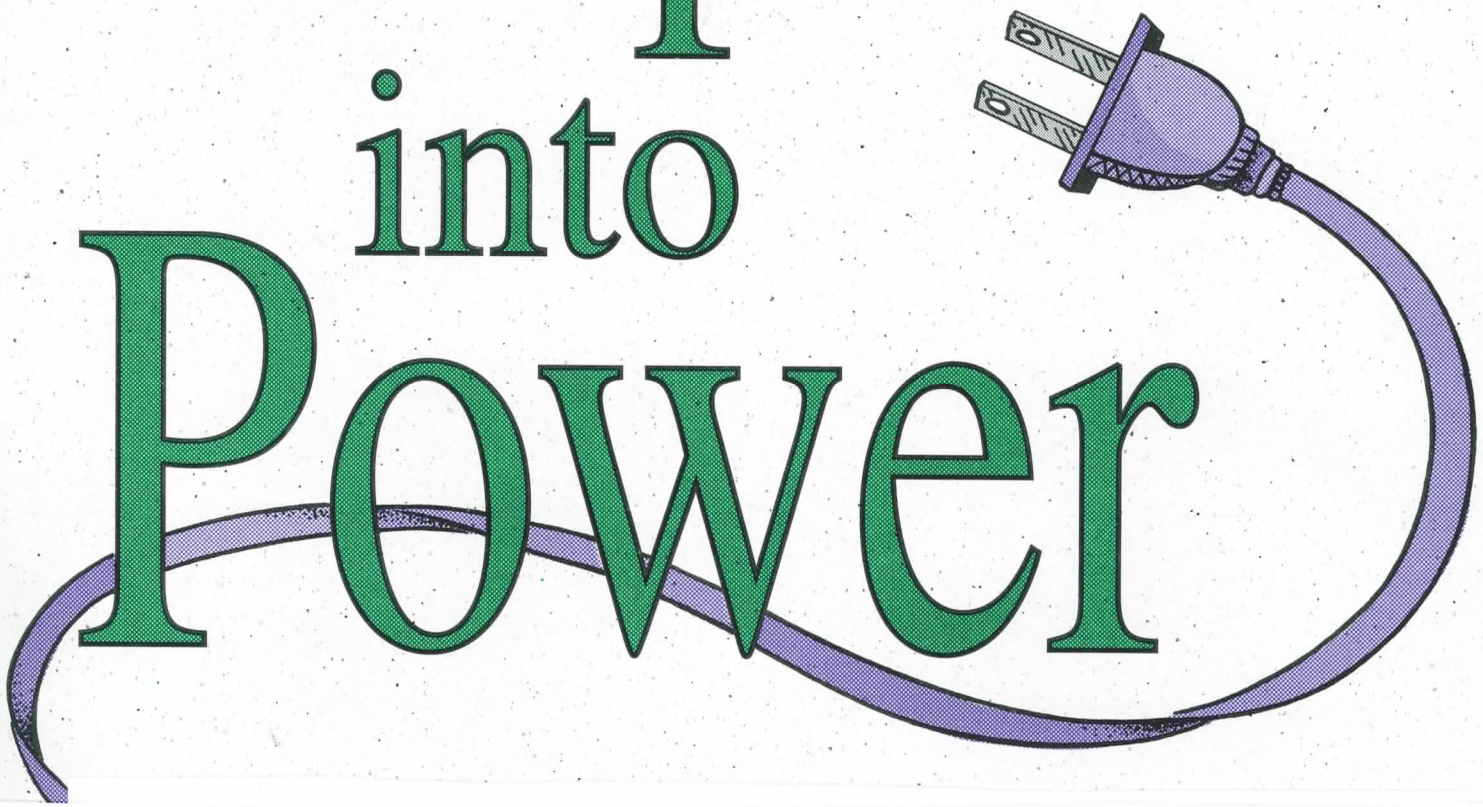
Plugging People into Power



This document was prepared in 1993 by the Northwest Conservation Act Coalition, now known as the NW Energy Coalition. While it is dated, the vast majority of the content remains relevant for consumer and environmental participants in the utility regulatory process.

Visit the Coalition at www.nwenergy.org

An Energy Participation Handbook

Northwest Conservation Act Coalition

The Northwest Conservation Act Coalition is a regional alliance of more than 65 public interest organizations and progressive utilities from Oregon, Washington, Idaho, Montana, and British Columbia. Our diverse membership has been working together for over a decade to forge an economically sound, environmentally responsible energy future for the Pacific Northwest and British Columbia.

Our members include consumer groups, environmental organizations, public interest advocates, municipal and state agencies, businesses, and progressive electric and gas utilities. We are united by a few simple principles:

The people of the region should guide our energy future;

Energy options should be chosen based on their total costs, including environmental impacts, not simply on their dollar price;

We should conserve first. Using existing energy supplies more efficiently is less costly — in both economic and environmental terms — than generating new supplies;

When new supplies are needed, we should look first to renewable resources.

These principles became law in 1980, with the passage of the Pacific Northwest Electric Power Planning and Conservation Act. Since then, we have achieved enormous progress together. In the mid-1970s, the region's energy plans were handed down by a handful of energy "insiders" with little accountability; now, they are crafted in open public processes. In the 1970s, energy planners foresaw steady, rapid growth in electrical demand that would be met through construction of large coal and nuclear plants at the rate of approximately one plant per year; today, energy conservation is the region's top priority and construction of large coal and nuclear plants is unlikely. These successes are due in no small part to the sustained advocacy of NCAC and its members.

In 1982, NCAC introduced its first "Model Electric Power and Conservation Plan." A fully documented plan that relied primarily on conservation, its basic tenets were radical when it was proposed. It became the working draft for the Northwest Power Planning Council's first-ever regional power plan; now it is official regional policy.

So we won the policy battle: What we need now is not a better plan, but **more decisive action**. The challenge for public interest groups interested in a sustainable energy future has shifted from planning to **doing.** To meet that challenge, NCAC will continue to play a key role in keeping the region's evolving energy plans on track; but just as importantly, we will be mobilizing our members, public officials, and the region generally to put these plans into action.

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ACKNOWLEDGMENTS

In keeping with the educational, participatory spirit of ***Plugging People Into Power***, many individuals and organizations lent their insight and experience to the project. It was with this spirit of diverse involvement that we sought to include the expertise and perspective of a broad range of people who researched, wrote, reviewed, and provided support for ***Plugging People Into Power***.

Noreen Callaghan had primary responsibility for overseeing the process and getting the document to print. Joe Kelly played an instrumental role in coordinating production and designing the layout.

All of the authors who have contributed to this book have shown incredible dedication and energy. For their research and writing skills, many thanks to:

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We were fortunate that over 50 energy experts took the time to review drafts of ***Plugging People Into Power***. Their contributions were crucial to the success of the publication. Much thanks for their time and knowledge.

Kathleen O'Brien edited the publication. Illustrations were created by Terry Lundmark. Lisa Fitzhugh reproduced the graphs and tables. Josh Baldi assisted in design and layout.

Plugging People Into Power would not have been possible without the support of The Opportunity Council, the Spokane Neighborhood Action Program, the Washington Department of Community Development, the Oregon Department of Housing & Community Services, The Energy Foundation, and the Northwest Power Planning Council.

This manual is the sole responsibility of the Northwest Conservation Act Coalition. While those acknowledged here have provided invaluable assistance, they are in no way responsible for the final content.

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Table of Contents

Plugging People into Power

Informed, active citizens profoundly influence the way energy decisions are made. Examples of successful citizen advocacy in local and regional energy policy abound. Your participation is critical to continuing our history of success.

A Call to Action

If you want to help plan your energy future or be a part of the solution to an existing problem, you can. There are people and forums in place to help you every step of the way.

Energy Toolbox

Although the information provided in this section may not look like your typical hammer, wrench, pliers or saw, it will be just as practical when you want to participate effectively in energy decisions.

Where to go from Here

Whether you want to call your state energy office, find more information on an energy topic of interest, or improve your energy vocabulary, this section will point you in the right direction.

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What single issue lies at the heart of almost every major environmental problem we face, including global warming, salmon extinctions, air pollution, nuclear contamination, oil spills, and acid rain?

E n e r g y

What single issue lies at the heart of our economic future, with far-reaching impacts on the vitality of our businesses and industries, the health of local and international economies, employment, and the ability of low-income citizens to secure basic services like heat and light?

E n e r g y

What can you do about it?

Read on!

▲

If you want to get a grip on your heating and lighting bills — *this is a good place to start.*

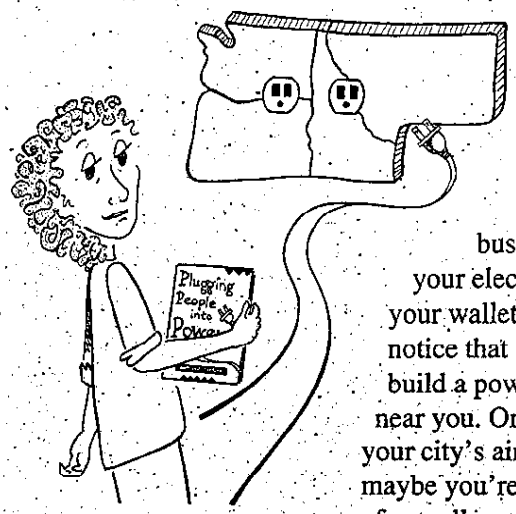
If you want to do something about global climate change besides worry — *this book's for you.*

If you're looking for alternatives to the continued destruction of the Northwest's legendary salmon and steelhead runs by hydroelectric dams — *dig in.*

If you want ideas about how to influence energy decision-makers to choose alternatives to fossil fuels and nuclear power — *they're in here.*

If you think there's a better energy future, a future in which we rely on efficient use of environmentally responsible renewable resources — *then let's start building it.*

Introduction



Odds are you are **not** an energy junkie who just happens to be fascinated by electrons and kilowatts and British Thermal Units. More likely, you were minding your own business when you noticed that your electricity bill was starting to hurt your wallet. Or maybe you received a notice that someone was planning to build a power plant or transmission line near you. Or perhaps you've noticed that your city's air quality is declining. Or maybe you're frustrated that your chances of actually catching a fish when you cast your fly are getting pretty slim. Or maybe your business is falling behind in a global economy where our competitors use half as much energy to produce a widget as we do.

You didn't start out to learn about energy, but you've discovered that it's at the root of something you care about deeply. It's not an end in itself, but the way it's used (or not used) can make a big difference as to whether we reach many of our economic and environmental goals.

Both *conservation* and *renewable energy resources* are part of a practical, affordable, and environmentally sound agenda — an agenda that already exists in our region's energy policy. It's time to work to **turn this agenda into action**. It won't be easy, but it can be done. Informed consumers can and do profoundly influence the way energy decisions are made. As a result of pressure by organized representatives of the public interest, there are open public planning processes just for this purpose. The truth is, though, that these processes are a complex maze of energy institutions and "insider" jargon.

Citizen activists who want to influence important energy decisions in the public interest need clear information, insightful analysis, and, above all, a straight line to the people who call the shots. You need a map, a non-technical description of how energy decisions work.

That's why we've written this handbook. The crucial energy decisions that lie ahead should be made in large part by the people who will bear the costs and consequences of those decisions. Your own decisions as an energy consumer will play an important role. We support a strong *conservation* ethic, and we urge you to curb waste by simply using energy more thoughtfully. But this handbook isn't about that. It's designed to help you influence the energy decisions that your utilities and your government make; it's intended to ensure that your values are well-represented when energy institutions make enormous investments in our energy future. *Conservation* isn't just a behavioral issue; it's an **energy resource**. This book is for people who want utilities and energy planners to invest their energy dollars in the *conservation* resource rather than wasting them on costly or environmentally unacceptable new power plants.

Elected or appointed public officials involved with important energy decisions need to hear clearly and persistently from the public, the people who will be expected to pick up the tab. You can be sure they hear from narrow vested interests. You can affect crucial energy decisions being made in administrative forums and by private companies, too, if you know which levers to pull and where to get information. This handbook helps you find those levers.

Energy is too important to leave to government and business alone. We'll be paying for today's energy decisions the rest of our lives. Our children and their children will pay for them, too. Get involved now, while important choices are being made. Don't wait 'til the bill comes due. ▲

User's Guide to *Plugging People Into Power*

Welcome to ***Plugging People Into Power – An Energy Participation Handbook.*** Like any other how-to handbook, ***Plugging People Into Power*** attempts to indicate the steps necessary to achieve a particular result. In this case we are enlisting you to help build an environmentally responsible and economically sustainable energy future. No mean feat!

No one of us could do this alone. In fact, it will entail millions of individual carefully thought out decisions. There are any number of ways you can participate in this "construction" project — from encouraging your utilities to adopt *conservation* goals, to participating in energy decision-making forums. ***Plugging People Into Power*** provides you with a wide range of participation options and opportunities. It helps you find your niche and provides you with the tools for productive participation.

Often when faced with a how-to situation, we skip to a diagram and instantly attempt construction. Many frustrated hours have been spent trying to piece together parts that were never designed to be compatible. This approach has been known at times to work, but, more often than not, projects have failed and time has been wasted.

With this in mind, we hope that you will read through ***Plugging People Into Power***. It will provide you with invaluable history, information, concepts, tools, visions for success, and support resources.

The handbook is structured in sections for easy reading so you can quickly refer back to specific information. **Why Energy Matters** explains the substantial effect electricity production and use has on the Northwest's environment and economy. **Energy in the Northwest** introduces you to the many organizations and agencies that have played a role in mapping our energy plans. It also gives us the historical background needed to interpret these plans. **Resources of Choice** describes our regional energy plan — the model we'll be working from.

Plugging People Into Power is designed to inspire us to action. **A Call to Action** provides the nuts and bolts for participation in energy issues.

The **Energy Toolbox** provides a collection of "tools" you'll need to participate effectively in energy issues. These "idea tools" may not look like your typical hammer or saw, but come in handy when you're faced with preventing or solving an energy-related problem.

The scope of ***Plugging People Into Power*** is limited. We can provide you only with the essential information needed to get started. In **Where to Go From Here**, we point you in the direction of more support. There are countless organizations, publications, and technical studies available to answer any questions you have; to help you problem-solve when the project isn't going as planned; and to deepen your knowledge and skill level.

Energy jargon and acronyms can seem, at times, like words from a foreign language, and they do appear in ***Plugging People Into Power***. Energy terms are offset in italics and their definitions can be found in the **Glossary**. A listing of acronyms follows the **Glossary.**

Finally, please help us by giving suggestions on how to improve this handbook. If you find ***Plugging People Into Power*** useful, share it with others. Comments can be given and additional copies of the handbook obtained by calling NCAC. The more of us that become involved in building our region's energy future, the more likely we are to succeed. ▲

CITIZEN SUCCESS

Watch for these boxes; inside they describe successful campaigns conducted by citizens just like you.

E N E R G Y

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Look for "energy facts" throughout the book; they may surprise you.

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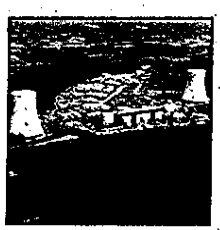
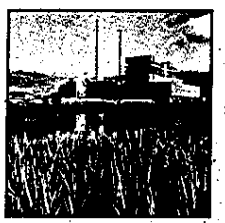
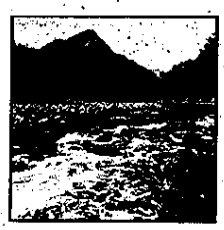
F A C T

WHY ENERGY MATTERS▼

Energy and the Environment







Photos courtesy of:
Northwest Power Planning Council
Brian Walsh
Northwest Power Planning Council
Tim Palmer

Fish extinctions in the Northwest, oil spills in Prince William Sound, nuclear accidents such as the 1986 Chernobyl meltdown in the Ukraine, acid rain damage to the forests of Europe and North America, and the prospect of major climate changes resulting from global warming all have one thing in common: they are the direct result of energy production and use. (See FIGURE 1: "Where Our Electricity Comes From").

No one today denies that the different technologies used to produce electricity have serious and long-lasting environmental impacts. Utilities and regulators have long regarded these impacts as "external" to the cost of producing and delivering electricity, and have not considered them in the consumer's cost. Such *externalities* are simply passed on to the whole of society and to future generations in the form of health care costs, air pollution, waste storage, environmental clean-up, habitat restoration, and so on.

As the toll from *conventional* energy production mounts, so have the calls to attach a dollar value to the impacts. As a result, some utility planners and regulators have begun to take a hard look at the environmental impacts of producing energy using coal, oil and gas, hydropower, nuclear power, and *renewable resources* such as wind, solar, and *geothermal.*

Most attempts to quantify and apply a dollar value to environmental damages have so far focused almost exclusively on air emissions. This approach ignores impacts from resource development such as mining, *siting*, delivery, and waste disposal (all of which are referred to as *fuel cycle costs*). Thus, the cost of habitat destruction due to hydropower dams and strip-mining impacts of coal production are typically not included in current methods of evaluation.

Coal Plants

Energy Production. Burning coal to generate electricity accounts for 80% of all sulfur dioxide emissions and one-third of all nitrogen oxide emissions. These pollutants cause acid rain and low-level ozone smog. Burning coal also produces more carbon dioxide (the major cause of global warming) than any other fossil fuel. This is the primary reason why utility companies are the single largest source of U.S. greenhouse gas pollution. In addition, coal combustion is a major emitter of airborne mercury, a highly toxic pollutant.

Extraction. Coal mining releases large amounts of methane — a *greenhouse gas* with 20 times more heat-trapping potential than carbon dioxide. Extensive land and watershed damages result from coal mining as well.

Oil– and Gas–Fired Combustion Turbines

Energy Production. Oil is slightly less polluting than coal, but use of oil in electricity *generation* has declined dramatically since the oil price shocks of the

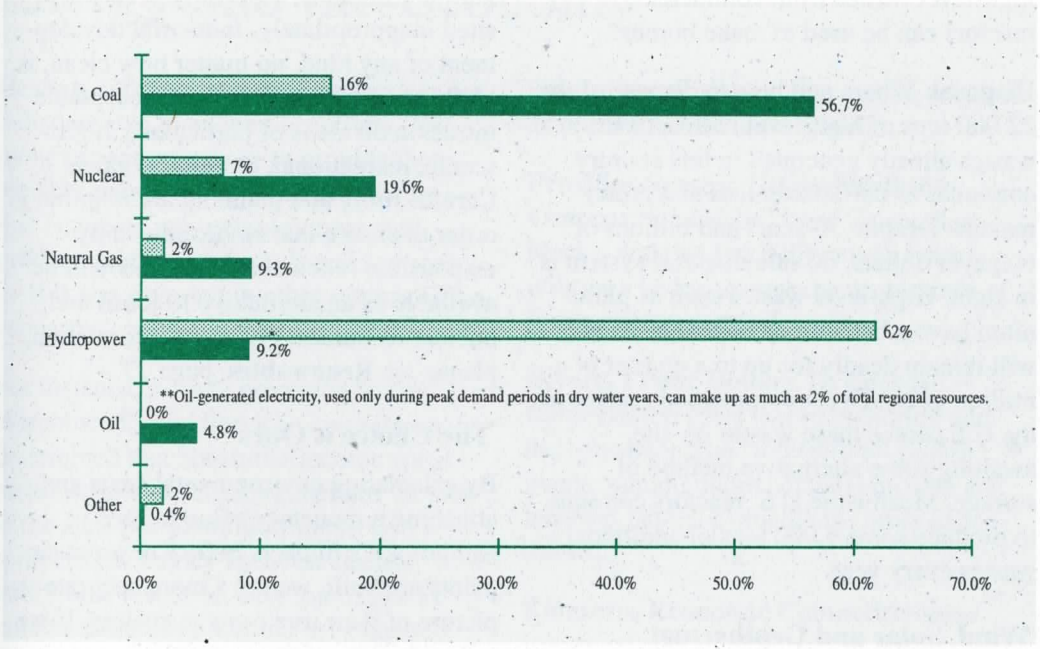


FIGURE 1:

Where Our Electricity Comes From

Note: "Other" for the Pacific Northwest includes *cogeneration* and *renewable resources*. "Other" for U.S. includes *renewable resources*.

Source: U.S. DOE, June 1988.

1970s. Natural gas, considered the "cleanest" of the fossil fuels because it does not produce sulfur dioxide as a by-product of combustion, is nevertheless a major source of nitrogen oxides (which cause urban smog and contribute to acid rain). Although gas-burning plants release less carbon dioxide than coal or oil, methane is released into the atmosphere during extraction. The higher greenhouse warming potential of methane gas reduces the benefit of this fuel's lower carbon dioxide content.

Extraction. Oil and gas exploration, production, and *transmission* result in many land and water impacts, ranging from habitat destruction to soil and groundwater contamination.

Hydroelectric Dams

Energy Production. Large dams like those on the Columbia and Snake Rivers have had a profound impact on wildlife habitat and fish stocks. Throughout the Northwest wild salmon stocks are in rapid decline due in large part to hydroelectric development. Many species are threatened with extinction. Prior to construction of the dams, it took a salmon smolt about a week to travel from the lower Snake River to the ocean. Today, slack water in the reservoirs behind the dams has lengthened that trip to 40 days or more. Since smolts complete the change from freshwater to saltwater fish in two to three weeks and must reach the ocean before that period is complete, many are losing the race with their biological clocks. Longer travel times have also increased smolt mortality from predators such as the Northern Squawfish.

Nuclear Plants

Energy Production. Nuclear reactors carry the risk of accidents such as the core meltdown and fire at Chernobyl in 1986, which spread radioactive gas over a thousand-mile radius. Three Mile Island's partial meltdown in Pennsylvania in 1979 demonstrated that U.S. reactors are not immune from major accidents. Potential for the spread of nuclear weapons is

No one today denies that the different technologies used to produce electricity have serious and long-lasting environmental impacts.

considerable as well, since reprocessed high-level wastes from commercial reactors can be used to make bombs.

Disposal. Where and how to dispose of the 22,000 tons of high-level radioactive wastes already generated in this country continues to baffle scientists and policy makers. Despite 30 years and billions of taxpayer dollars, no safe disposal system is in sight. High-level wastes such as plutonium have a half-life of 24,000 years and will remain deadly for up to a quarter of a million years. Every commercial reactor in the U.S. stores these wastes on-site, awaiting some alternative method of storage. Meanwhile U.S. reactors continue to produce some 3,000 tons of additional wastes every year.

Wind, Solar and Geothermal

By most measures, *renewable* energy technologies are cleaner than *conventional* alternatives. That's why regional energy policy encourages *renewables* over fossil and nuclear resources. While they produce little or no harmful air emissions, *renewable* power plants can have substantial land-use impacts, especially if they are sited inappropriately. Industrial development of any kind, no matter how clean, is likely to be regarded as an unacceptable intrusion on areas of particularly high scenic, recreational, or cultural value. Careful *siting* and planning are required in order to ensure that environmentally responsible *renewable resources* will be available as an alternative to fossil and nuclear resources. For more information, please see **Renewables**, page 27.

The Choice is Ours

By calculating environmental costs and attaching a monetary value to each technology's impacts **before** new power plants are built, we get a more accurate picture of their true costs to society. If we fail to do this, utilities will continue to choose resources that appear *cost-effective* in the short term, but may impose long-term costs that our children and grandchildren will have to pay. ▲

Watt's Up: A kW/MW Explanation

Throughout this handbook you'll see the terms kWh, MWh and MWa. A *kilowatt-hour* (kWh) is the unit of energy that most of us are familiar with. It's the unit that gets multiplied by utility rates to calculate your monthly energy bill. One kWh provides enough hot water (from an electric water heater) for a dozen ten-minute showers. It is also the amount of energy required to produce about two ounces of aluminum at the region's aluminum smelters. In the Northwest, the average residential price per kWh is about 5¢.

A MWh stands for a megawatt-hour, or a thousand kWh. The average Northwest home uses about 15 MWh per year (equivalent to 15,000 kWh).

An *average megawatt* (MWa) is a slightly different animal. It is the amount of energy that a 1 MW power plant could generate if it ran non-stop for a year (8760 hours) at full tilt. The electricity produced would amount to 8760 MWh, or 1 MWa. To put this in perspective, Seattle uses about 1000 MWa of electricity. The entire Northwest power system uses roughly 20,000 MWa. This regional total can also be expressed as 175,200,000 MWh, or 175,200,000,000 kWh. At 3 – 6¢ per kWh, that adds up to real money.

Energy and the Economy

Heating, lighting, and cooling services are indispensable to economic activity. Yet, money spent on energy to provide these services would be far more productive — that is, create more employment, and produce more useful goods and services — if it was invested in other sectors of the economy..

For instance, a study presented to the Wisconsin Public Service Commission determined that consumer income spent on household purchases generates 22 jobs in the state per $1 million spent. By comparison, money spent on electric utility bills results in only 9 jobs per $1 million (from Skip Laitner's, "Prepared Testimony Before the Wisconsin Public Service Commission," Economic Research Associates, Eugene, OR., December 30, 1991).

To the extent that energy investments of some kind are necessary, a dollar spent on *conservation* is overwhelmingly superior to a dollar spent on a power plant. Not only does it yield more energy, it also:

Creates More Jobs. Money spent on power plant operations and fuel costs can be redirected to equipment installation in homes and businesses. Studies show that *conservation* typically creates two to four times more jobs than a comparable investment in construction of a *conventional* power plant. These jobs are created locally, where the energy is being used.

Stimulates Local Investment. *Conservation* programs typically direct more money to local manufacturers, retailers, and installers of high-efficiency equipment and insulation, thus keeping more investment capital in-state or within the region.

Promotes Economic Stability. *Conservation* is less vulnerable to boom-and-bust cycles than power plant construction. There's less risk of overbuilding *capacity*, since *conservation* savings can be acquired as needed to meet new demand.

Provides Greater Utility Flexibility. *Conservation* can be "built" in smaller blocks, and this flexibility gives electric utilities a hedge against the uncertainty of future energy demand.

Diverts Fewer Dollars To Energy. *Conservation* costs less to the utility and the consumer than *conventional* power plants, making more personal income and business capital available for other expenditures.

Enhances Economic Competitiveness. Improved energy *efficiency* in businesses and industry reduces the *energy intensity* of the economy, lowering the cost of economic production overall. Money that companies no longer have to use on energy, can be used to hire additional workers or improve facilities. This makes us more competitive in the global market.

Learning From The Past

In the past, it was widely assumed that the economy would continue to prosper only if energy supplies expanded at the same pace as economic growth. Also, energy planners looked at the phenomenal growth in energy consumption in the 1950s and 1960s and assumed that people would continue to use energy at the same rate in the future, regardless of the cost.

Working on these assumptions, utility planners predicted the need for hundreds of new power plants nationally. In the Northwest alone, there were plans to build as many as 26 large coal and nuclear plants by the year 2000, beginning with construction of the five Washington Public Power Supply System (WPPSS, known as "Whoops") nuclear reactors in the mid-1970s.

Studies show that conservation typically creates two to four times more jobs than a comparable investment in construction of a conventional power plant.

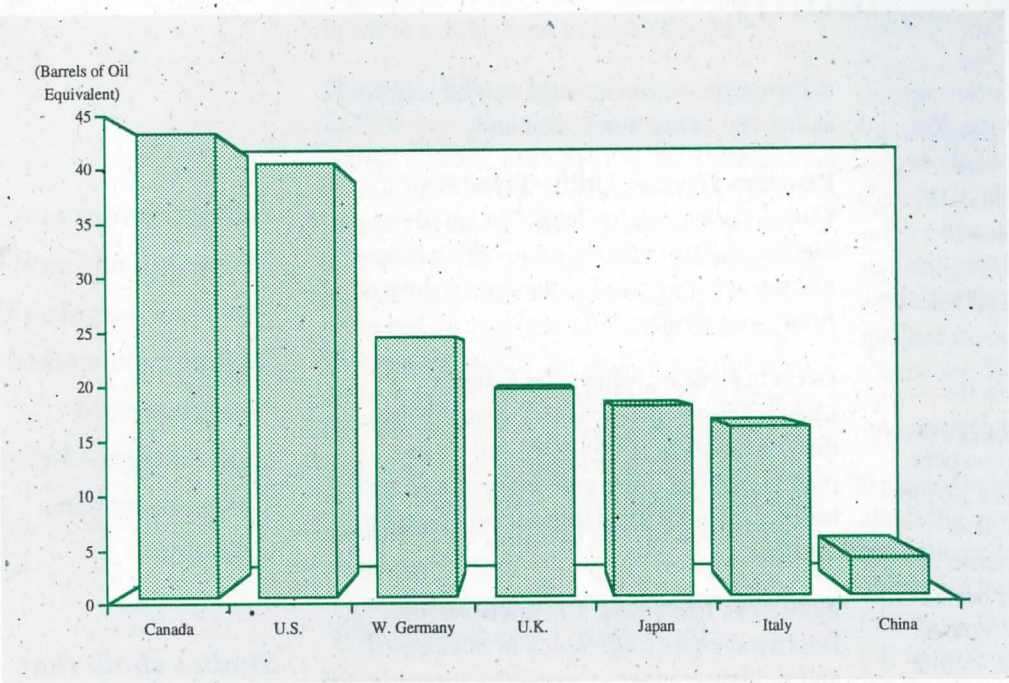


FIGURE 2:

Annual Energy Use Per Capita

Source: Scientific American, 1990.

According to regional energy planners, more than half of the growth of our region's electricity demand — about 1,500 megawatts — can be met simply through utility conservation programs over the next ten years.

But utility construction programs drove rates up sharply to cover the costs of building new plants, many of which were never completed. As prices rose, consumption went down. People were not willing to pay these higher prices when so much of the energy consumed could be reduced with simple *conservation* measures.

Homeowners and businesses alike decided that it made good economic sense to improve the *efficiency* of their energy use, and they did so with great success. Between 1973 to 1986, U.S. energy **use** remained practically level even though the economy continued to expand by over 40% — thanks in large part to energy *efficiency* improvements. As a result, the country was saving $150 billion annually on its energy bill by 1986. In addition, the U.S. was able to achieve a 28% reduction in *energy intensity*.

National and Regional Energy Consumption: How We Compare

Efficiency gains from 1973 to 1986 demonstrate that the economy can grow dramatically while energy use is level or declining.

Despite these gains, the U.S. remains the biggest energy consumer and the second-most *energy-intensive* economy among developed countries, using 60% more energy to produce a dollar of gross national product (GNP) than Japan, and 20% to 33% more energy per dollar of GNP than six leading European countries. We spend about 10% of GNP to pay the national energy bill, which totals more than $400 billion every year. By comparison, the Japanese spend only 5% of their GNP on energy. (See FIGURE 2: "Annual Energy Use Per Capita").

From the standpoint of electricity, the Pacific Northwest is even more *energy intensive* than the country as a whole. We use nearly twice as much electricity per capita as the national average, even though significant gains in *efficiency* were made in the 1980s. Although our rates are nearly half the national average, our much higher usage means that our electric bills are comparable to those in the rest of the nation. (See FIGURE 3, following page: "Electricity Use Per Person").

Conservation Potential in the Pacific Northwest

As long as the region's cheap federal hydropower remained plentiful, there was little incentive to become more efficient. But today the hydropower system has reached its *capacity*: We are consuming all the electricity we produce. Many utilities are seeking new sources of power, and new *generating* plants will cost as much to build and operate here as they do elsewhere in the U.S.

Fortunately, we have barely begun to tap the energy and dollar savings from *conservation*. According to regional energy planners, more than half of the growth of our region's electricity demand — about 1,500 *megawatts* — can be met simply through utility *conservation* programs over the next ten years. In other words, by reducing demand we can create at least half of the supply we need. Some experts believe we can meet all new demand with *conservation*.

1,500 *megawatts* is roughly equivalent to the power produced by two WPPSS-era nuclear plants operating at 65% *capacity* — enough to supply three cities the size of Portland. If the region fails to achieve these savings, we will have to spend an additional $2.3 to $3.8 billion to build *conventional* power plants.

Rates vs. Bills

Think about this: utility managers, regulators and customers have traditionally thought about energy decisions mostly in terms of their impact on **rates**; utility customers are generally referred to as **ratepayers**; when a utility announces its intent to raise **rates**, customers usually get agitated. But most so-called utility "ratepayers" don't even know the rate they pay per kWh. If you're a typical customer, you're more concerned about the **bill** you pay at the end of the month than about the rate per each kWh used. For this reason, we refer to utility customers as billpayers rather than ratepayers.

What's the difference? Promoting energy sales tends in the short run to bring about lower average rates. Conserving energy tends to yield lower average bills. Therefore, **the least-rates strategy is seldom the least-cost strategy**. Our interest is in obtaining the cheapest overall mix of resources (*supply-side* and *demand-side*) through *least-cost planning*. If this means lower sales because of *cost-effective conservation* programs, then the overall cost savings justifies slightly higher rates.

Which of the following customers would you rather be?

Customer A	1500 kWh X $0.05 = $75
Customer B	1200 kWh X $0.06 = $72

Customer B has a 20% higher rate, but pays $3 less per month.

(For more information on this, see **Rates**, page 57).

E N E R G Y

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By 1989, Safeway Stores Inc. had invested $2.8 million in its Oregon stores and cut costs by $1.3 million **annually** as a result.

▲

F A C T

Energy Expenditures and Economic Development

The costly mistakes of the WPPSS nuclear era teach us that unrestrained energy development can saddle the region with massive debts and drain much-needed investment capital from more profitable business and employment opportunities.

Today we know much of the new demand for energy services can be supplied with far less impact on our pocketbooks or the environment by using energy more efficiently. The benefits to the region's economy from investment in energy *efficiency* improvements are well-documented.

Businesses that install energy-efficient equipment can reap big savings. Replacing conventional fluorescent tube lighting at the Boeing Company's Renton, Washington plant with more efficient equipment reduced the lighting energy demand by more than 50% and netted a $69,000 annual savings on its energy bill. Jantzen's manufacturing plant in Vancouver, Washington, made similar investments and achieved an 84% energy savings, as well as an $11,000 annual savings on its energy bills.

The results are the same elsewhere. By 1989, Safeway Stores Inc. had invested $2.8 million in its Oregon stores and cut costs by $1.3 million annually as a result. From 1982 to 1989 Fred Meyers stores invested $5.5 million in energy saving projects. The company's investment pays back $1.5 million every year in lower energy bills.

The challenge now is to get utilities to pay for installation of *conservation* equipment that meets the utilities' need for new power. The result will be improved economic conditions — competitive businesses, higher employment — as well as reduced environmental impacts. ▲

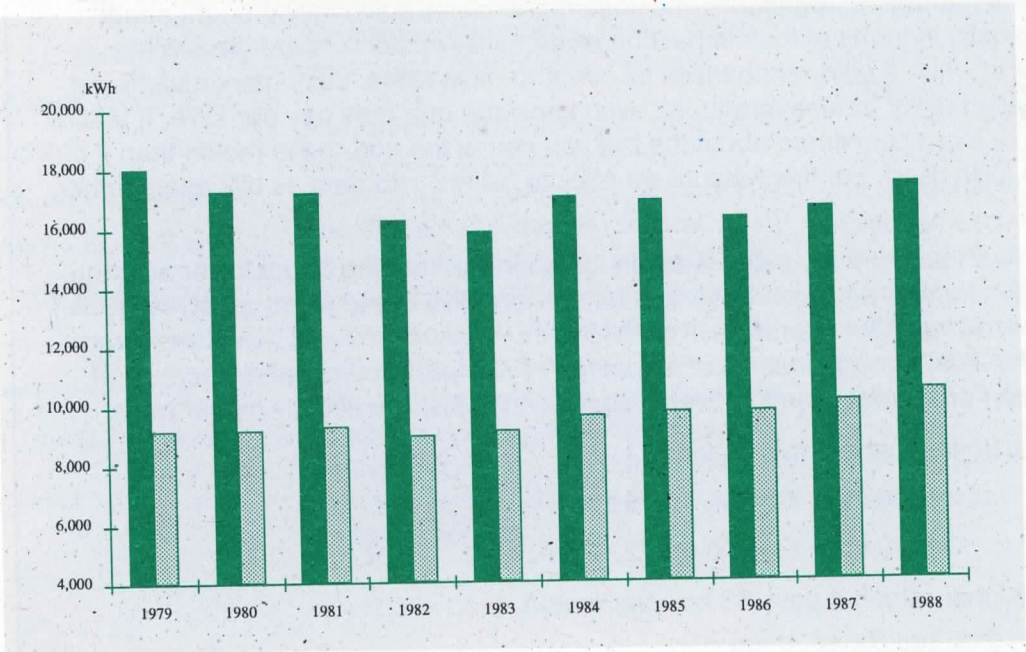


FIGURE 3:

Electricity Use Per Person

Source: Northwest Power Planning Council, 1989 Annual Report.

ENERGY IN THE NORTHWEST

Energy Players

The Pacific Northwest has a unique collection of groups and individuals that influence decisions that directly affect where your energy comes from and what it costs. As you become involved, it's important to know who's who in Northwest energy planning and policy-making.

In practice, not all players have the same amount of say when it comes to making policy. In addition, roles can become muddied. Utilities and other public agencies, mandated to serve in the public interest, rarely hear from the public at large; but they hear regularly from "energy insiders." Decisions made by utilities and public agencies can reflect general public interest only if the public is interested.

The following is a quick guide to the players and their roles in energy policy. (For more information, see **Contacts**, page 62).

Bonneville Power Administration (BPA or Bonneville)

The Bonneville Power Administration is a marketing agent of the U.S. Department of Energy (U.S. DOE). It sells the power from the Federal Columbia River dams, the operating Washington Public Power Supply System (WPPSS) nuclear plant, and additional resources acquired under the 1980 *Pacific Northwest Electric Power Planning and Conservation Act* (*Regional Act*). Bonneville sells this power to public and private utilities, direct service industries (see below) and various public agencies which, in turn, supply electricity to homes, businesses, and regional industries. Although it lacks authority to build or own dams or power plants, Bonneville does own and operate, within its service area, the nation's largest network of long-distance, high-voltage *transmission* lines.

Northwest Power Planning Council (NPPC or Council)

The Northwest Power Planning Council is a regional power planning and policy-making body that includes two governor-appointed members from each Northwest state (Idaho, Montana, Oregon and Washington). The *Regional Act* mandates the Council strike a balance between wildlife needs and electricity production in the Columbia River system by developing: a regional *conservation* and electric power plan; a program to protect, mitigate, and enhance fish and wildlife; and a program to involve the public in energy and wildlife decision-making processes.

Public Utility Districts or People's Utility Districts, in Oregon (PUDs)

PUDs are distinct units of local government (often counties) established for the sole purpose of providing utility services. PUDs are governed by Commissioners or Directors, elected by citizens in the local area.

Municipal Utilities (Municipals) Municipal utilities are public agencies, and like PUDs must conduct all of their business in public. They are governed by the elected City Council, although the Council sometimes delegates this control to an appointed Utility Board.

Cooperatives and Mutual Power Companies (Co-ops) Co-ops are neither private utilities (regulated by a utility commission), nor public agencies (subject to open public meeting laws). Instead, they are private corporations, governed by a board of directors elected by their customers, and subject to their own by-laws. Co-ops are subject to some state laws, but may hold closed or public meetings, depending on the terms laid out in the by-laws. All meetings, though, must be open to Co-op customers.

Investor-Owned or Private Utilities (IOU) There are six electric and five gas utilities (Washington Water Power (WWP) and Montana Power Company (MPC) provide both electricity and natural gas) in the Pacific Northwest that are owned by stockholders and managed by stockholder-elected boards of directors. In order to make sure their transactions are consistent with broader societal goals, investor-owned utilities are regulated by public utility commissions in each state. Utility board meetings are generally closed to the public.

Gas Utilities Gas utilities supply natural gas to their customers for direct use, such as space and water heating in homes and businesses. Gas utilities, also called local distribution companies (LDC), purchase natural gas from pipeline companies or suppliers to sell to consumers in their service territories. Most gas utilities in the Northwest are privately owned and are therefore regulated like private electric utilities by state commissions.

Public Utility Commissions (PUCs) Public utility commissions (PUCs) and public service commissions (PSCs) are state regulatory agencies with authority over investor-owned utilities. When an IOU wants to increase rates or change its service policies, it must first get permission from the state commission. The commission schedules public hearings on proposed rate increases or other *tariff* changes, and establishes a process for public participation in each proceeding.

Direct Service Industries (DSIs) Ten Northwest aluminum smelting plants produce about 33% of U.S. aluminum and consume 20% of the region's electricity. These plants along with several large paper and chemical producers are called Direct Service Industries because they purchase power directly from BPA, rather than from a retail utility as is the case for all other consumers.

Independent Power Producers (IPPs) Independent power producers develop energy resources and sell electricity to public and investor-owned utilities. Prior to the 1970s, electricity *generating* facilities were generally owned either by the U.S. government or by utilities. In an effort to diversify the supply of energy resources, independent private firms were encouraged to develop alternative *generating* technologies such as *cogeneration, biomass, geothermal*, solar, or wind energy. Today, IPPs are the fastest growing suppliers of energy in the Northwest, and many offer gas and coal *generating resources* as well.

Fish and Wildlife Agencies Federal and state fish and wildlife agencies work with Northwest tribes — whose treaty fishing rights have been adversely impacted by dams — and the NPPC to develop and implement fish and wildlife programs. Studies conducted by these

agencies provide a basis for determining the impact of energy decisions on the health of Northwest fish and wildlife populations.

State Energy Offices

Energy offices are responsible for energy planning and facility *siting* in each state. In addition, they conduct research on energy resources and related issues and provide education and technical support for state citizens and organizations. Some energy offices are housed within larger state agencies, such as the energy divisions of the Idaho Department of Water Resources and the Montana Department of Natural Resources and Conservation.

Local Governments (City and County)

Local elected officials are responsible for a number of key planning decisions that affect the way their municipalities use energy, including: administration of building codes (with improved energy *efficiency* standards); development of transportation systems and land-use tools (*solar access* ordinances, for example); and development and use of *renewable resources* (such as the use of *geothermal* resources in Klamath Falls, Oregon). Local governments across the region are being urged to integrate improved energy *efficiency* standards into their urban planning framework.

Tribes

The Columbia River Inter-Tribal Fish Commission (CRITFC) was formed in 1977 by resolutions of the Yakima, Warm Springs, Umatilla, and Nez Perce tribes. Holding fishing rights agreed to in treaties signed over a century ago — rights which are as firm as international laws — these tribes are concerned with maintaining existing fish populations in the Columbia River basin. The Commission is composed of representatives from the Fish and Wildlife Committees of their member tribes. Many other tribes, outside of the Columbia Basin, participate independently. Northwest tribes also play a role in renewable energy development. Their involvement is crucial on proposals to *site* facilities on their reservations and in areas they hold sacred.

Community Action Agencies (CAAs)

Community Action Agencies (CAAs), also called Community Action Programs (CAPs), are community-based social service organizations that foster self reliance in low-income households. CAAs help low-income people find the resources they need to live with dignity and to improve the social and economic conditions in their communities. CAAs offer weatherization and other services.

Public Interest Groups

Many public interest groups throughout the Northwest focus their efforts on energy issues, particularly where such issues affect their members economically and environmentally. Many of these groups, in turn, are members of the Northwest Conservation Act Coalition (NCAC), an energy issues umbrella organization. Advocates follow progress on the issues, comment on proposals and policies put forth by other regional players, organize campaigns to increase citizen awareness and rally support, and meet with other interested parties to work on these issues.

YOU, The Citizen

You are a crucial energy player because ultimately you pay the price for energy production and use. Throughout the Northwest's energy history, organized citizens like you have created the most innovative solutions and made the most significant policy decisions. **Don't let utilities and other energy players plan your energy future without you!** ▲

History of Energy in the Pacific Northwest

Their [nearly 90 Northwest public utilities] plan was to build one new large coal or nuclear plant each year through 2000, for a total of 26.

To understand the importance of public involvement in energy decisions, it's helpful to look back at Northwest energy policy over the past fifty years. During this time, planners and decision makers (often with little input from the public) have guided the region down a tangle of energy paths: from engineering feats that produced the largest coordinated hydroelectric system in the world, to illusions of large-scale nuclear power "too cheap to meter," to the first regional model for coherent *least-cost planning*.

Reckless or responsible, each of these developments affects you. After all, you're the one who will ultimately be asked to pay whatever energy costs come due, to repair damages to the environment, and to absorb any risks that might have been avoided through more thoughtful planning.

The electric power system in the Pacific Northwest is unique in many ways. We have the nation's largest supply of hydroelectric power and the most public utilities per capita to distribute it. For much of the time that electricity has been a public issue in the Northwest, the central player has been the Bonneville Power Administration (BPA). Bonneville markets power from the large federal energy system and transmits about half of the electricity *generated* in the region through power lines spanning much of Idaho, Oregon, Montana, and Washington.

Bonneville was created by the Bonneville Project Act in 1937 as part of President Roosevelt's New Deal. During a time when rural areas were being denied service by private utility trusts, BPA was created to "encourage the widest possible diversified use of electric energy." With the completion of Bonneville Dam in 1938 and Grand Coulee in 1941, BPA had ample electricity to distribute throughout the region. In fact, with so much surplus power in an area then so sparsely populated, many people questioned the value of Roosevelt's New Deal hydro projects in the Pacific Northwest.

But with the outbreak of WWII, the energy picture in the Northwest changed dramatically. With our abundant supply of cheap hydroelectric power and our strategic position on the Pacific Rim, this region became a vital center for wartime aluminum production. Five aluminum smelters were built, bringing with them robust economic growth and a steady demand for electricity. In the 1940s industrial use accounted for 90% of Bonneville's energy sales, and in the years following the war, demand for power grew 7% annually (compared to just over 1% today). Between 1950 and 1979, the region's annual energy demand increased from 3,000 *average megawatts* to 16,000 *average megawatts*. (To put this growth in perspective, the city of Seattle uses about 1,000 *average megawatts*).

For a time, new resources built to keep up with demand cost less than the ones built before them. Improvements in *generating* technology, combined with a growing energy market, brought down the price of Northwest power as new dams came on line. Adjusted for inflation, wholesale rates fell from 2.7¢ in 1940 to 0.6¢ in 1979. (See FIGURE 4: "BPA Electricity Rates"). Rates were structured to encourage

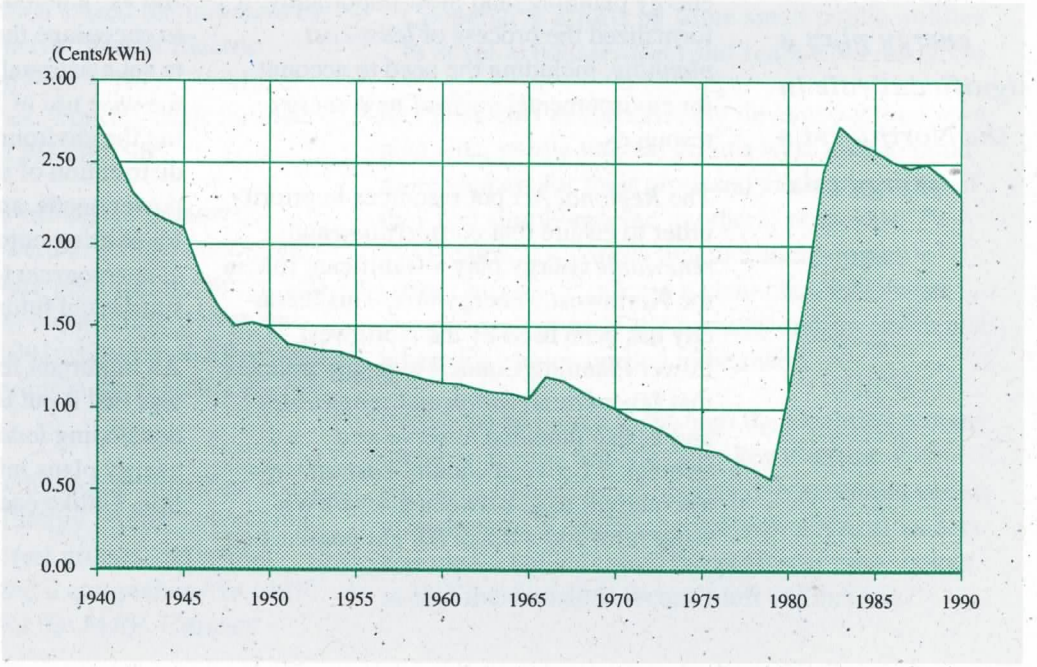
consumption, and "Live Better Electrically" became the catchphrase of the 1950s and 60s (see **Rates,** page 57). However, as growth continued, energy forecasters predicted severe electricity shortages by the mid 1980s. Their outlook — supported only by the assumption that fantastic growth trends of the recent past would continue indefinitely — gave rise to the Hydro Thermal Power Program (HTPP) in 1970.

Nearly 90 Northwest public utilities (including the Washington PUD consortium Washington Public Power Supply System, or WPPSS) put their support behind the HTPP. They recognized that new hydro power opportunities were largely exhausted on the Columbia and Snake rivers; meeting the radical increases in projected demand would require a bold new approach. Their plan was to build one new large coal or nuclear plant each year through 2000, for a total of 26. This new *capacity* would provide around-the-clock energy, using the hydro system to help meet *loads* during *peak* use times. In 1975 Bonneville Administrator Donald Hodel warned that unless the massive HTPP program was undertaken, "appalling energy deficits over the next decade...[would see] either houses cold and dark or factories closed down or both because the deficits are no longer manageable." Completion of the HTPP would have nearly tripled the region's supply of *firm* power in just 25 years.

But HTPP ran into big trouble as construction delays mounted (the average delay per plant grew to 54 months). With power plants so far behind schedule, Hodel warned the Northwest in 1979 of "the damnedest power shortages our region has ever seen." Not only did the projects drag along, their costs began to accelerate beyond the amounts budgeted. The estimated cost to build five WPPSS nuclear plants ballooned from $4 billion in 1974 to nearly $24 billion in 1980. Utilities became increasingly strapped for cash, and Bonneville's wholesale prices shot up 500% to cover the costs of the program.

FIGURE 4:

Bonneville Power Administration Electricity Rates, 1940 – 1990



Source: Northwest Power Planning Council, Vol.2, Part 1.

While BPA was wringing its hands over "appalling energy deficits" that never materialized — largely because spiraling energy costs drove down energy demand — a collection of local and national environmental and consumer groups, electric utilities, Native American tribes, BPA officials and others were pressing the U.S. Congress for a better planning model for the Pacific Northwest. Such a change in approach was badly needed. In addition to cash shortages and dramatic rate hikes, salmon stocks were weakened to the point of being listed under the Endangered Species Act and public trust was evaporating. In 1980 Congress stepped in with a comprehensive, regional solution.

The solution came in the form of the *Pacific Northwest Electric Power Planning and Conservation Act* (*Regional Act*), which offered sweeping institutional changes. The *Regional Act* allowed BPA to acquire new energy resources and mandated the agency to help restore fish and wildlife harmed by the dams; it created the Northwest Power Planning Council (NPPC), a four-state representative body that provided for greater participation by the public and the four states in energy planning; and most importantly, it formalized the process of *least-cost planning*, including the need to account for environmental costs of new energy resources.

The Regional Act put resources in priority order to ensure that conservation and renewable energy play a significant role in the Northwest's energy mix.

The *Regional Act* put resources in priority order to ensure that *conservation* and *renewable* energy play a significant role in the Northwest's energy mix. This hierarchy has been used by the Northwest Power Planning Council to justify policies that favor *conservation* and *renewables,* and is also intended to serve as a tiebreaker between equally *cost-effective* alternatives (e.g. between a 4.5¢/kWh wind farm and a 4.5¢kWh gas combustion turbine). The resource hierarchy is as follows:

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First: **Conservation** (energy *efficiency — demand side management*)

Second: **Renewable energy** (wind, solar, *biomass, geothermal*)

Third: **High-efficiency resources** (*cogeneration, fuel cells*)

Fourth: **All other resources** (including coal and nuclear plants).

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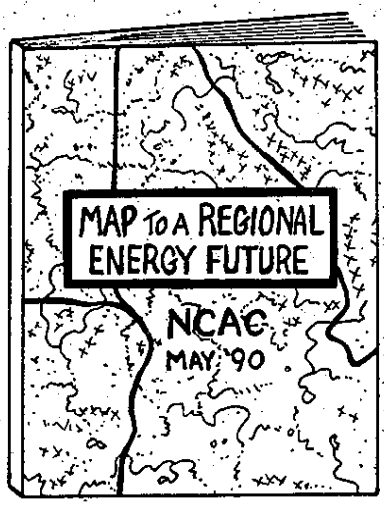
With this one piece of legislation, regional energy planning was turned on its head. Costly resources that had been the centerpiece of previous supply planning were dropped to the bottom of the stack, and energy *efficiency* was formally recognized as a legitimate energy resource superior to other alternatives. (See **Conservation**, page 20).

The U.S. Congressional Office of Technology Assessment summarized the Regional Act as "a unique attempt by the Congress to encourage the Pacific Northwest Region to set a national standard in determining the wise use of limited resources, protecting the environment, ensuring equitable distribution of the costs and benefits of power needs, and testing the opportunities for shifting onto *conservation* and *renewable resources* to provide a stable and substantial future."

An important feature of the *Regional Act* was that it put the NPPC in charge of developing *load* forecasts and 20-year energy plans informed by public participation. Unlike earlier historical trend fore-

▼ CITIZEN SUCCESS ▼

Public Participation at the Regional Level — 1991 MAP Campaign



With the *Pacific Northwest Electric Power Planning and Conservation Act of 1980,* Idaho, Montana, Washington, and Oregon formed the Northwest Power Planning Council. The Council plans the region's energy future and develops a program to restore fish and wildlife resources damaged by Columbia River Basin hydroelectric development. In 1982, the Northwest Conservation Act Coalition seized the initiative by developing a comprehensive "Model Electric Power and Conservation Plan." NCAC's Model Plan became, in effect, the working draft for the Council's first Regional Plan in 1983.

By 1990, the region had exhausted its power surplus, salmon stocks were in critical condition, existing power plants were performing poorly, and an extended drought was constricting power and water supplies. So the 1991 update to the Regional Plan came at a critical point in the region's energy history.

NCAC developed a new Model Action Plan or "MAP to the Region's Energy Future." Working with over 50 public interest groups and public utilities, NCAC organized a comprehensive campaign to build support for the MAP. Citizens delivered more than 1,500 written and oral comments on the Plan. These comments overwhelmingly (90%+) supported the MAP's call for higher levels of energy *efficiency*, investment in environmentally responsible *renewable resources*, and no further development of coal and nuclear power.

Results: Significant portions of the MAP were adopted in the Council's 1991 Regional Plan, and many of the MAP's central themes now dominate Northwest energy politics. The new Regional Plan features:

Strong support for unprecedented levels of investment in energy *efficiency*, including regulatory reforms that make *conservation* a profitable way of doing business for electric utilities;

Programs to promote the introduction of environmentally responsible *renewable resources*;

No new coal plants or nuclear plants;

Cooperative efforts by some small public utilities to develop *conservation* and *renewable resources*.

Key Elements of Success: By developing their own plan first, public interest groups were able to build more support for their proposed alternatives than if they had simply reacted to others' proposals. The MAP came at a critical juncture in the region's energy history: It offered a clear choice between competing visions of the regional energy future just when that choice needed to be made.

Broad-based outreach through the Coalition's many member groups was the other key element: Campaign documents were produced to address a variety of audiences. Regular contact with political leaders and media outlets raised the profile of these issues so that the decisions weren't left to "insiders."

Giving priority to these first and second tier resource options as outlined in the Regional Act will promote sustainable, least-cost electric service.

casts compiled by the region's utilities, the Power Planning Council's forecasts take a more systematic approach and consider the effects of efficient energy use. The first NPPC Conservation and Electric Power Plan (Regional Plan) came out in 1983, with another in 1986, and the most recent in 1991. For the 1983 and 1991 Power Plans, NCAC helped to generate broad-based public support for higher levels of *conservation* and *renewable* energy through its MAP Campaign. Both the 1983 and 1986 Power Plans emphasized *conservation* initiatives which, if not undertaken, would result in "lost opportunities" for *cost-effective* energy savings (e.g. new buildings, if not made efficient, would waste energy over the 30 to 70 years of their lives). Both plans called on Bonneville to develop the ability to step-up *conservation* programs so that when the need arose BPA would be ready to deliver.

Today, energy demand has finally caught up with existing supplies, and that demand is expected to increase over the next decade by an additional 2,300 MWa. Utilities in the Northwest now have a decade of experience with *conservation;* additionally, the costs of *renewable* energy projects are rapidly coming down. Giving priority to these first and second tier resource options as outlined in the *Regional Act* will promote sustainable, least-cost electric service.

The region is at a crossroads — we can move forward with responsible *least-cost planning* and action, or we can fall back onto misguided, conventional approaches of the past. The choice will be made by planners, policy makers, utilities, consumer advocates and most importantly, by concerned, informed citizens like yourself. ▲

RESOURCES OF CHOICE ▼▼▼

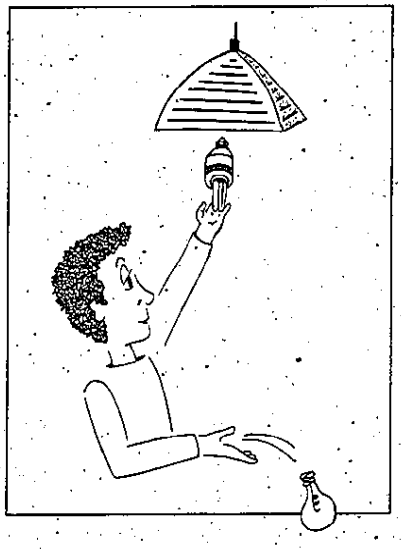
Making the Right Choices

We learned a great deal from the costly mistakes made during the coal and nuclear era, and have emerged from that time with a fundamentally new approach to meeting our electric energy needs. Under this approach, regional energy planners accountable to their states play a major role in forecasting electric energy needs, rather than leaving it to utilities alone; resources are to be evaluated based on their **total** cost to society, not just their dollar price to utilities; and energy *efficiency* is to be treated like a resource fully equivalent to new power plants.

The difference between this approach and the planning philosophy of the 1960s and 70s is nothing short of revolutionary. It gives us a systematic way to compare all of the attributes of alternative energy resources and let the winners and losers emerge on their merits. And, most importantly, it allows the public to play a much more active role in shaping the region's energy future.

In the following chapters, we describe the basic electric energy resource options in the order of priority assigned by the *Regional Act*: *conservation* first, *renewable resources* second, "high efficiency" resources third, and coal and nuclear power last. Simply put, this hierarchy expresses a policy of preferring *conservation* over new supplies, and *renewable* supplies over non-renewable ones — a policy also supported in recent public opinion polls.

The *least-cost planning* framework and the resource priorities of the *Regional Act* provide a great head start in energy decision making. Understanding them should help you participate in energy planning decisions more effectively. But making the right energy choices means more than planning; after all, a plan is only as good as the actions taken to put it into place.



We've reached a juncture in our energy history where our electric energy **planning** capability is much greater than our ability to mobilize people, institutions, and resources to turn the plans into reality. So as you read through the following sections, we strongly urge you to get involved early in the planning process. The earlier you get involved, the more leverage you'll have. We also encourage you to follow through by participating in subsequent parts of the decision-making process, all the way down to the energy choices you make as a consumer. Subsequent chapters in this handbook provide information on how to get involved in the decision-making process. ▲

Conservation: Our Resource of Choice

For the Northwest alone, the untapped reservoir of conservation savings is comparable to the amount of energy contained in oil reserves on the North Slope of Alaska.

It may seem odd to think of buying *conservation* like we would a coal plant or a new dam. But energy saved from using more efficient lights, motors, windows, building designs and appliances is functionally the same as energy produced at power plants. Amory Lovins of Rocky Mountain Institute (RMI) calls the energy "freed up" through energy *efficiency* programs *negawatts*. *Negawatts* can take the place of building new *megawatt capacity*. The difference is that *conservation* typically costs less than building new power plants and it can provide the same or better services without damaging the environment. Further, it can be added in small increments (instead of giant blocks) and it doesn't require the building of new *transmission* lines. These qualities put *conservation* at the top of the list of regional resource priorities, and gave it a percentage cost credit under both the *Regional Act* and the 1991 Regional Plan. The Plan recognizes *generation* resources as *cost-effective* up to 7.5¢ per kWh, and recognizes *conservation* as *cost-effective* up to 11.0¢ per kWh because of its many societal benefits.

Conservation can compete with *generation*, because people want energy **services**, not kWh. For example, if a more efficient water heater could deliver consistently hot showers and hot water for washing dishes and doing laundry while using one-third fewer *kilowatt hours* than the competing model, which one would you prefer? If the purchase prices were the same, you would probably choose the high-efficiency water heater because it would provide the services you need (in this case, hot water) but use fewer kWh and result in lower bills. The same is true for refrigeration, motor drive, lighting, heating, and air conditioning.

Were the most efficient choices always made, the potential energy savings would be huge. For the Northwest alone, the untapped reservoir of *conservation* savings is comparable to the amount of energy contained in oil reserves on the North Slope of Alaska. *Conservation* options are now available that can achieve dramatic energy savings without sacrificing individual comfort.

So what is the role for utilities in *conservation*? Utilities are required to provide energy services at the least cost. If they can do that more effectively by installing efficient lights, motors and appliances than by building new power plants, then they should. They should buy *conservation* savings just as they would buy the output from a gas or coal plant. (See **Building the "Conservation Power Plant"**, facing page). If utilities fail to help their customers purchase efficient appliances, they will end up having to pay a premium for more costly and polluting sources of energy. Those higher costs and environmental damages will be passed on to all of us as billpayers, taxpayers, and *downwinders*.

Promoting *demand-side management* will delay the need to build additional *generation*. For example, the *conservation* programs run by Bonneville during the 1980s saved the region nearly 350 *average megawatts* of electricity at an *average cost* of 1.8 ¢/kWh. This in turn saved the region's billpayers an estimated $1.3 billion against the costs of obtaining the same amount of power from a new coal plant. If Bonneville had saved the 1,000 MWa that it set out to achieve in 1980, we wouldn't have to acquire as many new resources today.

Building the "Conservation Power Plant"

Utility planners have traditionally had one answer for how to keep the lights on in the face of growing energy demand — build more power plants. But the energy saved from *conservation* is functionally the same as energy produced from a new coal or gas plant. Not only that: it's often cheaper to save a wasted kWh than it is to make a new one.

Conservation has often been thought of in terms of doing with less. There are indeed plenty of actions, like turning off unneeded lights, turning down thermostats, and taking shorter showers that each of us can take to lower our energy bills. While the authors of this handbook wholeheartedly support lifestyle choices that result in lower energy use, our focus here is on using existing supplies more **efficiently** as a means of offsetting new power plants. To that end, utilities have a critical role to play in securing *conservation* — they can **purchase conservation** just as they would buy a new power plant, and it costs less!

Utilities engaged in *least-cost planning* are directed to find the cheapest overall mix of *supply-side* and *demand-side resources*. Moving from the planning part to the doing part means **buying** these resources — whether insulation and efficient appliances, or new combustion turbines. By helping their customers invest in the most efficient technologies, utilities can secure the cheapest and cleanest energy available — **saved energy.**

Why not leave it to energy users to make these decisions? Most of us don't follow the latest innovations in efficient appliances, lighting systems, motors, insulation, building designs and space heating equipment. And if we do have the information, we're often unable or unwilling to pay the typically higher upfront cost of installing efficiency measures in our homes, offices or factories.

Take, for example, compact fluorescent light bulbs. These lights use about one-fourth the energy of standard incandescent bulbs and last ten times longer. Over their lives they can save upwards of $40 in energy costs. But they run about $15 to $20 in stores. Many customers, if given the choice between a $1 standard bulb and a $20 energy saver, will take the one that has a lower first cost even though the compact fluorescent is cheaper over its lifetime. Unless utilities get involved and help customers buy the more efficient products, much of the vast potential for energy savings will remain on store shelves. If this happens, we will all have to pay for more expensive, polluting and risky power plants: plants that could have been avoided had the utilities invested in *conservation*.

Utilities should therefore be willing to fund *conservation* up to the cost (in cents per kWh) that they would otherwise spend on new *generation*. By offering incentives or rebates for customers to purchase more energy efficient end-use equipment, utilities can acquire the cheapest energy available.

E N E R G Y

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If every American household replaced just one incandescent bulb with a compact fluorescent, we'd save the energy equivalent of all the energy generated by one large thermal plant running a full year.

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F A C T

How Much Can We Save?

The Northwest Power Planning Council has set a regional *conservation* target of at least 1,500 *average megawatts* over the next decade (Northwest electric use is expected to grow by 2,300 MWa over the same period of time, which means that if it is achieved, *conservation* will meet about two-thirds of new growth, or about 7% of total demand). Electric Power Research Institute (EPRI), the research arm of the utility industry, estimates that it is technically possible to save between 20% and 40% of all the electricity currently used in this country with no loss of comfort or service at a *marginal cost* of 4¢ per kWh. This is about half the cost of building a new coal plant. Lawrence Berkeley Laboratory (LBL), a research group funded by the U.S. Department of Energy, estimates that 50% of the U.S. total could be saved by *conservation*. The Rocky Mountain Institute, an independent non-profit organization, estimates that as much as 75% of current U.S. electric consumption could be avoided with energy *efficiency*, at an *average cost* of just 0.6 ¢ a kWh. Remember that these numbers are based on national patterns of energy use. In the Northwest, where historically low power rates have encouraged far higher per capita electric use (through electric space and water heating), the potential is significantly higher. (See FIGURE 5, page 24: "Potential Energy Conservation").

This large reservoir of potential energy savings is of little use, though, unless we begin tapping it. Several utilities around the country have ambitious plans to acquire *conservation* over the next ten to twenty years. California utilities expect to meet three-quarters to all of their growing energy needs with *conservation*. Seattle City Light plans to meet 100% of its projected *load* growth over the next decade with energy *efficiency*. This planning shows a radical change from just 15 years ago, when utilities looked at *conservation* as little more than a public relations tool.

Where Will We Find the Savings?

Large savings can be realized by concentrating on a few major end uses of electricity: lighting, cooling, refrigeration, heating, and electric motor systems. Lighting, for example, accounts for about one-fifth of all U.S. electric consumption. In large commercial buildings, lighting makes up about 40% of total use. By replacing existing lights, ballasts, and fixtures in these buildings with more efficient systems, it is possible to save 75% of the energy used for lighting while providing the same or better lighting quality. In addition to lowering electric bills, efficient lighting reduces glare and flicker, and is quieter than standard fluorescent lighting.

Compact fluorescent lamps last ten times longer than incandescents and produce less waste heat, easing demands on cooling systems. Combined with occupancy sensors — which turn off lights automatically when a room is left vacant — compact fluorescents can save about 15% of all electricity used in the U.S. at an average cost of one cent per kWh. Comparable savings can be achieved with appliances, motors, and other end-uses in homes, offices, and factories.

One caution. *Conservation* is considered *cost-effective* if it can be installed at a lower cost than building a power plant that provides the same amount of energy. Sometimes energy planners and utility managers will suggest that savings in the commercial or industrial sectors are "more *cost-effective*" than savings in the residential sector because they cost less per kWh saved. This is misleading, because the true measure is not whether a utility can buy savings more cheaply from one *conservation* program than from another, but whether the energy saved costs less than the energy otherwise obtained from a new coal or gas plant.

CITIZEN SUCCESS

Public Participation in Utility Conservation — Seattle City Light

Seattle City Light has a strong history of responding positively to citizen involvement. In 1976, for example, a citizens committee effectively reversed the utility's plans to invest in two WPPSS nuclear plants whose eventual failure cost 88 other utilities about $1.4 billion.

In 1990, a citizens committee found that Seattle City Light "puts too much emphasis on short-term marketing, and not enough emphasis on developing and implementing new *conservation* programs." In response, the mayor convened a group of 28 citizens including *conservation* experts, environmental interests, low-income advocates, and representatives of local businesses. Their job was to develop a plan for the utility to acquire *conservation* more aggressively.

After studying the amount of *conservation* available, this group, the Citizens Conservation Committee (CCC), concluded in the summer of 1992 that it was possible for City Light to meet all of its load growth over the next 20 years through energy *efficiency* programs.

The CCC reported that if Seattle were to pursue this course, it would not only save energy, but create greater economic growth in Seattle, improve electric reliability, and avoid the environmental damages of alternative power sources. In light of these benefits, the Committee recommended City Light develop a plan to meet all of Seattle's growth in electricity consumption over the next 20 years through energy *conservation*, including end-use system efficiencies. The utility should acquire a minimum of 100 MWa of savings over the next ten years."

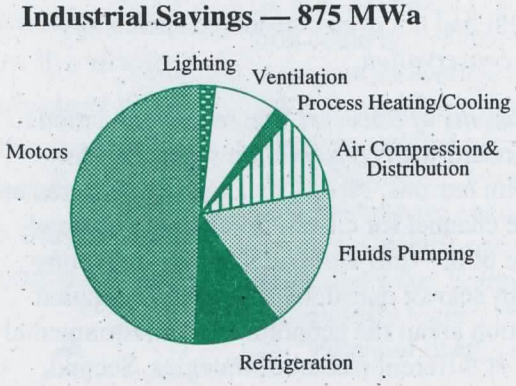
City Light then called upon another citizens group to compare CCC's *conservation* proposal to all the other strategies the utility could follow to meet growing energy needs. This second committee, called the Resource Advisory Group (RAG) echoed CCC's findings, and a plan to triple Seattle's *conservation* efforts was presented to the City Council for consideration.

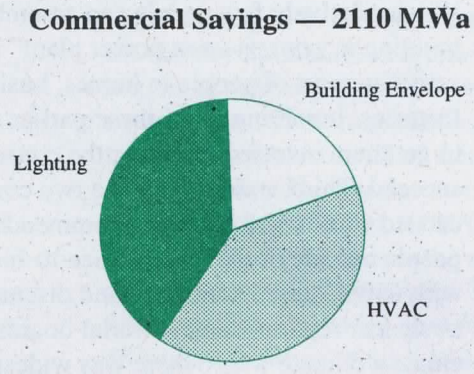
Results: Seattle City Light has committed to acquire 100 MWa of *conservation* — its entire projected *load* growth, over the next 10 years. No other public utility in the region has put forth such an ambitious *conservation* goal. Prior to the citizen involvement processes, City Light had not even considered such a large role for *conservation*.

Key Elements of Success: The recommendation to press forward with *conservation* succeeded for three main reasons. First, City Light has fostered an effective channel for citizen involvement. Knowledgeable utility staff were on hand for both committees to answer questions and provide detailed information about the economic and environmental impacts of different resource strategies. Second, both committees represented a broad base of community interests. Unlike building a coal plant, which relatively few people can assemble and run, building a "*conservation* power plant" requires the active support of people in homes, businesses, and factories. Involving all of these parties early helped to get them invested in seeing the *conservation* plan succeed. Third, members of the two committees carried CCC's and RAG's recommendations to people outside of the utility. Face-to-face meetings with City Council members, and discussions with newspaper reporters and editorial boards helped create a climate where there was widespread understanding and support for the proposals.

Conservation Transfers and Exchanges: Sharing Our Savings

Treating energy savings as a resource can lead to some interesting and profitable opportunities. For example, *negawatts* can be sold or exchanged between utilities. *Conservation transfers* can eliminate the need for some *generation*, and capture more savings than would a single utility acting on its own. Take the following example. Utility A has a large sum of available *conservation*, but is not in a hurry to obtain it because the demand in its territory (its *load*) is growing slowly. Meanwhile the demand in Utility B's area is growing much faster. Utility B may find it *cost-effective* to pay for 50 MWa of *conservation* in Utility A's service territory. The 50 MWa of *generation* no longer required by Utility A can go to serve Utility B's growing *loads*. Neither utility would have to build a new power plant. This type of *conservation* transfer can happen among utilities in this region or between utilities in the Northwest and their counterparts in California and the desert Southwest through existing *transmission* lines. By creating a market in transfers of *conservation* savings, utility needs for new power plants can be reduced. Since *conservation* is cheaper overall, transfers also help to keep electric costs down and minimize environmental damages from fossil and nuclear plants.





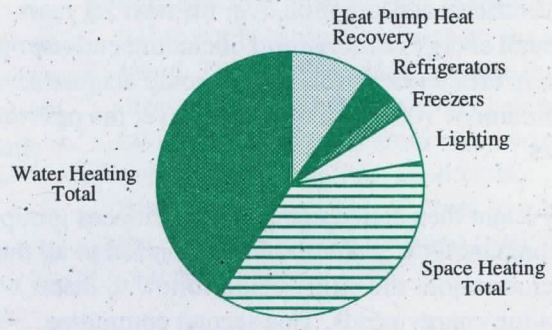


FIGURE 5:

Potential Energy Conservation Savings for The Pacific Northwest: 20–Year Forecast

Source: 1991 Northwest Power Planning Council Plan

In addition to *conservation transfers*, we can exchange energy with utilities that have different seasonal needs. Under so-called *regional exchanges*, existing resources are used where and when they are most appropriate. In addition to easing the need for new *generating capacity*, these exchanges can provide spin-off environmental benefits. For example, California's *peak* use period occurs in the spring and summer months when air conditioning *loads* are highest, and smog is at its worst. This is also the time when snowmelt in the Northwest creates the greatest potential for *generation* at the dams. Currently, we store as much water as possible behind the dams to make sure it will be there during the winter months when we need it to meet electric heating *loads*. But slowing down the river in this way creates problems for fish that migrate in the spring. Environmental quality in both areas can be improved if the Northwest exports power to California during the spring and summer, and then gets it returned by California utilities during the winter when we need it. This arrangement can reduce smog in California, improve conditions for ocean-going salmon, and enable both areas to delay the need to build new *peaking capacity*.

Barriers to Conservation

If *conservation* makes such good sense for both utilities and consumers, why isn't more happening? Essentially, there are five reasons:

Successful *conservation* programs cause utilities to take in less money. This is because most utilities have their revenues linked to the number of kWhs they sell. For investor-owned utilities, this means they make less profit as a result of doing *conservation*. For public utilities, the so-called "lost revenues" from *conservation* programs mean they will have to raise rates slightly in order to cover their costs. In both cases, *conservation* has been treated as a liability instead of a least-cost resource.

Consumers are often unaware of efficient technologies. For most customers, energy is a significant cost, but one that ranks behind payroll, health care, housing, and food. Consequently, many people in homes and businesses are not aware of the savings that can be had from efficient end-use devices. Utilities have a critical role to play in informing customers about these technologies and in making them affordable.

Consumers typically have shorter payback horizons than utilities. Even though *conservation* saves money on monthly bills, installing energy saving devices isn't free. If the bill savings fail to pay back the cost of *efficiency* measures in 6 to 12 months, most customers choose not to make the investment. Utilities, however, build power plants that are paid back over 40 years. They are uniquely able to provide *conservation* to their customers who would otherwise be unwilling or unable to make the same investments.

While many of the region's utilities depend on Bonneville for program funding, BPA's *conservation* budgets have historically jumped up and down from one year to the next, making it difficult for utility managers to implement sustained programs. It is nearly impossible to acquire any resource on two-year funding cycles; *conservation* is no exception.

A final threat to the success of *conservation* is the fact that natural gas power plants are being acquired at an alarming rate throughout the region. Utilities have in many cases chosen to build supply projects instead of *conservation* power plants. If combustion turbines continue to be acquired at this rate, the need for *conservation* will be significantly reduced.

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Recycling paper uses 30 to 55% less energy than making paper out of new trees — if you recycle a foot-tall stack of newspapers, you save enough energy to take a hot shower every day for a week.

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The Rocky Mountain Institute estimates that as much as 75% of current U.S. electric consumption could be avoided with energy efficiency.

What You Can Do

If you are served by an investor-owned utility, recommend the PUC *decouple* (see **Decoupling**, page 61) the utility's profits from its kWh sales. In this way, the utility will not be hurt financially by supporting *conservation*. If your utility is publicly owned, tell the City Council or PUD Board that slight increases in rates are justified for *cost-effective conservation* programs that will save customers money over the long term.

Tell your utility's regulators that you want to see greater availability of information and incentives to customers for purchasing efficient technologies.

Insist your utility offer programs to all customers — residential, commercial and industrial — that help them reduce their energy use and defer the need for new power plants. Get involved in your utility's planning processes and enlist the support of experts in the public interest community and in state government. They can help provide the technical expertise necessary to put forth a credible plan. ▲

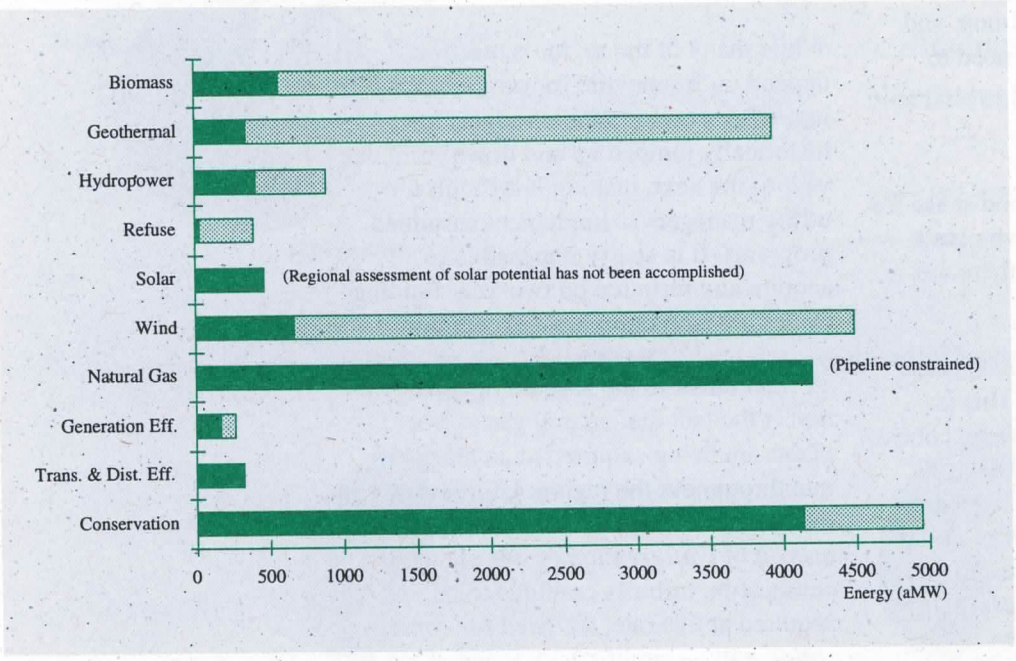


FIGURE 6:

Electric Power Resource Potential in the Pacific Northwest

Source: Northwest Conservation and Electric Power Plan, 1991.

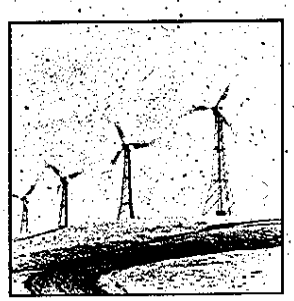
Renewables: Right After Conservation

Conservation can meet a substantial portion of our future energy needs, but ultimately, no matter how efficiently we use energy, we need some way to produce it. Our society uses tremendous amounts of energy to heat, cool, and light our homes and offices, and to power our industrial economy. Combustion of fossil fuels (natural gas, coal and oil), nuclear power, and *renewable* technologies (powered by the sun, wind, water, *geothermal* energy and the burning of *biomass*) are primary sources of this energy.

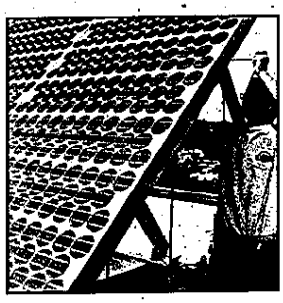
Unlike most areas in the U.S., the Pacific Northwest has always relied heavily on a *renewable resource* for its electricity. In fact, our average electric rates are half that of the national average due to the extensive hydroelectric system built here in the 1930s, 40s, and 50s. The low rates charged for this hydropower, however, have not included costs associated with fish and wildlife losses and have encouraged inefficient use of our energy resources.

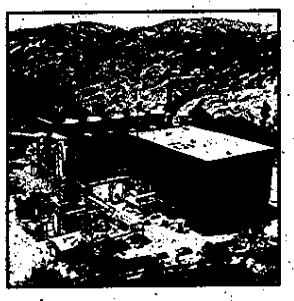
Despite the region's extensive experience with hydroelectricity, we have little experience with other *renewables*, such as solar, wind, and *geothermal* energy. This lack of experience, coupled with low natural gas prices, has led utilities to favor gas-fired power plants in current energy planning, though using natural gas to *generate* electricity is less efficient than using it directly to heat water and homes. The *Regional Act* ranks renewable over non-renewable electricity *generation* for the following good reasons:

The Pacific Northwest has abundant renewable resources. California has developed wind, solar, and *geothermal* resources in significant quantities. Yet, the wind, *geothermal* and *biomass* potential in the Northwest is much greater than in California. Southern Idaho and southeastern Oregon also have substantial solar resources. The Northwest Power Planning Council considers only a small fraction of the total potential of these resources to be technically available and *cost-effective* now. NPPC has estimated utility-scale, *renewable* energy potential available for development in the Pacific Northwest. (See FIGURE 6, facing page: "Electric Power Resource Potential"). With successful demonstrations and maturing technology, this potential will expand dramatically.



Small-scale *renewable* applications, whose potential is not included in Council estimates, could also contribute significantly to meeting Northwest energy needs. Solar water heaters, photovoltaic roof panels, and careful building design use the sun's energy for space and water heating and running appliances without electicity from the grid or gas from the pipeline. *Geothermal* and wind energy can be used on a small scale as well. Low temperature *geothermal* resources can be used directly to heat buildings. In Boise, Idaho, many downtown buildings are heated with *geothermal*, including the Idaho State Capitol Building. Wind turbines are used throughout the Northwest and the world, to pump water for agricultural uses, such as irrigation. More attention should be paid to such small-scale *renewable resources*. Like *conservation*, they reduce the need to build large power plants.





Renewable energy technologies are cleaner than conventional fossil fuel and nuclear energies. As with *conventional resources*, there are environmental issues to be considered when planning for *renewable generation*. The primary benefit of *renewables* is that, unlike fossil fuel

Photos courtesy of:
U.S. Windpower
Northwest Power Planning Council
Union of Concerned Scientists

Our current economic system fails to account for the environmental and social damage caused by energy production and consumption.

combustion and nuclear power, they generally do not produce polluting emissions or toxic waste. They do have some environmental impacts; these tend to be local rather than global, and site-specific. *Renewable resources* are often located in areas with recreational and scenic value, unlike gas-fired power plants, which can be built in heavy industrial areas.

All *renewable* technologies are not appropriate to all applications or locations. *Environmental impact studies*, creative planning, and communication between developers, environmentalists, and affected communities are crucial to predicting and avoiding or minimizing the local land and wildlife impacts of *renewable resource* development.

For example, one of the major environmental concerns related to wind power development is the possible death of birds flying in the path of wind turbines. Studies are underway in California to determine the cause of raptor deaths at the Altamont Pass "windfarm." These studies will help wind developers minimize wildlife impacts there as well as in new areas of development.

Investment in renewable technologies is less risky than investment in conventional power plants. *Renewable* technologies pose few risks to public safety and are immune to global fuel price fluctuations and supply disruptions. Facilities can be built quickly and incrementally as needed (in six months to two years compared to 8 to 15 years for coal and nuclear facilities). Fueled by sunlight, wind, water, and *geothermal* energy, *renewable* technologies are also immune to carbon regulations, such as a *carbon tax*. These factors make *renewables* a sound investment. (See FIGURE 7: "Projected Resource Costs").

Renewable technologies are getting cheaper. The cost of developing solar, wind, and *geothermal* resources has gone down substantially as they have been developed for commercial-scale applica-

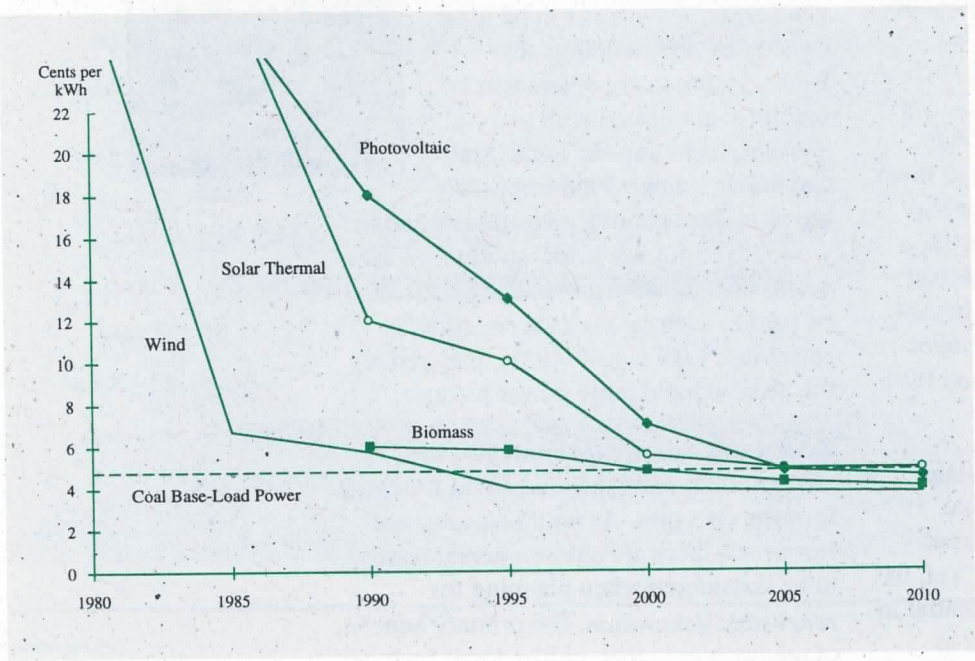


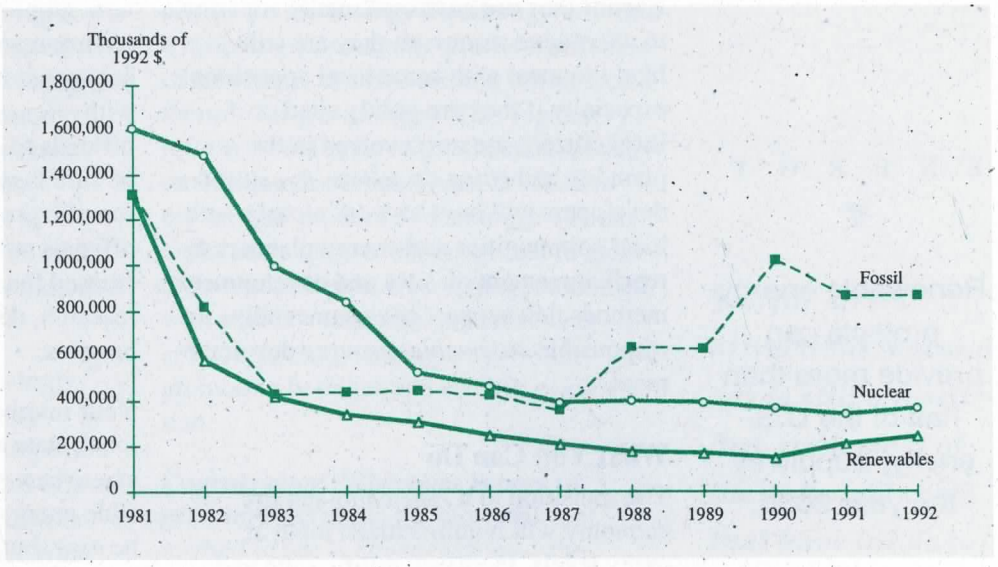
FIGURE 7:

Projected Resource Costs: The Declining Cost of Renewable Resources

Source: Scientific American, September 1990.

FIGURE 8:

U.S. Dept. of Energy Research & Development Budget, 1981–1992



Source: U.S. Department of Energy, May 1993

tion in California. As environmental impacts of energy resources are more fully internalized and the technologies continue to mature (see **Environmental Costs,** page 54), the long-run economic cost of *renewables* is likely to decrease even further. The U.S. DOE graph, above, illustrates that with relatively little federal research and development funds, researchers have made significant progress toward technologies that can compete with *conventional* power sources. In many cases, *renewables* are already *cost-effective* alternatives to fossil fuel and nuclear energy.

Barriers to Renewable Resource Development

Financial support for *renewable resource* development has fluctuated since the 1970s. Federal policies adopted late in the decade, such as the federal *renewable* energy tax credit program, that supported private investment in research and commercialization, failed to give *renewables* development a long term boost. And massive cuts in federal research funds gave *renewable* developers a distinct disadvantage in the 1980s. (See FIGURE 8: "U.S. DOE Research & Development"). These reductions, coupled with comparable ones in state and utility support, led to a boom-and-bust cycle for the *renewable* energy industries.

Another barrier to development is the way we have priced energy. Our current economic system fails to account for the environmental and social damage caused by energy production and consumption. As a result; the superior environmental characteristics of *renewable resources* have not been figured into the cost equation when *renewables* are compared to fossil fuels and nuclear energy. If global warming, air pollution, and other hidden costs of fossil fuels were included in their price — rather than in our taxes and health-insurance costs — *renewable resources* would be more competitive with *conventional* plants.

Renewable resource development has also aroused local opposition in some areas because of its environmental impacts. Many of the adverse environmental impacts of *renewables* can be avoided or mitigated through careful site selection. But, no matter how cleanly they operate, renewable power plants still have some

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Renewable energy projects can provide more than half of the U.S. energy supply by the year 2030.

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characteristics of industrial development. Even if they are environmentally superior to alternative resources, they are still likely to meet with some local opposition, especially if they are poorly sited or if local citizens are not involved in the planning and *siting* decisions. *Renewables* developers will have to work closely with local communities and energy planners to reach agreement on sites and development methods that support environmentally responsible *renewable resource* development.

What You Can Do

The transition to a *renewable*-energy economy will require citizen input at many levels. Increased utility, state and federal support, the implementation of new energy policies, and changes in the way we price energy are crucial factors. Tell your electric utility that you support *renewable resource* development — if new supplies are needed — and that environmental and social costs should be accounted for in energy planning. Work with *renewables* developers and local officials to *site* projects responsibly, and be sure they get community input on specific projects. Write your elected officials so they know you support increased federal funding for *renewables* research, development, and demonstration projects.

Your involvement in energy decisions at local, state and federal levels is crucial to an environmentally and socially responsible energy future. The trade-offs won't be easy, but they will have to be addressed. It's up to you to ensure environmentally responsible *renewable resources* are supplying your energy in the future. ▲

Natural Gas: A Short-Term Solution

Many of us would like to see a power system that relies exclusively on efficient use of environmentally responsible *renewables*. In the short to medium term, however, we are likely to rely on natural gas to meet a significant portion of our energy needs. Deregulation of natural gas pipelines and the discovery of large natural gas reserves in Canada have depressed natural gas prices to near-historic lows. And natural gas burns more cleanly than other fossil fuels. As a result, electric utilities are turning overwhelmingly to gas as their preferred *generating resource*; the direct use of gas in homes for space and water heating is increasing rapidly; and even the transportation sector is looking to natural gas as an alternative to petroleum-based fuels. Natural gas is positioned to act as a *bridge fuel*, a key link in the transition from fossil fuels to *renewables*.

Yet, for all its attractions, natural gas is still a fossil fuel, with most of the risks and costs that have led us to be wary of other fossil fuel dependencies: noxious air emissions, limited supply, potentially wild price fluctuations, and the prospect of political manipulation by foreign or domestic suppliers. In the early 80s, natural gas prices doubled in a few short years. So, while it would be unrealistic to expect no new natural gas applications while prices are so low, it would also be short-sighted to put all of our energy eggs into the natural gas basket.

As natural gas demand increases, *capacity* to deliver gas where and when it is needed will become increasingly strained. During periods of extreme cold weather, some uses will probably have to be curtailed. Most natural gas-fired power plants (combustion turbines) will keep limited

supplies of oil on-site to burn in the event of a supply disruption. Such a disruption is most likely to occur during periods of extremely cold weather, which are also the periods when many Northwest cities experience their worst air quality emergencies. If combustion turbines burn relatively dirty oil during periods of dangerously poor air quality, much of the environmental advantage of gas relative to other fossil fuels is lost.

If natural gas is to play an increasingly important role in our region's energy system, we can and should take steps now to minimize both its environmental impact and the economic risks associated with fuel price and supply fluctuations. What can we do to be sure gas is used efficiently?

Direct use of gas for space and water heating As a general rule, it is more efficient to use gas directly for space and water heating than to burn it to *generate* electricity to meet those same energy needs. But electric utilities and BPA, which bring in more revenue by selling more electricity, resist such changes. Utility regulators and policy-makers should adopt policies that promote the most efficient and affordable means for meeting energy needs — regardless of whether it is electricity or gas.

Comprehensive *least-cost planning* for natural gas Natural gas companies should promote and finance *conservation* in homes and businesses wherever *conservation* is less costly than delivering new gas supplies. Energy planners and regulators can facilitate this process by integrating electricity planning with gas planning to assure that energy needs are met at the lowest total cost. Electric utilities should include direct use of gas in their *least-cost plans*. In both gas and electric *least-cost plans*, environmental costs should be fully and fairly considered.

Regulatory reforms that reward efficiency In the **Energy Toolbox**, you'll find a chapter on *decoupling* profits from sales of *kilowatt hours* (for electric utilities) and therms (for gas utilities). This regulatory reform would remove the financial penalty on utilities that either invest in efficient use of their product or encourage customers to use a more economical fuel to meet their energy needs. *Decoupling*, combined with positive economic incentives for *efficiency*, can go a long way toward promoting both gas and electric *conservation*.

Cogeneration Where gas is used to *generate* electricity, the most efficient method to use is *cogeneration* — the simultaneous production of electricity and steam or heat for industrial processes. The Northwest, with its large pulp and paper industry, has enormous potential for efficient *cogeneration*. Yet many proposals for *cogeneration* are little more than large gas-fired power plants with small, incidental industrial "hosts" to use the steam. These proposals defeat the purpose of efficient gas use. In recognition of this problem, the 1991 Regional Plan calls explicitly for *thermally-matched cogeneration*, i.e. *cogeneration* that maximizes *efficiency* by teaming up with a large industrial steam user. Utilities, regulators, and planners should put forth guidelines for *cogeneration* to ensure that gas is used efficiently.

Given the temporarily low price of gas and the ease with which new gas plants can be sited, the risk of overinvesting in gas as an electric resource is great. If we learned one thing from the last "cheap, plentiful" power source, it's that all energy resources are too precious to waste. Our long-term *efficiency* goals shouldn't be compromised by the temporary allure of cheap gas. ▲

Yet, for all its attractions, natural gas is still a fossil fuel, with most of the risks and costs that have led us to be wary of other fossil fuel dependencies...

Coal and Nuclear Energy: Last Resorts

Efficient use of natural gas (through *cogeneration*) is the third of the *Regional Act*'s energy resource priorities — after *conservation* and *renewables*. The fourth and final option in the Act's hierarchy includes coal and nuclear power plants, as well as gas-fired power plants that do not *cogenerate*. These resources are relegated to the status of last resort because of their extraordinary economic and environmental costs, as well as risks associated with huge investments in any one resource.

As late as 1980, coal and nuclear power were considered mainstays of the region's energy plans. The current twenty-year Regional Plan does include two partially-completed WPPSS nuclear plants at Hanford and Satsop. But, since the Regional Plan was completed in 1991, the region's two existing nuclear plants have proved unreliable and uneconomical. The Trojan nuclear plant in Oregon was permanently retired in 1993, almost twenty years before the scheduled end of its operating life, due to extraordinary cost overruns. WPPSS plant #2 at Hanford has experienced operating costs significantly higher than the price at which BPA can acquire other new resources, and BPA has threatened to shut it down if it cannot produce power more economically.

With such grave doubts about whether **existing** nuclear plants can be operated economically, the region's utilities have all but given up on the idea of investing billions to complete the two mothballed reactors. *Conventional* coal plants were omitted from the Regional Plan altogether because of their high costs and the air pollution they emit.

Coal still plays a significant role in our existing energy mix. However, since the primary purpose of this handbook is to help people get constructively involved in building the energy future envisioned in the *Regional Act* — one based primarily on *conservation* and *renewable resources* — we have chosen to underemphasize coal and nuclear power. Had this handbook been written 15 or 20 years earlier, we would have discussed coal and nuclear power in greater depth. Regional — and increasingly, federal — energy policy points us to less costly solutions. ▲

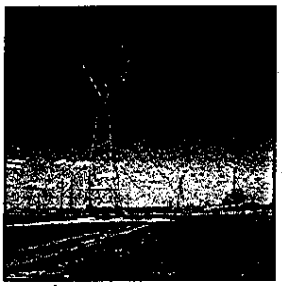

Photo courtesy of:
Northwest Power Planning Council

Tying Our Resources Together: Siting and Transmission

Least-cost planning should leave us with some pretty good choices. But don't confuse "pretty good" with "environmentally benign." Any power plant or *transmission* line, no matter how clean, raises a key environmental question: "Where do we put it?"

Conservation can meet many of our energy demands without necessitating power plants and *transmission* lines. And unlike those who live near power plants, those who get *conservation* "sited" nearby, actually enjoy many bonus benefits, such as better lighting and cozier homes.

But even if we reach our *conservation* goals we **will** need some new power plants, if only to replace old or environmentally unacceptable ones. They will have to be *sited* **somewhere.**

Siting decisions are important opportunities to get involved. But they aren't good forums for addressing broader issues, such as whether the power is needed, or whether the type of resource proposed is the best available. These issues should be addressed in the planning and resource selection processes. If we wait until *siting*, we may lose track of the big picture. For instance, the *siting* process doesn't provide much perspective on the choice between environmentally sound resources nearby and more damaging ones sited at a distance.

Because their environmental impacts are site-specific and land-use oriented, *renewable resources* have encountered substantial opposition in the *siting* process. Yet fossil fuel burning turbines have encountered little or no opposition. Site by site decisions may not add up to the most environmentally desirable result.

Prompted by public pressure, the NPPC developed a promising *siting* safeguard called "Protected Areas" in 1988. The Council inventoried Northwest rivers and ruled all salmon and steelhead streams, and many others with exceptional fish and wildlife values, off-limits to new dams. While this doesn't guarantee that inappropriate sites won't be developed, it has eliminated unproductive *siting* battles in places where development would be unacceptable.

This handbook doesn't discuss *siting* in depth, but much of the information should prove helpful if you participate in a *siting* process. *Siting* decisions will be improved by informed public involvement. Just because the planning process indicates a legitimate need for a power plant doesn't mean that a particular location makes sense. And the *siting* process can be a forum for **final** appeal of poor planning

Transmission

Transmission is the step between production and consumption of electricity. Energy conserved at home, though, (by compact fluorescents, more efficient refrigerators) is energy that doesn't have to be transmitted. This reduces the need for new lines and avoids the power losses that occur (typically 5 to 10%) during *transmission*. All power plants, even the cleanest *renewables*, require *transmission* to get them to the consumer.

In addition to their obvious visual and land-use impacts, *transmission* lines also emit radiation, called *electro-magnetic fields* (EMF). EMF has been linked with diseases, notably childhood leukemia. In response, many electric utilities are contemplating a policy of "prudent avoidance" — reducing the necessity for new *transmission* lines and *siting* them away from population centers. In some cases, *transmission* may **prevent** environmental impacts by allowing utilities to transfer power among geographical areas instead of building power plants.

Because utilities today must plan *transmission siting* publicly and consider alternatives, many of them are finding cheaper and more environmentally benign solutions. In 1991, for example, BPA deferred a new *transmission* line into the Puget Sound region after extensive public review. A combination of stepped-up *conservation* and upgrades on existing lines turned out to be cheaper.

Control of *transmission* lines is a complicated but important issue for utilities and consumers. Open access to *transmission* promotes competition and keeps costs down. This is a key issue in the development of *renewables*, since developers generally do not own *transmission* facilities. Recent changes to federal law support more open *transmission* access. For more information on *siting* and *transmission* contact your state energy office, your state *siting* agency, and/or the local jurisdiction involved. (See **Contacts**, page 62). ▲

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Between 1974 and 1984 U.S. utilities spent more than $500 billion to build new power plants and transmission lines.

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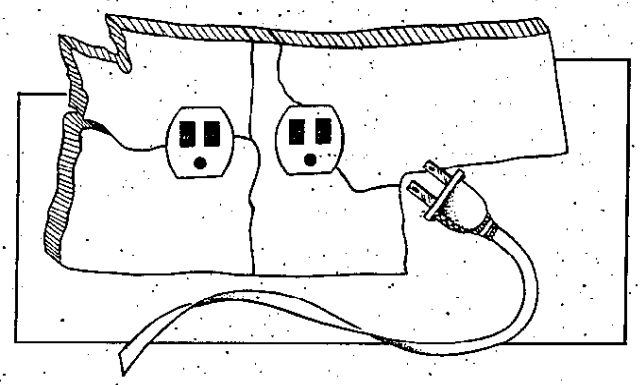
PLUGGING PEOPLE INTO POWER ▼▼▼▼

Participate: You Make the Difference



Energy consumers do not actively participate in energy policy and planning decisions. Yet the kind of energy we use and the way we use it profoundly affects our lives at every level. Choices made today will have consequences for your household budget, for your local economy, and for the environment for years to come. So how do we, as concerned citizens, get involved to make sure that decisions are consistent with our values and do not adversely affect future generations?

Whether the issue is simple or sophisticated, advocacy is the key. Advocacy is a very simple concept — making your opinion count in the forums where decisions are made. To advocate means to speak in favor of or recommend something. It means providing active support for alternatives, as well as creation of strategies to put them in place. It means becoming well-informed about an issue, seeking support of others in your community, and representing your interests in decision-making processes.

By becoming involved in energy issues in this way, you play an important role in shaping our region's energy future. And, you will benefit from other advocates before you. Examples of successful citizen advocacy and positive changes in local and regional energy policy abound. In **Energy and the Northwest** you learned how our energy history was turned around by the *Regional Act.* Public advocacy was the reason for the pro-consumer language in the *Regional Act.* It was also the reason for explicit language calling for protection of fish and wildlife.

The MAP citizen success story (page 17) illustrates how proactive involvement sustained the fundamental reordering of the region's energy resource priorities in favor of *conservation* and *renewable resources.* It also led to language recognizing the need to evaluate the environmental costs of producing and using energy. Together these trends constitute a revolution in thinking about energy development that is taking hold across the country.

Another example of success took place shortly after the passage of the *Regional Act.* Low income representatives organized to promote weatherization of low income households. Public and private utility officials insisted that low income weatherization was a "social issue" and not their responsibility. Advocates argued that weatherization is a *cost-effective* means of "buying" energy. After two years, numerous meetings, and letters from the region's

governors and congressional delegations, BPA bowed to pressure and funded low income weatherization. Today, virtually every utility in the region has such a program.

Here in the Northwest, we have unique opportunities for participation in utility decision-making. More than 40% of our region's consumers are served by over a hundred public utilities. "Public" power allows you to determine the decisions made by your utility. In **Resources of Choice**, the Seattle City Light citizen success story (page 23) shows how a citizens' committee's recommendations profoundly changed City Light's *conservation* strategy. Throughout the region, there are similar opportunities to influence both private and public utilities.

Participation in energy issues can be intimidating, but you needn't do it alone. Nor is it always a matter of "re-inventing the wheel." There is a whole network of public interest groups and agencies for you to plug into. Their collective experience provides an invaluable resource to the first-time activist in search of information. Often they are the best place to introduce yourself to issues or to find out about the opportunities for public involvement. In many cases you will find that processes already exist for your participation. **Getting Started** provides information about these public processes, and you'll find a wealth of organizational resources in **Where to Go From Here.**

This **Plugging People Into Power** section describes some examples of how citizen advocates have scored impressive victories in three key areas: meeting low-income heating needs, restoring fish habitat damaged by dams, and promoting *conservation* as an alternative to "megaprojects" in British Columbia. We also provide some general background on the issues for context. Strategies used to deal with each of these issues vary, depending on the problem and the means available for solving it.

There is, however, one common ingredient: concerned, informed, active citizens like you. The need for this essential ingredient has never been greater. If we are to successfully implement an energy strategy that features *conservation* as its cornerstone, **your** participation is the critical component. ▲

By becoming involved in energy issues in this way, you play an important role in shaping our region's energy future.

Energy For All

Low income people are particularly burdened by, and vulnerable to, energy costs. This burden is largely due to the fact that the housing they can afford is energy wasteful. As a result, low income individuals spend a higher percentage of their income on energy than middle and upper income consumers. Low income people find they must choose between heat, food, and other basic necessities. (See "Heat or Eat?" following page). This problem can be turned into an opportunity: Utilities can finance weatherization and achieve energy savings more cheaply than they can build new power plants. It's a win-win situation: Low income consumers get affordable energy service while utilities get a *cost-effective* new energy resource — the saved energy. Unfortunately, the Federal Government, historically a mainstay of funding for low income weatherization, has cut back on contributions to this effort.

Improvements in low income occupied housing stock such as repair or replacement of unsafe or inefficient heating systems; installation of energy-efficient

windows and doors; and repairs to a structure to protect weatherization measures, lengthen the life of low income structures and improve the health, safety, and comfort of the occupants.

Active involvement of low income advocates in utility planning is critical to ensuring that low income consumers benefit from energy efficiency programs.

Active involvement of low income advocates in utility planning is critical to ensuring that low income consumers benefit from energy *efficiency* programs. Historically, such participation has helped form ties between utilities and their low income customers.

If you want to advocate for low income energy issues it's important that you:

Build strong relationships with utility companies in your area. Understand their concerns and priorities. Get to know their positions on issues and why they take them.

Inform your local energy providers about the need for, and *cost-effectiveness* of, low income weatherization. Utility and billpayer benefits from low-income weatherization, in addition to reduced energy, include fewer delinquent bills and shut-offs among low income households. These non-energy benefits should be recognized and incorporated into any analysis of the *cost-effectiveness* of low income *conservation* programs.

Work to ensure that *conservation* programs provide a full spectrum of weatherization measures — including insulation in attics, floors, and walls, air sealing to reduce heat loss through leaks in the home, mechanical system repair and replacement, and *conservation* education.

Contact the community action agencies in your area to find out if they work with the local utility. CAAs operate low income weatherization programs funded by the Federal and State governments.

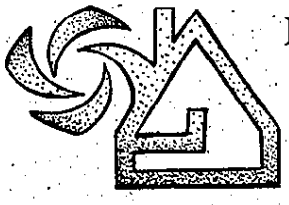
While many people agree that energy services are a basic need, programs that favor low income people over other billpayers have met with opposition from utility commissions and courts. These parties agree with the need for energy services, but see preferential treatment of selected customers — treatment unrelated to the cost or type of service provided — as illegal. However, the Low Income Rate Assistance Program (LIRA) in California is evidence of successful rate relief for low income people. LIRA gives a 15% discount to low income households served by investor-owned utilities. There are similar opportunities for rate relief to low income customers of public utilities.

Intervention in rate cases and *tariff* filings, comments on *least-cost plans*, membership in *collaboratives*, and testifying at hearings are all important low income advocacy opportunities. (See **Public Involvement Processes**, page 45). ▲

Heat or Eat?

A study conducted at Boston City Hospital, completed in September 1992, found that the number of emergency visits by underweight children increased by 30% after the coldest months of the year. Dr. Deborah Frank, the pediatrician and director of the hospital's Failure to Thrive Clinic, said the seasonal increase in underweight children with medical emergencies appeared to be the result of a "heat or eat dilemma," in which poor families are going without adequate nutrition in winter months in order to pay their heating bills. She said the increase could not be attributed to chronic illness or disease.

CITIZEN SUCCESS



Public Participation in Low Income Fuel Efficiency Programs — Spokane Neighborhood Action Programs

In January of 1992, Washington Water Power (WWP), an investor owned utility in Eastern Washington, filed a draft *Demand-Side Management* (DSM) *tariff* with the Utilities and Transportation Commission to fund an energy *efficiency* program in WWP's customer area. (A DSM *tariff* is a public filing that describes the terms of the proposed *efficiency* program). The Spokane Neighborhood Action Programs (SNAP) — in collaboration with other community action agencies — worked closely with WWP to ensure that low income customers could both participate in, and benefit from, the fuel *efficiency* measures proposed in the program.

The major component of the DSM filing was the fuel *efficiency* program, with a five-year budget of $99 million. In this program, the utility pays to have customers with electric space and water heating equipment change over to more economical gas-fired equipment.

SNAP and other low income advocacy groups secured several revisions to the proposed filing. They alerted WWP to the special needs of their constituents — the characteristics of their homes and space heating equipment, their inability to pay a monthly fee, and restrictions on funding available to CAAs. WWP's response was to make major modifications to the program to ensure that low income customers would be able to participate fully in *demand-side management* programs.

In the initial draft filing for the fuel *efficiency* program, all residential customers — low income customers included — were required to contribute a $20 monthly payment to WWP for 60 months following conversion of their equipment. As the filing underwent revisions, the monthly payment for low income customers was reduced to $15, and finally eliminated — low income participants now make no payments to WWP.

While this was the most substantial change affecting low income customers, SNAP and other participating CAAs managed to work other key components into the DSM program:

- The amount of utility funding for low income customer fuel *efficiency* installations was increased from $2,700 to $3,400. This better reflects the cost of equipment changes in low income homes; often housing belonging to low income customers has baseboard heat, and expensive ductwork must be put in when installing a new gas furnace.

- All participants' housing is to be brought up to minimum *efficiency* standards before being converted from electric to gas space heating. This includes improved weatherization and insulation that will help make sure these homes will use new gas heating more effectively.

- A collaborative group that includes low income participants was formed to discuss issues such as the design and cost effectiveness of *conservation* programs.

Results: SNAP and other participating CAAs have developed an ongoing, positive relationship with WWP that has already yielded the above fuel *efficiency* program, and will ensure that any future energy decisions made by the utility will have low income customers in mind.

Key Elements of Success: SNAP had established earlier ties with WWP by being a service provider for weatherization of low income residences, and by actively participating in the electric and gas Technical Advisory Committees of WWP. The key here was making good use of public participation channels. SNAP staff also stayed up to speed on WWP's ongoing programs and kept in close contact with other area CAAs.

Fish and the Power System

E N E R G Y

▼

Upgrading the turbine blades on the Grand Coulee, John Day and Chief Joseph Dams would replace the power of the two Elwha Dams.

▲

F A C T

Sixteen million wild salmon and steelhead once returned to spawn in the Columbia/Snake River basin, the world's largest runs of these fish. Today it is estimated that only 2% of these historic wild runs remain. Competing river uses such as hydroelectric development, irrigation, commercial and recreational fishing, and hatcheries have destroyed most native fish populations over the past 50 years and have greatly reduced the variety of species. Thousands of *megawatts* of cheap and seemingly "clean" electricity have been *generated* at great cost. If we are to rebuild and sustain the fish populations that characterize the Northwest, we will have to balance our need for power, irrigation, industry, and recreation with the needs of the fish of the Columbia and the Snake Rivers.

In the early era of hydropower development, dam construction flooded thousands of miles of prime spawning and rearing habitat, transforming swift rivers into a series of connected lakes. These lakes altered river ecosystems and delayed migration. In addition, no safeguards were built to help fish bypass the dams. On their way to the ocean, where these species live for most of their adult lives, the fish may have to pass through dam turbine blades. Turbine pressure — if it does not kill the fish outright — weakens them and makes them susceptible to predators. Passage back upstream is equally difficult, as there is no natural way for returning adults to bypass the many dams.

More than a decade before the first dam was completed across the Columbia River (Rock Island Dam, in 1933), the Federal Power Act was put into effect requiring dam builders to consider fish issues. Since then, attempts to reduce the negative impacts of dams have been made with varying degrees of success. Hatcheries have been built to replace damaged habitat, screens have been installed to direct young salmon away from turbines, barges and trucks transport migrating salmon and steelhead around dams and reservoirs, water is held and released to increase flows for short times, and ladders have been built to enable returning adults to climb over the dams.

These mitigation efforts have worked in some cases, but many fish populations continue to decline. In the last five years, three Snake River salmon populations have been added to the Endangered Species list. More than 200 other Northwest stocks are also in serious trouble and might soon be added to the list.

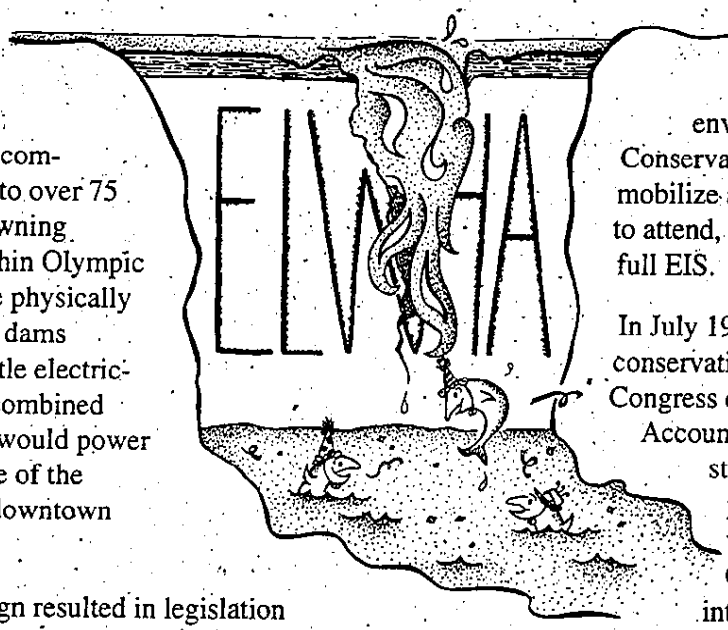
Today everyone involved in fisheries and *hydroelectric* production accepts the fact that there are inherent conflicts between fish and power production. Negotiation, litigation, and mitigation are now the norm when siting, licensing, and relicensing *hydroelectric* projects. Negative impacts can be lessened without driving up the cost of power. Creative solutions are vitally needed in all areas where humans affect salmon. Already in place is an exchange of 1,000 MW between the Northwest and California. This exchange decreases the Northwest hydro power system's requirements to store water in spring and summer, when water flows are most vital for migrating salmon. In addition, drawdowns of Snake River reservoirs are being examined as a way to restore natural river velocities for fish migration.

CITIZEN SUCCESS

Public Participation in Fish and Wildlife Issues — Elwha River Ecosystem and Fisheries Restoration Act

Located on Washington's Olympic Peninsula, the Elwha River once had one of the most prolific salmon runs in the Northwest, supporting ten stocks of *anadromous* (ocean-migrating) fish, including all five species of Pacific salmon. Elwha chinook salmon were known for their tremendous size, some weighing over 100 pounds.

These salmon runs were effectively destroyed by the construction of two *hydroelectric* dams on the Elwha early in the century. Built without any fish ladders or other provisions for fish passage, these dams completely block access to over 75 miles of pristine spawning habitat protected within Olympic National Park. While physically large, the two Elwha dams produce relatively little electricity — just 19 MWa combined (less electricity than would power two buildings the size of the Columbia Tower in downtown Seattle).



A seven-year campaign resulted in legislation authorizing full restoration of the Elwha ecosystem and its anadromous fisheries.

How it Worked: Although environmentalists and tribal members have been concerned about the Elwha dams for decades, the recent successful campaign essentially started with a single committed activist, who believed that fish and wildlife could be restored in the Elwha River ecosystem by removal of the dams. Armed with appropriate legal and biological data, he persuaded four conservation groups (Seattle Audubon, Olympic Park Associates, Sierra Club, Friends of the Earth) to support his effort, and, along with the Lower Elwha S'Klallam Tribe and several federal fish agencies, they requested and were granted *intervenor* status in the Federal Energy Regulatory Commission (FERC) permitting process. They called for denial of licenses and removal of the dams. Friends of the Earth (FOE) assigned a staff person to the Elwha project to coordinate efforts for conservation groups.

In 1989, the intervenors requested that FERC prepare a full *environmental impact statement* (EIS) to examine dam removal/fish restoration possibilities. FERC conducted meetings in Seattle and Sequim to examine environmental impacts. Conservation activists were able to mobilize a large number of citizens to attend, with strong support for a full EIS.

In July 1989, at the request of the conservation groups involved, Congress directed the General Accounting Office (GAO) to study the various legal and policy issues involved with the Elwha dams. Over the summer, intervening conservation groups began advocating for a negotiated, legislative settlement to the Elwha dams controversy. They proposed that power from the dams be replaced by BPA-funded *conservation* measures in the mill that owned the dam and the dams be removed by the federal government.

Grassroots organizing and outreach intensified in 1990, with the formation in March of a local Port Angeles-based citizens group, Friends of the Elwha, and the addition of Trout Unlimited as an intervenor before FERC.

Continued on next page →

Also in the summer of 1990, after seven years of scientific studies, the National Park Service officially called for removal of the Elwha dams as the only means possible to fully restore *anadromous* fish runs along with the entire Elwha ecosystem. The U.S. Fish & Wildlife Service, Bureau of Indian Affairs, and the National Marine Fisheries Service adopted similar positions, and the Department of the Interior put its support behind dam removal in June, 1991.

FERC issued a draft EIS for the Elwha River dams in February, 1991. It reached three dramatic conclusions, stating that (1) full ecosystem restoration was possible only through dam removal, (2) removal was feasible, and (3) the cost of power from the dams, if re-licensed, would equal the cost of power from BPA. At public hearings on the EIS held by FERC in Seattle and Port Angeles, conservation groups mobilized more than 200 citizens to attend and testify in favor of dam removal. In conjunction with issuance of the EIS, an additional ten conservation groups were recruited as *intervenors* in the Elwha FERC proceedings.

In April 1992, legislation, drafted initially in the winter of 1991 by Senators Bill Bradley and Brock Adams, was introduced by Senator Adams and by Representative Al Swift, with bipartisan co-sponsorship from the entire Washington state delegation. After numerous discussions among interested parties, a much strengthened Elwha bill passed both houses of Congress on unanimous voice votes. On October 25, 1992, President Bush signed the "Elwha River Ecosystem and Fisheries Restoration Act" into law.

Results: The Act directs the Secretary of the Interior to prepare a report to Congress by January 1994 on his plan for the full restoration of the Elwha ecosystem, including a definite plan for dam removal. Following submission of his report, the Secretary is authorized to implement the restoration, subject to appropriations of funds by Congress.

Key Elements of Success: The Elwha restoration campaign was a complex effort. It involved broadening the base of support over time, thoroughly investigating the problem, mobilizing citizens to participate in hearings and meetings, using any and all legislative means available, creating seed "solutions," and persistence. Beginning as it did with one well informed activist and ending with a presidential signature, the campaign is a perfectly laid-out study in grassroots coalition building and prudent political lobbying. Public education and outreach was key to this campaign's success. (Get in touch with Friends of the Earth — in **Contacts**, page 64 — for more details on this campaign).

The Northwest can implement aggressive *conservation* programs, substitute natural gas for electricity where gas is more efficient, and renegotiate institutional arrangements to encourage "fish-friendly" river operations. The "Elwha Citizen Success Story" shows how citizens' activism can lead to fish run and river habitat restoration without sacrificing hydropower resources, in fact replacing the power with *conservation* savings.

Many local restoration and collaboration efforts are in place to help restore productive ecosystems. The Chehalis Basin Fisheries Task Force, for example, brings together many historically adversarial groups in hopes of restoring that basin's river resources.

If you are interested in becoming active in fish issues, contact your local fish and wildlife organization. (See **Contacts**, page 62, for a partial listing of such groups). Your involvement will help to create a situation where hydropower and environmental diversity can coexist. ▲

Energy In British Columbia

From the abundant snows of British Columbia's extensive mountain ranges comes a huge bounty of water that flows through Canada's westernmost province in powerful rivers with evocative names — the Columbia, the Fraser, the Peace, the Nechako, the Thompson, the Kootenay, the Stikine, to name a few.

This endowment is the backbone of British Columbia's energy resource. The province, home to 3 million people, gets 87% of its electricity from *hydroelectric* dams, mainly on the Columbia and Peace rivers. B.C. Hydro, a publicly owned "Crown" corporation formed in 1962, supplies more than 92% of the province's population with electricity. In 1993, B.C. Hydro expects to sell approximately 5,600 MWa, about 60% of the total sold by the Bonneville Power Administration in the U.S. Pacific Northwest. Like the Northwest, B.C.'s per-capita electricity use is high, because of climate, the abundance of cheap hydro, and difficulty in providing gas service for residential heating.

Stewardship over B.C.'s vast natural capital — its forests, fisheries, wildlife, and water — dominates political debate in the province. When energy comes up in these debates, Canadians' concern about domination by U.S. interests becomes an additional factor in the political equation. Sovereignty over Canadian resources often is in the background when the province sorts out issues such as *conservation*, electricity exports, environmental effects of dam construction, fisheries and river management. (In Canada, the provinces generally have greater authority over resources vis-a-vis the federal government than U.S. states do.)

These issues come into focus with the Columbia River Treaty of 1964, which led to construction of three storage dams on the B.C. side of the river for flood control and power *generation*. The treaty dams — which include Libby in the U.S. — doubled the storage *capacity* on the Columbia. By regulating the river's flows, the dams allowed more power to be *generated* at U.S. dams on the Columbia. Under terms of the treaty, half of that extra power, or *downstream benefits*, belongs to British Columbia. At the time of treaty ratification, B.C. chose to sell it to U.S. utilities for $254 million (U.S. dollars) for 30 years. That power, which today is approximately 600 MWa of energy and 1,100 MW of *generating capacity* annually, is scheduled to begin returning to B.C. in 1998. Whether B.C. takes the energy or re-sells it to the U.S. remains to be negotiated.

Many British Columbians feel their provincial government, through the 1964 Treaty, literally sold their interests down the river, by giving away a vast resource to the U.S. for less than market value and allowing the U.S., acting through the BPA, to have too much control over river flows and reservoir levels north of the border. *Downstream benefits* are worth hundreds of millions per year, and the damage treaty reservoirs did to fisheries and land resources is only now being seriously evaluated.

More recently, British Columbians have made known their displeasure about Bonneville lowering the Columbia and Kootenay reservoirs to *generate* power and to aid endangered Snake River juvenile salmon struggling to migrate through U.S. reservoirs. There is concern over the impact on B.C. fisheries and the recreation economies of communities near these reservoirs.

Electricity exports is another policy arena where cross-border issues arise. Many British Columbians believe the provincial

"Downstream Benefits" are worth hundreds of millions per year, and the damage treaty reservoirs did to fisheries and land resources is only now being seriously evaluated.

government for years has used B.C. Hydro to advance short-term, ad hoc financial interests at the expense of well-planned stewardship over B.C.'s resources and the long-term interests of the province's citizens. Past provincial governments sought to construct large *hydroelectric* "megaprojects" in order to sell low-priced energy to the U.S. For example, two projects that could supply export markets at the cost of severe damage to river ecosystems are B.C. Hydro's proposed 900 MW Site C dam on the Peace River and Alcan's Kemano Completion Project on the Nechako River. The Kemano project would divert 87% of the Nechako, home to one-fifth of the Fraser River's huge sockeye salmon run, upon which many Canadian and American fishermen depend for their livelihoods.

In 1988, B.C. Hydro created a wholly-owned subsidiary, PowerEx, to facilitate export sales. Many in B.C.'s public-interest community are concerned that PowerEx shields exports from public scrutiny and have called for its abolition.

A related issue is seasonal, *regional exchanges* of energy. There is a large potential for electricity trading between Southwest U.S. utilities with high summer demand and B.C., with its high winter demand. B.C.'s huge *hydroelectric* storage capacity also could be coordinated with U.S. storage in the Northwest to make more efficient use of electricity grids on North America's West Coast. But the river and reservoir regulation concerns have led to re-evaluation of these cooperative benefits.

The latest step in the exports controversy is a recently completed review conducted by the newly-formed B.C. Energy Council, an advisory body to the provincial government. Created by the B.C. Legislature last year, the Council is to prepare a provincial energy plan, which has never before existed, and to review special issues. A report on long-term exports was issued in May, 1993.

The B.C. Energy Coalition, an informal public-interest advocacy group, fears that permitting long-term energy export agreements would be a mistake akin to the Columbia River Treaty — a financially and environmentally risky sale of B.C.'s resources over a long period of time.

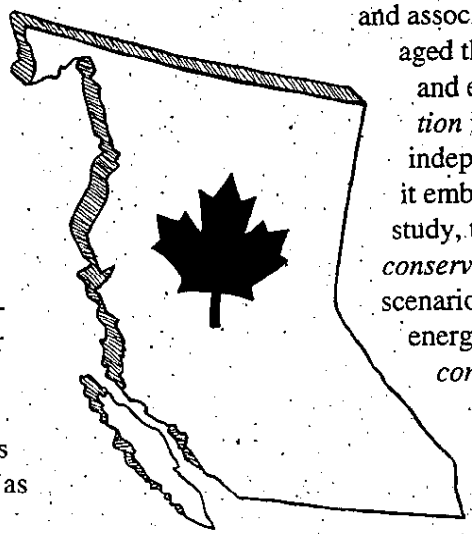
B.C. environmental and consumer advocates point to *conservation* as the resource of choice for protecting the province's irreplaceable natural endowment, ensuring Canadian sovereignty over the nation's resources, and building a sustainable energy system province-wide. B.C. Hydro has become much more serious in recent years about acquiring this clean, cheap resource. Through its "Power Smart" program, the utility has saved approximately 80 MWa of electricity, enough to serve nearly 47,000 homes.

But that is just a toe in the door. A new report from B.C. Hydro's Conservation Collaborative Committee estimates that B.C. could economically save up to 3,082 MWa by 2010, five to six times the electricity used by homes and businesses in Vancouver last year. ▲

CITIZEN SUCCESS

Public Participation in B.C. Energy Planning — B.C. Hydro Collaborative

B.C. Hydro is the primary electric utility in Canada's westernmost province. It is a "crown" corporation (owned by the provincial government) with a history of use as an agent of government policy since its formation in 1962. There was little opportunity for the public to influence its activities — in fact, the utility had a reputation in much of the province as an impersonal and unresponsive bureaucracy with a history of undertaking huge projects.



In 1989, responding to the renewed threat of construction of a 900 MW dam on the Peace River, a group of energy activists representing British Columbia environmental and billpayer groups formed the B.C. Energy Coalition and embarked on a strategy to replace megaprojects with *demand-side management* as the resource of choice. The Coalition approached B.C. Hydro with a proposal to document the size of the province's *conservation* resource. Larry Bell, freshly appointed chairperson of B.C. Hydro, turned out to be committed to public involvement and energy *conservation*, so the proposal was received with interest.

In November 1990, B.C. Hydro sponsored a Vancouver workshop, featuring representatives of all major customer and stakeholder groups (including the Energy Coalition), to reach consensus on a public process for the study. This led to the formation of the B.C. Hydro Conservation Potential Review Collaborative that began meeting in February 1991. Three of the 13 Collaborative members came from the Energy Coalition: two environmental, and one billpayer representative. Other collaborative members represented industrial and commercial customers, local government, native interests, West Kootenay Power (B.C.'s second largest electric utility), and B.C. Hydro itself.

During the next two years the Collaborative survived two changes of B.C. Hydro chairperson and associated reorganizations, and managed the review of technological, social, and economic potential for *conservation* in B.C. Hydro's service area by independent consultants. Early in 1993, it embarked on the second phase of its study, the determination of achievable *conservation* potential, given certain scenarios of utility investment, legislation, energy prices, and public awareness of *conservation*.

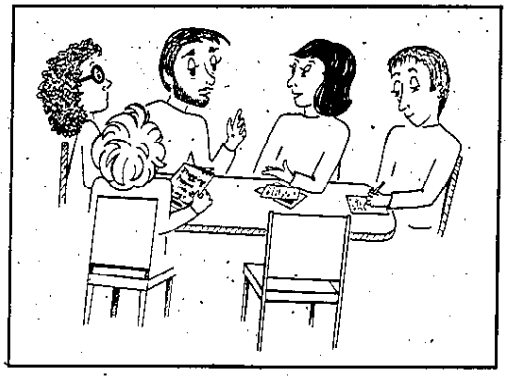
Results: The Collaborative, which has become a showcase for B.C. Hydro, is a model for collaboration in other areas and has produced valuable baseline information for utility *conservation* planning. It is one among several positive developments that have forced huge projects like the Peace River dam to be shelved indefinitely in favor of more creative and efficient resource options.

Key Elements of Success: Canada's first utility collaborative runs smoothly, thanks to the participants' commitment to consensus-based decision-making and *conservation* as the preferred energy source. Shared goals and skillful facilitation avoided potential conflict between traditional adversaries. The review was successful (and more acceptable) because of the participants' broad base of experience.

A Call To Action ▼▼▼▼▼

Getting Started

As the citizen success stories throughout ***Plugging People Into Power*** demonstrate, citizen advocacy **can** make the difference. One key element in each of these successful campaigns was that participants made effective use of available resources. As they discovered, there is a network of people and specific forums in place to tap into. **Public Involvement Processes** describes the kinds of public energy forums that already exist. But if your energy concern isn't being addressed by an existing organization or process, **Organizing an Energy Campaign** should assist you. Whether you participate in an existing process or have to make your own way, first ask yourself the following questions:



What's my energy interest or concern? Your energy concern may be what prompted you to pick up this handbook. Or maybe reading it has raised your concern about a particular issue: fish, low income *conservation*, rates, Canadian resources. What's your issue? You can work to solve an existing problem, as in the case of the Elwha Dams, or you can work to prevent future problems by getting involved in long-term solutions today, such as the MAP Campaign (see page 17).

If you know you want to participate in energy decisions, but you're having trouble knowing just what issue to work on, call the public involvement staff at your state energy office, the NPPC or BPA. As public agencies, they work for you. But before you start calling these public outreach offices, you might want to contact one of the energy-oriented public interest groups you'll find in **Contacts** (page 62).

How can I get involved? Generally speaking, there are three ways to address your concern: join a public interest group, participate in an existing *public process*, or initiate your own energy campaign.

Citizens everywhere have organized to address a wide variety of energy issues. Participating in established environmental and consumer advocacy groups is the easiest way to introduce yourself to an issue (see **Contacts**, page 62).

In addition, there may be a utility, state, or regional process — a public forum in place — where your issue is being addressed. For example, if you're concerned about your utility's *conservation* efforts, volunteer to serve on a citizen's advisory board like the one at Seattle City Light, or participate in your utility's rate hearing. Public involvement in energy issues at the regional level is most often coordinated by BPA or the NPPC. You have a right to obtain information and participate in meetings organized by these and other public agencies. Write or call to get on their mailing lists.

It's important to note that public processes can be dominated by other than public interests. If the forum is set up in a way that your views are not taken seriously and you are unable to make an impact, work to change it. If you can't change it from within, take advantage of outside resources. Let the media know and tell your public officials that this particular process doesn't allow true citizen participation.

If no public process or campaign currently addresses your issue, organize your own energy campaign. A checklist to help get you started comes later in this section. But for more detailed information about campaign activities and organizing techniques, see the organizing resources in **Further Reading** (page 72).

Has any work been done on my issue? It's unlikely you're the first person to confront this issue. Knowing its history may give you some clues about how to proceed. For example, if you would like your home and other homes in your community to be more energy efficient, you should know about community-based energy *efficiency* programs that have succeeded elsewhere. (Contact the Rocky Mountain Institute for more information — see **Contacts**, page 62). Perhaps you can use these campaigns as a blueprint for yours. With a little background research you might find out that others in your community, such as your electric utility, have begun to address your concern. If so, you won't have to initiate your own campaign. You can join an effort that is already under way.

Who are my allies? Take a step back and think broadly about your issue. Which individuals or organizations are already involved or are interested in working with you? Finding common ground with other groups strengthens your position. Public agencies required to serve the public interest, such as state energy offices, should also be contacted for information and technical support.

What obstacles should I anticipate? Anticipating obstacles helps increase your chances of success. Learning other viewpoints regarding the issue you hope to work on helps you overcome unforeseeable challenges such as poor media coverage or being ignored by your utility. Strong negotiating means knowing what the "opposition" wants and why. Ask yourself if there's another way for them to get what they really want, or if you and your group could help them on another issue. Find common ground.

What are my resources? Realistically assess the resources available to you to achieve your goal. If resources are not adequate for the tasks you set, you won't get very far.

When thinking of resources, we most often think of money. While money is important, consider volunteer time and energy, information and expertise, contacts with public officials and media, as resources as well. If you work with a coalition of groups, pool your resources. Citizen advocacy often depends on people power. Remember to tap into government agencies for support, such as state energy offices and the NPPC, especially when your goals are already reflected in existing policies.

You should also look at the resources of those who might oppose your efforts. For example, if you want to change or institute legislation following the path of Initiative 394 (I–394 Citizen Success Story, page 60), there will be factions that may well oppose you. Be aware they may have money and other resources, as well as full-time lobbyists working the other side of the issue.

The public interest groups and energy and environmental organizations listed in **Contacts** have more members and expertise than even the best organized special interests. Take advantage of these resources.

At what level of involvement can I be most influential: local, state, regional, or national? Think about where your efforts would reap the greatest rewards. If you approach your issue individually or as a small group, chances are you'll be most effective on the local level.

The public process you participate in may dictate your level of involvement. If you are unsure as to where you would be most effective, get in touch with folks you consider allies. Your state energy office and the NPPC might also help you find some answers.

Whom am I trying to influence? Your target audience should be directly tied to your goal. For example, if your goal is to design and pass a *solar access* ordinance in your city, the people you'd want to reach would include decision-makers, such as city council members, and interested and affected parties, such as land use planners, builders, developers, businesses, homeowners, and the general public.

Are my elected officials aware of my issue? Are they involved? Do they support my view? Find out what your elected officials think. Write and meet with them to discuss your views. You don't have to be an expert on your issue, you are an expert on your community, and your opinions on energy and the environment count.

Your standing in your community, professional experience and commitment, and a reasonable approach, will help to deal effectively with legislators. For guidance on the ins and outs of letter writing and lobbying, contact the Union of Concerned Scientists, your local chapter of the Sierra Club, or the League of Women Voters (see **Contacts**, page 62).

How should I involve the media? Influencing ongoing media coverage of your issue is one of the most effective tactics you can adopt as an energy activist. Public awareness of your issue can be a crucial component of raising support and building momentum.

In addition to reaching the general public through the media, you can reach other vital energy players. Public agencies, utilities, legislators and other energy planners are all sensitive to media coverage.

You can use the media to announce and cover specific events you sponsor or to provide information about the issue in general. Using mainstream media, such as daily newspapers, and newsletters of local public interest groups and other organizations, is a great way to broaden your support base. (See **Media** sidebar, page 51).

If my issue involves a legal process, what do I do? There are public offices, non-profit groups, and private firms that can help you with legal aspects of your energy concern (see Consumer and Legal advocates, in **Contacts**, page 62). In certain public processes this service is provided for you. If your issue requires you get involved in a legal issue, find out what your rights are. ▲

Speaking Up: Public Involvement Processes

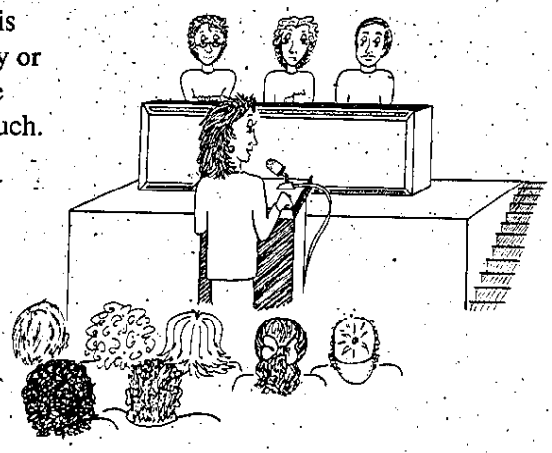
Many of the region's energy decision-makers (see **Energy Players**, page 11) are required by law to organize public forums to have public input on energy policies and other decisions. Generally referred to as *public involvement processes*, these forums may involve one or more meeting(s), public hearings, and written comment periods designed to get your thoughts on a particular issue. **You should participate in forums that relate to your energy issue.**

Described below are some utility, state, and regional involvement opportunities. Because processes vary, you'll want to call the coordinating agency or your local utility for specific information on how you can participate. (Unless otherwise stated, you will find addresses and telephone numbers in **Contacts**, page 62).

Utility Processes

You affect your electric and gas bills by being active in your utility rate-setting process, working groups, advisory boards, and collaboratives. How you get involved depends on the kind of electric or gas utility that serves you. **Private** or **investor-owned utilities (IOUs)** including Idaho Power, Montana Power, Portland General Electric, Washington Water Power, Pacific Power and Light, Puget Sound Power and Light, Northwest Natural Gas, Washington Natural Gas, and Cascade Natural Gas are regulated by state utility commissions, which have clear guidelines for your participation. **Public** and **municipal utilities (Peoples' utilities in Oregon)** are public agencies that must share any information and allow you to participate in any meeting, except those dealing with real estate, litigation, and employee matters. **Mutual** or **cooperative power utilities** have publicly elected Boards of Directors that establish procedures for your involvement. Cooperatives outline member rights in their by-laws. All utilities have customer service departments that can give you additional information and meeting schedules.

Rate Cases Rate cases are held when a utility believes it is collecting too little money or someone else believes the utility is collecting too much. The process begins with utility staff or consultants determining how much money they believe the utility needs and how much each residential, commercial, and industrial customer should pay. The best way to get involved is to contact consumer organizations, such as the Citizen's Utility Board in Oregon or Idaho Consumer Affairs, Inc., and state consumer advocates (see **Contacts**, page 62). These groups have the experience and resources necessary to represent your interests in these forums. You will be notified of proposed rate changes by an announcement in your monthly bill.



Working Groups, Advisory Boards, and Technical Sessions Utilities form working groups or advisory boards when they need citizen input on specific issues. The public is generally represented, for example, in utility *least-cost planning* processes (see **Least-Cost Planning**, page 54). Utilities may send out a notice with your bill asking for your participation, or they may contact specific advocates that represent a particular segment of the population, such as low income communities. Technical sessions include experts, such as NCAC, who advise the utility on a particular technical matter. If you are interested in being a part of a particular

utility process, give your utility or NCAC a call to find out how you can get involved. If there is no group that addresses your issue, ask your utility to form one.

Collaboratives In recent years, a new approach to reaching agreement on utility program design and policy issues has swept the country. Called the collaborative process, it brings together typically adversarial groups to resolve differences by consensus (mutual agreement), rather than going through traditional litigation. Collaboratives give participants direct access to top decision-makers. They are much more than an advisory group; they provide a means to reach negotiated settlements.

The collaborative process...brings together typically adversarial groups to resolve differences by consensus, rather than going through traditional litigation.

Collaboratives have been used in British Columbia, California, New England, and the Pacific Northwest to develop *conservation* programs, incorporate environmental costs into resource selection, forecast future energy needs, design criteria for new resource acquisition, and design and implement research projects. Participants in recent collaboratives have included environmental advocates, consumer/public interest advocates (often representing low income and other residential consumers), large industrial users, commercial customers, state utility commission staff, Public Council staff and state energy offices. Participation of various groups is often funded by the utility, or utilities, involved.

Local and State Government Processes

Local Governments Local elected officials are responsible for a number of key decisions involving energy issues: adoption and implementation of building codes that contain new energy standards, development and adoption of land use ordinances and development of *renewable resources*. Local governments hold public meetings to hear from their communities. In addition, local government associations establish partnerships with communities and other energy decision-makers to leverage local and state projects involving energy-related opportunities. Contact your state association of counties or cities for more details.

State Legislatures Legislative energy committees meet annually (every two years in Oregon) to focus on current energy issues. Committees work to stay abreast of their state energy situation and to propose state energy-related laws. This work requires meetings with community representatives, energy experts, and other decision makers. Write or call your elected officials; they need to hear from you on energy issues. (See the Government pages in your White Pages telephone directory for listings).

State Energy and Natural Resource Agencies In addition to working with local communities and acting as information services, state energy offices organize formal public processes on specific energy issues. For example, in 1992, the Washington State Energy Office convened the State Energy Strategy Committee to develop a broad energy plan for Washington that stressed *conservation* as its top resource priority. The new strategy will outline state priorities to communities, local governments, utilities and other energy decision-makers. State energy offices also offer education programs and technical services to business and industries. Call your energy office to find out what's happening in your state.

Regional Government Processes

Northwest Power Planning Council The Council deals with energy policy and planning issues throughout the region. When formulating and amending their fish programs and energy plans, the Council

has processes to identify, study, request public comment on, and adopt changes. Get on the Council's mailing list to receive the free bi-monthly ***Northwest Energy News***, which covers major Northwest energy and fish issues, and the monthly ***Update***, for dates of upcoming events, comment period deadlines, and available publications. At NPPC public meetings and working sessions you may speak directly with Council members about your issue. The Council is mandated to involve the public in energy decisions, so take advantage of this unique Northwest resource.

Bonneville Power Administration
Every year BPA holds Programs in Perspective (PIP) — regional meetings where you can meet with top managers to learn about the agency's current focus and to determine the Administration's two-year budget. BPA also has public meetings and comment periods every two to three years when it is reviewing and updating its 10-year Resource Plan. The agency organizes additional public processes when making major policy and planning decisions. Get on the free ***BPA Journal*** mailing list to know when meetings and comment periods are held. And attend a PIP meeting near your community; the agency needs to hear from you.

U.S. Department of Energy (U.S. DOE)
Ten regional offices around the country manage federal grant programs for the U.S. DOE. The Northwest region is administered from Seattle, Washington. The grant programs are operated by state energy offices, Departments of Community Development, and other state and local agencies. The programs include the Weatherization Assistance Program for low income homes, the Institutional Conservation Program for schools and hospitals to receive technical assistance studies and energy *conservation* measures, and the State Energy Conservation Program for state energy office planning and demonstration projects. You may attend public hearings or send written comments on any proposed changes to the above programs. Call the Seattle Office to receive information on upcoming hearings. (See **Contacts**, page 67). ▲

Organizing An Energy Campaign

Effective campaigns, such as the 1991 MAP Campaign and the Elwha Restoration Campaign, require a great deal of planning. Some broad suggestions to help you run an effective campaign are listed below.

Campaign Plan

The first thing you'll need to do is create a campaign plan that includes your long-term and short-term goals, strategies for obtaining your goals, and an outline of campaign activities. Your campaign plan should also include a timeline, budget, methods of evaluation, and media strategy. Outlining these details in advance will give you a clear and concise path to follow. (See **Further Reading**, page 72, for additional organizing resources).

Goals Define realistic goals for yourself, keeping in mind that goals not only depend on the issue but on available resources as well. A goal that is too ambitious can lead to a vague outcome at best, failure at worst. Your goal should also be specific and measurable. "Increasing energy *efficiency* in every Montana home" is an example of an overly-broad campaign goal that would be difficult to achieve and evaluate. A goal as specific as "Instituting a utility rebate program in the next 18 months that covers the cost of compact fluorescent light bulbs for all low income consumers" would work better. You can work with your electric utility and local community action agency to achieve this goal. In addition to your long-term goal, you'll want to set up a series of attainable short-term goals. Early successes help motivate and inspire others to participate.

Strategy There are usually several ways to approach a goal. The best approach will depend, to some extent, on how much work has already been done on your issue and if there is a public involvement process already in place. You'll also need to know who you're trying to reach before you set strategy. If public understanding of your issue is low, you may want to start with an education campaign. If the public is already aware of your issue, you may be able to start with some simple action steps.

The approach you take may also depend on your timing. Too often citizen activists get involved only after a crisis is reached. Without a doubt, energy issues can be complex and difficult to follow, but it is to your advantage to act early and to stay involved. Taking a proactive stance increases your chances of success (such as in the 1991 MAP Campaign, page 17).

Scheduling and timelines It is important to develop early a timeline for your major campaign milestones, with tasks and deadlines for each. This will create a structure for program management. It will also ensure ample time for publicity.

Budget and fundraising Once you have a campaign plan and a schedule of tasks, you should be able to draw up a budget outlining expenditures and projecting possible funding sources. Ask local organizations for donations of space, equipment, art supplies, printing, housing for speakers, refreshments, etc. These in-kind contributions will reduce costs and increase the community's "ownership" of your program. Always keep accurate records of income and expenses. You will probably be asked to share this information with your funding sources.

Evaluate Results At the end of your energy campaign, you will need to determine how successful your efforts have been. Your methods of evaluation will depend on your goal. For example, if your goal was to raise public consciousness about the connection between salmon extinction and hydropower in Idaho, you may want to do a survey of public knowledge of this issue before and after your educational efforts. Evaluation should help you identify your best activists and allies, and clarify which organizing techniques work and which don't. Your evaluation should be helpful in future campaigns.

Publicize Successes. A short report documenting your campaign results can be used as a "hook" to interest the media. Publicity should be an ongoing part of your campaign, but it is particularly important to publicize the results of a successful program. For one thing, it builds participants' morale, and makes it more likely they'll work with you on future campaigns.

Recruiting a large and diverse group of active citizens will make your work easier and broaden your program's appeal. Try to involve groups already working on your issue, as well as individuals with specialized expertise (e.g. graphic designers, fundraisers). One way to involve existing groups is to ask for campaign endorsements.

As you develop your campaign plan, keep a few things in mind. Your program should be specific to your community and those you want to reach. You will be most effective if representatives of your targeted audience are involved in the planning process or endorse your efforts. Finally, key elements of successful campaigns generally include good timing, a proactive rather than reactive approach, effective outreach, and a broad base of support. These key elements helped participants realize their goals in each of the Citizen Success Stories found throughout this handbook. By planning ahead, your energy campaign can be just as successful. Your efforts make the difference. ▲

Media

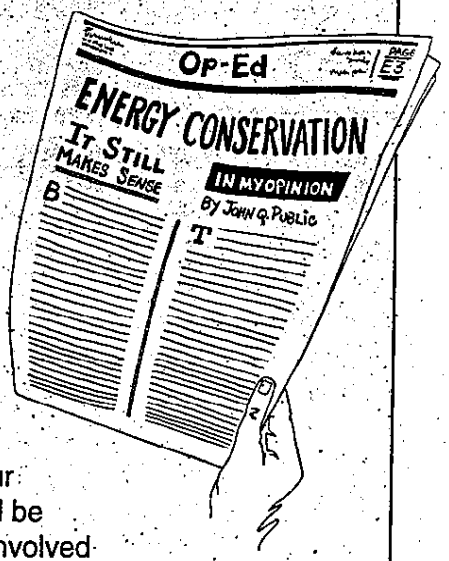
Proper use of the media will help get your message across to a larger audience and may increase participation in your campaign. It is important to develop a comprehensive media plan and to maintain good relationships with media representatives.

Ninety percent of your media efforts should go toward advance publicity, and good outreach can ensure substantial free media coverage. Begin by compiling a list of all local media outlets (e.g. weekly and campus newspapers, area newspapers, church and organizational newsletters, radio stations, and commercial and cable television stations). Establish a contact with each of these media outlets and learn their deadlines. Then, use a combination of the techniques described below to help get your message out.

Press releases and media advisories (local daily and weekly papers, radio and television stations) Press releases should contain all the who, what, where, when, and why information about your event. Send releases to the news editor and calendar section of local papers, and follow up with a phone call to editors to see if more information is needed. Use this phone conversation to suggest a feature story or interview. Include your name and phone number on the press release, and put all the most important information in the first paragraph. Keep releases short.

Continued next page →

Public Service Announcements (radio and TV stations) Your local TV station may be willing to produce a PSA for you. They may ask you for audio and/or video material. Prepare your own 30-second PSA for radio. Write your text, then have a local celebrity record it for you. Distribute the tape to local stations. And give the text to radio announcers to read on the air.



Editorial Memos Write a short memo containing information about your program to the editorial board of your local paper or broadcast news station. Schedule annual meetings with editorial boards.

Letter to the Editor A simple letter describing the reasons you support a particular technology, program, or plan is effective, especially if it has information that is relevant and of interest to your community.

Feature (Human Interest) Story "Local color" stories can highlight your event. The theme is most important; it must address current issues, and be interesting to the target audience. Getting a local celebrity or politician involved with your campaign is a good news hook. Get to know columnists. You may get additional coverage from them if they know about your issue.

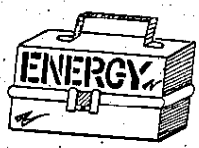
Event Coverage If you have cultivated the media and obtained advance coverage, the media will probably be looking forward to your big events as much as you are. Even so, it is important to officially announce your event(s) through short press releases and invitations to media representatives. Follow these up with a phone call.

Press Information Prepare press packets containing news releases, a history of your event and its significance, a full program agenda, information on your organization, biographies of participants, photographs, and an issues briefing sheet. Send these packets to editors and reporters prior to your event(s) and give them to additional reporters who cover the event(s).

Press Conferences If you have a particularly newsworthy event or influential speakers, consider calling a press conference. This will only be worthwhile if you are confident that at least four or five reporters will attend. Call the conference for the day before or morning of your event. Send out press advisories, follow up with phone calls, and have press packets on hand for all who attend.

Press Interviews Speakers and influential people associated with your event(s) can generate press coverage by speaking directly with reporters about your issues and/or event(s). Send out a press advisory announcing who is available for interviews, and how/when they can be arranged. For more information on successful use of the media see **Contacts** and **Further Reading**.

ENERGY TOOLBOX



Least-Cost Planning

Least-cost planning (LCP) is an important tool for getting utilities to do their job — meeting energy needs as efficiently as possible. Before LCP was required by the *Regional Act* in 1980, utilities simply built power plants and sold the output like a commodity. This resulted in fiscal and environmental disaster; the financial collapse of the WPPSS nuclear program led to the largest municipal bond default in history.

That woke people up. To avoid such disasters in the future, the region had to rethink the whole utility business. After all, it's really not a commodity that consumers want (electricity), it's **energy services**, such as heat, light, and motor drive. And consumers want these services at the lowest possible cost, from both a financial and environmental perspective. To meet that goal, utilities must systematically look at the demand for energy services, and then find the most efficient way to meet that demand. By building only what is needed and doing the least costly things first — as the region did after the WPPSS crisis — *conservation* always seems to come out on top.

Appropriately, this revolution in the utility business is called *least-cost planning*. One important improvement in this approach is that it is supposed to include **all** of the costs of meeting energy demand, not just the dollar cost to the utility. As outlined in the *Regional Act*, LCP must consider such energy costs as air emissions, lung disease, damage to fisheries, and waste disposal. Using a least-cost model — one that takes into account the environmental costs associated with a resource's *siting* and use — favors the use of *renewable resources* over fossil or nuclear resources.

The NPPC prepares a *least-cost plan* for the region. While it applies to all utilities in the region, only BPA is legally bound to implement it. All of the region's private utilities must now prepare their own *least-cost plans;* many large public utilities do so as well.

The LCP process is a very technical one. But it is an open process in which the public interest should be, and often is, represented. Here are some tips and questions that will help you use this tool to build a better energy future:

If you are served by a private utility or a large public utility, ask for their *Least-Cost Plan.* They will generally have a summary if you don't want the whole thing. If they don't have one, find out why.

If your utility is not investing in *conservation*, or not investing enough, find out why. Is *conservation* in their plan? Do they plan to capture **all** of the *conservation* available at lower cost than new power supplies? If not, your energy bill will go up unnecessarily.

Do they have a LCP advisory committee? Does someone on that committee represent your point of view? If not, insist that someone be appointed who does.

Does the utility's LCP consider environmental costs? If not, they should. If so, do they value environmental costs as highly as you think they should? (See **Environmental Costs**, below).

Is your utility investing in fossil fuels or other environmentally damaging new resources? If so, are those resources in the LCP? Have they made a commitment to capture all *cost-effective conservation* first? Are they investing in *renewable resources*?

If you want to be involved in LCP, your utility should be willing to help. Other helpful folks can be found in the **Contacts** section. Your state public utility commission would be a good place to start. ▲

Environmental Costs

Only a fraction of the cost of energy appears on your utility bill. We pay the rest in other currencies: declining salmon runs, smoggy air, forests killed by acid rain, and increased risks of global warming. It's hard to put an accurate number on these costs. The only number we know for sure to be wrong is zero. Yet that's exactly the number that energy planners use if they choose to ignore environmental damages.

Because these impacts are not fully figured into the dollar cost of energy, they are referred to as *externalities*, a term which makes them sound small, like afterthoughts. But these so-called *externalities* affect things that we care about, like clean air, unspoiled beaches, and the planet's ability to support life. One way or the other we will all end up paying for them. How then, do we go about making these environmental *externalities* **internal** to the resource selection process?

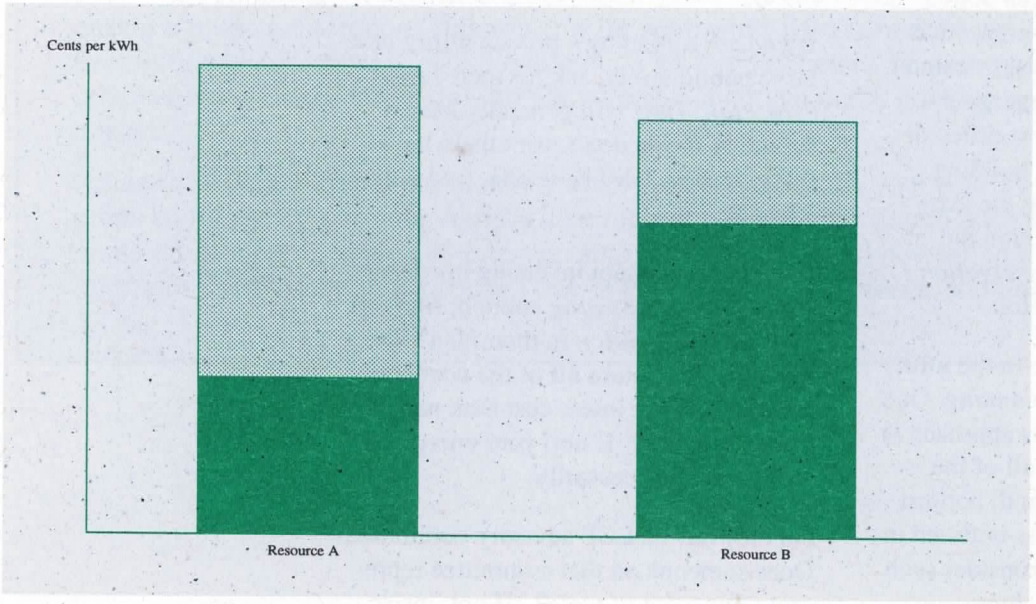


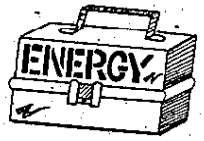
FIGURE 9:

Hypothetical Resource Cost Comparison

Financial Costs-Capital, O&M, Fuel

Environmental Costs

The **financial cost** of Resource A is lower than the **financial cost** of Resource B. Including environmental costs in the total, however, makes Resource B cheaper overall.



Regulators nationally and in more than 26 states have begun to experiment with ways to account for environmental costs. The approaches they've taken fall into four categories.

Qualitative Ranking Under this approach qualitative judgements are made about the environmental impacts of different resources. For example, from the best scientific data available, planners assign labels of High Impact, Medium Impact, and Low Impact. These labels are then used to screen out unacceptable types of *generation* or break ties between options of otherwise comparable costs. The chief drawback to this approach is that qualitative labels don't translate well into the dollar costs that utilities use in making resource decisions.

Quantitative Methods Where information is known about the cost of pollution or of controlling emissions, actual dollar figures can be tacked on to the price tag for a given resource. In the states where dollar values have been assigned to various air emissions, this approach has been used. The resulting control cost "adders" serve to make polluting resources more costly to build, and increase the potential for *cost-effective conservation*. (See FIGURE 9: "Hypothetical Resource Cost Comparison"). However, many impacts still cannot be translated neatly into a dollar amount. What is the cost of a salmon stock gone extinct, of not being able to see Mt. Rainier because of pollution, or of a human life?

Resource Set-Asides Recognizing the difficulty of setting exact values for environmental damages, certain PUCs (like California's) have chosen to reserve a portion of new *capacity* for *renewable resources*. This approach guarantees that at least a percentage of new power sources will be *renewable*. In so doing, it stimulates the market for emerging technologies and helps ensure that utilities don't become overinvested in any one resource. The remaining pool of options may still be subject to qualitative or quantitative adjustments (like adders) to make sure that the environmental impacts are not ignored.

Setting Limits Instead of using cost adders or taxes to influence which resources get chosen, overall limits may be set for the amount of pollution that policy makers deem acceptable. In this way, utilities may choose whatever energy sources they want, so long as the overall emission limit is not exceeded. This was the model for the Clean Air Act Amendments of 1990. The new cap they set for sulfur emissions from coal plants will cut utility SO_2 emissions across the country by 10 million tons. Setting overall emission limits offers utilities more flexibility than regulating emissions from every plant they own, yet achieves the same end result. For this reason, setting limits may be a more efficient way to regulate CO_2 than through a *carbon tax*.

However they get considered, environmental costs are greater than zero and must be treated that way by planners and regulators. Coal and gas plants that we build today will continue to emit pollution for the next 30 to 40 years. At the same time, many *renewable* energy projects currently being offered (which don't emit CO_2 and other pollutants) are very close in cost to new fossil plants. Properly considering environmental *externalities* can make the difference in which gets selected.

What You Can Do

We all pay the price for environmental damage. Choices about what resources get built are too important to be left to those in corporate boardrooms: Let the regulators of your utility know that you support the inclusion of environmental costs into new resource decisions. Talk to the environmental affairs staff at your utility to see what they are doing to account for the costs of polluting resources. Don't get stuck holding the bill for irresponsible planning. ▲

Rates

Setting rates appropriately is a critical first step in promoting energy *conservation*, bringing future energy costs under control, and ensuring equity for low-income customers. The way rates are set can:

- Encourage greater energy *efficiency* in homes, businesses, and factories by signaling the higher costs of new resources;
- Promote equity between customer classes, provide incentives to those who conserve, and ensure that the least efficient users pay for expensive new plants;
- Mean the difference between low-income customers getting adequate energy services or not;
- Help to reduce wintertime demand on the region's hydro system, freeing up water that endangered salmon need to reach the ocean safely.

This section gives a brief introduction on how rates are set, with an emphasis on what ratemaking means for residential customers. It compares different rate designs and explains the difference between rates and costs.

How Your Rates Are Set

Rates are an imperfect attempt to recover the costs an electric utility incurs in providing energy services to its customers. In order to determine "fair and just" rates for each class of customers a utility serves, regulators (e.g., PUD Commissions, City Councils, or state regulatory commissions) go through the following four steps:

Determine the Revenue Requirement

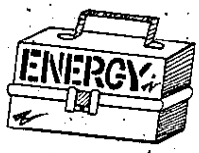
The costs of providing energy services include the cost of building or buying new *generation* and *conservation* resources, *fixed costs* of maintaining the existing energy system (production, *transmission*, and distribution), variable costs (mostly fuel for *generating* plants) of operating the utility system, plus salaries, taxes, and money to make payments to utility shareholder or bondholders. This sum total is called the *revenue requirement*.

Utilities generally use one of two methods to estimate what their costs will be. A utility using a historic test year will base its estimate on a year of actual utility operations (usually the year just before a rate hike request). A utility using a future test year will estimate what its costs will be in a future year (usually the year just after a rate hike request). It's important to remember that either estimate will be wrong. Weather conditions, economic cycles, demographic changes, changes in energy markets, changes in interest rates and inflation, even changes in accounting practices can significantly affect how much money the utility is actually going to need.

Forecast Energy Sales Traditionally, rates are set simply by dividing the estimate of *revenue requirement* by forecasted energy sales:

$$\frac{\text{Revenue Requirement (Dollars)}}{\text{Forecasted Energy Sales (kWh)}} = \frac{\$}{\text{kWh}}$$

As with costs, however, we don't really know how much electricity is going to be needed in the future. Since some costs are *fixed* (they remain the same no matter how much or little energy is needed), the utility will lose money if it sells less energy than expected, and will make more money than it needs if it sells more energy than expected. Since the burden of proof for a rate change is generally on whichever party proposes the change, regulatory agencies and PUCs usually wait for the utility to request a rate change. In general, that means if a utility is overrecovering (making more money than it needs), it **won't** ask for a rate change. But if a utility is underrecovering (making less money than it needs), it will.



Determine Cost of Service for Each Customer Class Determining *cost of service* is when the *revenue requirement* is divided among residential, commercial, and industrial customers. This can be a very technical process. However, it is important to make sure that overall costs of the system are apportioned fairly among customer classes and that much of the costs of distributing power to consumers across the system are shared based on total energy usage.

Adopt Rate Design Rate design is the process of structuring rates for each customer class in a way that recovers the cost of providing energy to those classes. The rate structures chosen are based on customer behavior — do customers use more power or less, do they place heavy *loads* on the system during *peak demand* times, do they want to participate in *conservation* programs, or do they have little incentive to use energy more efficiently?

The typical residential bill consists of a *customer charge* and one or more blocks of *energy charge*. The *customer charge* applies even if you use no energy — it's like an admission fee to the system. On most systems, the *customer charge* is about $3.00 – $5.00 per month, and is designed to cover the costs of meter reading and billing. Utilities that have higher *customer charges* can set electric rates lower; by overcollecting on the *customer charge*, the utility offsets losses due to lower rates so that the customer's bill stays about the same.

Rate Structures: Past, Present and Future

The rate charged per kWh can be a single *flat rate*, which applies to all kWh used; it can be a *declining block rate* which decreases as the amount of power used goes up; or it can be an *inverted rate*, which increases as the amount of power used increases. (Examples of all three rate structures are shown in box at right). The rate structure can have a major impact on the level of power usage.

Based on monthly energy usage of 1,500 kWh average for the Northwest, all three utilities, in the example, recover the same amount of revenue — $80. However the Utility A customer has a much stronger incentive to conserve than the Utility B customer, because the cost of the second block is 50% higher. As you can see, all three recover the same amount of money from the average customer. Utility A's $.06/kWh rate sends the customer accurate signals about what it's costing the utility to provide energy services.

For many years, rates in the Northwest were structured to encourage electricity consumption. Utilities assigned *declining block rates* to their residential customers, which worked fine as long as new dams and growing kWh sales brought down the cost of new power.

This situation reversed in the mid-1970s, when hugely inflated projections of future energy growth caused utilities to begin construction on several large-scale coal and nuclear plants. Power from these new sources cost many times the price of electricity from existing dams. As rates rose to pay for the new plants, customers looked for ways to lower their bills, including cutting back use and investing in energy *efficiency*. As a result, electricity from most of the planned additions became unnecessary. Some of the plants

Comparing Rate Structures

	Utility A (*Inverted Rate*)	Utility B (*Declining Block Rate*)	Utility C (*Flat Rate*)
Customer Charge:	None	$20	$5
First 500 kWh:	$.04	$.06	$.05
Additional kWh:	$.06	$.03	$.05
Bill for 1500	$80	$80	$80

Rates Versus Bills in Four Easy Steps

1. Start With Existing System

Annual Cost ($B)	$5.0
Annual Sales (GWh)	+100,000
Avg. Rate ($/kWh)	$0.05

2. Choose Option A or B to Meet Growing Demand

*Option A: Meet 10,000 GWh with **Conservation***

New *Load* (GWh)	10,000
Cost per kWh	x 0.03
Cost of new resource ($B)	$0.3

*Option B: Meet 10,000 GWh with **Generation***

New *Load* (GWh)	10,000
Cost per kWh	x 0.06
Cost of new resource ($B)	$0.6

3. Re-calculate Costs and Rates

Annual Cost ($B)	$5.3
Annual Sales (GWh)	+ 100,000
Average Rate ($/kWh)	$0.053

Annual Cost ($B)	$5.6
Annual Sales (GWh)	+ 110,000
Average Rate ($/kWh)	$0.051

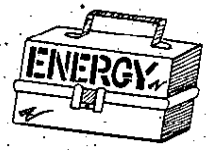
4. Compare Bills

Average Residential Use (kWh)	13,182
Average Rate ($/kWh)	x $0.053
Average Bill	**$699**

Average Residential Use (kWh)	14,500
Average Rate ($/kWh)	x $0.051
Average Bill	**$738**

proved too expensive to complete. Therefore, the artificially low prices built into *declining block rates* had a hand in driving up the *average cost* of power throughout the region.

Today, energy demand in the Northwest is overtaking existing supply, and new resources will need to be acquired. It's more important than ever to make sure that rates are structured in a way that provides incentives for efficient energy use. This applies to wholesale rates that BPA charges its public utility customers, and to rates each of those utilities charges its retail customers.



Rates vs. Costs: Keeping an Eye On Your Bill

Between 1979 and 1983, as a result of its power plant construction spree, BPA's wholesale price per kWh increased 500%. An outraged public focused on controlling rates at any cost (see Initiative 394 Citizen Success Story, page 60). Some PUD commissioners, BPA managers, and many other public officials responded by discouraging any activities that would have raised rates in the near-term. This included deferring *conservation* programs, which, though raising near-term rates, would have lowered energy costs by avoiding the need for more expensive power plants.

Purchasing any new energy resource costing more than the *average price* of power from the existing system **will** raise rates somewhat. On average, *conservation* costs a fraction of new supply alternatives. But even a "free" *conservation* program would raise rates somewhat. This is because successful energy *efficiency* programs reduce the volume of kWh sales over which utilities divide their fixed costs. Consequently, the rate per kWh may be slightly higher as a result of doing *conservation*, but the total costs on the system will be reduced by selecting the least expensive energy available.

The key indicator to watch, then, is your **monthly bill**. Slightly higher rates for *conservation* programs will be offset by lower total *system costs* and therefore, lower average bills. The danger is utility customers may focus exclusively on rates when decisions are made to invest in *conservation* or *conventional resources*. Better informed customers can contribute to more responsible long-range planning by understanding that rates are not the primary basis for judging the merits of a proposed energy plan.

What You Can Do

Get Involved. While each of us is affected by the outcomes of rate-setting decisions, few citizens actually participate in rate discussions. There is a perception that ratemaking is complex and therefore better left to "experts." Although it's true that certain technical issues must be addressed, ratemaking has as much to do with public policy and politics as it does with finance and *load* forecasting. Whether concerned citizens participate or not, one thing is certain — other customers with resources and interest, such as large industrial customers, will hire lawyers to influence rate decisions to their advantage.

Not only that, as the region scrambles to acquire new resources to meet growing energy demand, rates **will** increase. It's inevitable. These increases may be entirely appropriate and justified, or they may be larger than necessary because of inefficient consumption. So when an increase is proposed, citizen activists should be prepared to ask these questions:

Are rates increasing because new supply projects are being built or because successful *conservation* programs are lowering the utility's total kWh sales? Is the utility spending at least 5% of its *revenue requirement* on *conservation*? Is the utility meeting at least half of its growth in demand through these energy *efficiency* investments?

Is an *inverted* residential rate design in place, or being proposed? Does the monthly *customer charge* exceed actual costs of meter reading and sending bills? Is a special rate for low income customers in place?

Are those customers that are growing rapidly paying the high cost of new facilities built to serve them, or are all customers paying these costs? Are residential rates being raised more than commercial and industrial rates?

▼ CITIZEN SUCCESS ▼

Public Participation in the Legislative Process — Initiative 394

In the 1970s, the Washington Public Power Supply System (WPPSS) attempted to build five nuclear power plants simultaneously. The earliest estimates of the cost to complete all five plants was $4.1 billion, but a combination of engineering miscalculations, construction delays, and mismanagement created huge cost overruns. By 1982, estimated cost of completing the projects soared to $24 billion.

Since tax-exempt municipal bonds were being issued to fund construction, public utility ratepayers were ultimately responsible for paying for these cost overruns through their electric rates. As rates began to rise sharply, opposition sprang up across the state — the so-called "ratepayers rebellion." In 1981, citizen activists conceived Initiative 394, also known as the "Don't Bankrupt Washington" initiative. I-394 required voter approval before public agencies could issue municipal bonds for large energy projects.

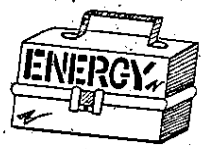
Results: I-394 won by a landslide. The impact of WPPSS debt and soaring rates had affected all areas of the state, and the prospect of multi-billion dollar debts for power plants not likely to be needed presented a clear case to outraged voters. Although a legal challenge subsequently overturned the initiative, the signal I-394 sent to state lawmakers and power planners was crystal clear: Never again should public money be spent on major energy projects without public input and approval.

Key Elements of Success: In this case, the initiative process was the last resort for a public with little say in the energy planning and development process. With every other path of public involvement blocked, there seemed to be no other way to gain access to the decision-making process short of a grassroots campaign to take the issue to voters. Few energy campaigns have the advantage of working against such a clear case of mismanagement as did the I-394 campaign. But the I-394 campaign demonstrates the effectiveness of the initiative process when all other options have failed.

Does the utility have higher rates for those months when energy costs the most to produce (November through March in the Northwest) — "seasonal" rates? Are there higher rates during times of peak use to encourage customers to use *peak* resources more wisely, instead of forcing investment in new *generating* plants and *transmission*?

Does the utility rate ease the need to make investments in new *peaking* resources by encouraging large industrial customers to generate their own power on site during *peak* use periods? This can be achieved by offering "interruptible rates."

If rates do not accomplish these objectives, work to change them to be more effective. The goal is to make sure your utility is running *cost-effective conservation* programs to meet new energy needs. Low rates vs low bills — you be the judge. ▲



Decoupling

Decoupling is a change in utility regulation that removes the incentive for investor-owned utilities to sell as much energy as they can. Under the traditional regulatory model, utilities collect revenue based on the number of kWh they sell: the more kWh sold, the higher a utility's earnings; the fewer kWh sold, the lower its earnings.

The problem with this system is its inherent bias against actions like progressive rate design, *fuel switching*, and *conservation* programs which, by saving energy, cause sales (and therefore revenues) to be lower than they would otherwise be. Because IOUs tend to shy away from investments that cause them to lose money, traditional regulation creates a preference for power plants over *conservation* programs, which results in higher costs and risks over time. By contrast, *decoupling* enables utilities to operate in the public interest and keep bills as low as possible without themselves being hurt financially.

The Way It Works

It's easiest to understand how *decoupling* actually works by holding it up against the standard regulatory model. Under traditional regulation, if costs turned out to be exactly the amount forecast, and sales ended up at exactly the level projected, the utility would theoretically earn exactly the amount it was authorized to make. But in any given year, many factors beyond the utility's control (weather, economic cycles, demographic changes) can cause energy sales — and by extension, utility revenues — to be much higher or lower than expected. *Decoupling* is unique in that it fixes the amount of revenue the utility is entitled to keep regardless of the number of kWh sold. In so doing, it breaks the link between utility earnings and energy sales.

Under *decoupling*, sales will still fluctuate from the level predicted. But because the amount of revenue the utility is entitled to keep stays constant, there is no opportunity to earn windfall profits. Nor will the utility take a bath financially if its sales are lower than expected because of a mild winter or economic downturn, or because of successful *conservation* programs. If a *decoupled* utility were to overcollect in a given year, the excess margins it took in would be returned to customers the following year in the form of lower rates. If sales turned out to be lower than forecast, the revenue shortfall would be made up the following year through a surcharge. While these annual adjustments may yield small short term changes in rates, *decoupling* over the long term has shown little impact on rates against what they otherwise would have been.

One misconception about *decoupling* is that it appears to guarantee utilities a profit. This is not the case. Under *decoupling*, utilities are not **guaranteed** a profit regardless of how efficiently they operate; however, the opportunity to earn their authorized profit is not affected by unanticipated fluctuations in the volume of kWh that they sell. This design still provides incentives for cost control while removing the unprofitability of *conservation* programs.

Decoupling has been the regulatory model for years in California, New York, and Maine, and is now being tested in Washington State and Oregon. Combined with performance-based incentives to encourage higher levels of *conservation*, *decoupling* has transformed Puget Sound Power and Light into the region's energy *efficiency* leader. ▲

Where To Go From Here

Contacts

Below are the basic resources you need to plug into power — addresses, phone numbers, and brief descriptions of energy contacts. You can find contact information about your local utility on your monthly gas or electric bill.

▲ Departments of Community Development

Departments of Community Development (DCDs) are state agencies that empower local communities to strengthen their economic, social, and environmental foundations. DCDs offer home weatherization, through Housing Divisions, and many other services to low-income households.

Idaho State Economic Opportunity Office
Department of Health & Welfare
450 W State St
State House Mail
Boise, ID 83720-5450
(208) 334-5730, fax (208) 334-0645

Montana Department of Social & Rehabilitation Services
Family Assistance Program
111 Sanders Capitol Station
PO Box 4210
Helena, MT 59604
(406) 444-4545

Oregon Housing and Community Services Dept.
1600 State St
Salem, OR 97310
(503) 378-4729, fax (503) 378-3465

Washington Department of Community Development (DCD)
Housing Division
Ninth and Columbia Building
PO Box 48300
Olympia, WA 98504-8300
(206) 586-6459, fax (206) 586-5880

▲ Community Action Agencies

Community Action Agencies (CAA), also called Community Action Programs (CAPs), are community-based social service organizations that foster self reliance in low-income households. CAAs help low-income people find the resources they need to live with dignity and to improve the social and economic conditions in their communities. Like DCDs, CAAs offer weatherization and other services to low income households. There are close to 100 CAAs in the region, so contact your state DCD to find the one that serves your community. (CAAs listed below are members of NCAC and active in energy issues.)

Clallam–Jefferson Community Action Council
802 Sheridan St, 1st Floor
Port Townsend, WA 98368
(206) 385-2571, fax (206) 385-5185

Human Resources Council – District XI
617 S Higgins
Missoula, MT 59801
(406) 728-3710, fax (406) 728-7680

Metrocenter YMCA
909 Fourth Avenue
Seattle, WA 98104
(206) 382-5013, fax (206) 382-7283

Oregon Fair Share
306 SE Ash St
Portland, OR 97214
(503) 239-7611, fax (503) 234-6170

The Opportunity Council Energy & Housing Program
314 E Holly
Bellingham, WA 98225
(206) 734-5121, fax (206) 676-2142

Spokane Neighborhood Action Programs (SNAP)
2116 E. First Avenue
Spokane, WA 99202
(509) 456-7111, fax (509) 534-5874

Yakima Valley Opportunities Industrialization Center
815 Fruitvale Blvd
Yakima, WA 98902
(509) 457-2917, fax (509) 575-0482

▲ Public Interest Groups

Consumer and Legal Advocates

Citizens Utility Board of Oregon (CUB)
921 SW Morrison, Room 550
Portland, OR 97205
(503) 227-1984, fax (503) 227-6847

Statewide consumer advocacy organization. CUB represents consumers in Public Utility Commission hearings before the Oregon Legislature.

Conservation Law Foundation (CLF)
62 Summer St
Boston, MA 02110
(617) 350-0990, fax (617) 350-4030

Non-profit organization that provides legal service to grassroots organizations in New England and across the

U.S. CLF intervenes on its own behalf to represent the public interest in investor-owned utility processes before state utility commissions. CLF promotes energy efficiency, renewables and other economic and environmentally sound energy resources.

Idaho Consumer Affairs, Inc.
207 Hillcrest Square
1111 S Orchard St.
Boise, ID 83705-1966
(208) 343-3554, fax (208) 336-3488

As the "voice of Idaho consumers," Idaho Consumer Affairs, Inc. is a statewide organization affiliated with the Consumer Federation of America and 15 state and national groups. Its emphasis is on education and innovative consumer programs. It serves as an intervenor before regulatory agencies.

Land and Water Fund of the Rockies (LWFR)
4696 Overland Rd
PO Box 1612
Boise, ID 83701
(208) 342-7024, fax (208) 342- 8286

Regional non-profit organization that provides free legal service to grassroots environmental groups in the Pacific Northwest. The Fund's energy project operates somewhat differently from traditional legal services in that it intervenes on its own behalf in a variety of legal processes to promote energy efficiency, renewables, and other economic and environmentally sound energy resources.

Public Citizen
215 Pennsylvania Avenue SE
Washington, DC 20003
(202) 546-4996, fax (202) 547-7392

A consumer advocacy group founded by Ralph Nader to increase public awareness of critical consumer issues. Public Citizen has two energy-related programs. Sun Day is a national project created specifically to promote and share information on solar energy. The Critical Mass Energy Project is an information network that promotes and publishes information on energy conservation and renewable resources.

Sierra Club Legal Defense Fund (SCLDF)
705 2nd Ave., #203
Seattle, WA 98104-1711
(206) 343-7340, fax (206) 343-1526

SCLDF is a non-profit public interest law firm providing free legal services to environmental organizations nationwide. Legal Defense Fund staff attorneys act to protect natural resources and human health, representing dozens of small, grassroots clients, as well as national groups.

Washington Attorney General – Office of Public Counsel
900 Fourth Ave, Suite 2000
Seattle, WA 98164
(206) 464-7744, fax (206) 389-2058

The Office of Public Counsel is a division of the Office of Attorney General that houses attorneys to represent Washington consumers served by investor-owned gas, electric, telephone and water utilities. The Office operates independently from the regulatory commission and is designated by state law to act as billpayer advocates. Representing the concerns of utility customers, Public Counsel attorneys testify before federal and state regulatory agencies on matters concerning utility rates.

Legal Service Programs

Legal Service Programs are private non-profit firms that provide legal services to low-income and elderly people in civil matters. Fees are reduced and certain kinds of legal services are offered at no charge. Multiple offices exist in the four Northwest states. Call the one in your state listed below for an office nearest you.

Evergreen Legal Services
King County Office
401 Second Avenue S, Suite 401
Seattle, WA 98104
(206) 464-5911, fax (206) 382-3386

Idaho Legal Aid Services
310 N 5th St
Boise, ID 83701
(208) 345-0106, fax (208) 342-2561

Montana Legal Services Assoc.
801 N Last Chance Gulch
Helena, MT 59601
(406) 442-9830, fax (406) 449-7322

Oregon Legal Services
516 SE Morrison, Suite 1000
Portland, OR 97214
(503) 234-1534, fax (503) 239-3837

▲Energy and Environmental Organizations

Alliance to Save Energy
1725 K St NW, Suite 509
Washington, DC 20006
(202) 857-0666, fax 331-9588

Non-profit coalition of businesses, government, environmental, and consumer leaders dedicated to increasing the efficiency of energy use. ASE conducts research, pilot projects, education programs, and policy advocacy.

Alternative Energy Resources Organization (AERO)
25 S Ewing, Room 214
Helena, MT 59601
(406) 443-7272, fax (406) 442-9120

Grass-roots, non-profit established to help citizens develop useful, human-scale, environmentally compatible technologies and practices that conserve energy and reduce fossil fuel dependence. AERO supports sustainable agriculture, creation of locally and regionally based food systems and renewable resources.

Coalition for Energy Efficiency and Renewable Technologies (CEERT)
1100 11th St, Suite 311
Sacramento, CA 95814
(916) 442-7785, fax (916) 447-2940

Coalition of major renewable energy companies, environmental organizations and public interest groups. CEERT carries out policy research, regulatory and legislative advocacy and public education in support of energy efficiency and renewable energy.

Energy Conservation Coalition (ECC)
6930 Carroll Avenue, Suite 600
Takoma Park, MD 20912
(301) 891-1104, fax (301) 891-2218

Alliance of national public interest organizations and local affiliates formed to publicize and promote energy conservation and renewable resources.

Energy Outreach Center (EOC)
503 W Fourth Avenue
Olympia, WA 98501
(206) 943-4595, fax (206) 943-4977

EOC is a community-based, public information and service provider. Supplies reliable and objective information about energy conservation and renewable resource use for residents of the South Puget Sound area.

Eugene Future Power Committee
85328 Willamette St
Eugene, OR 97405
(503) 687-0060

A small, local organization originally formed to oppose the development of a nuclear power plant in Eugene, Oregon. Its mission is to support clean, affordable energy and public, consumer-owned utilities.

Fair Electric Rates Now (FERN)
2848 French Rd NW
Olympia, WA 98502
(206) 866-4376

A small, local organization that promotes conservation and renewable resources, and seeks to protect the interest of electric utility consumers.

Fair Use of Snohomish Energy (FUSE)
11930 92nd St SE
Snohomish, WA 98290
(206) 568-8201

FUSE focuses on public education, energy, and utility issues.

Forelaws on Board/Don't Waste Oregon Committee
19142 SE Bakers Ferry Rd
Boring, OR 97009
(503) 637-3549

Forelaws on Board/Don't Waste Oregon Committee are environmental, consumer interest groups active in Oregon and Washington. Both groups are mainly involved in nuclear issues.

Friends of the Earth (FOE) Northwest Office
4512 University Way NE
Seattle, WA 98105
(206) 633-1661, fax (206) 633-1935

FOE is an international environmental organization headquartered in Washington, DC with a regional field office in Seattle. FOE's mission is to protect the Earth and its resources - air, water and land. Interest in energy issues is related to work on restoring salmon runs in Northwest rivers.

Greenpeace
4649 Sunnyside Avenue N
Seattle, WA 98103
(206) 632-4326, fax (206) 632-6122

An international organization headquartered in Washington, DC. Through grassroots organizing, research, public outreach, and non-violent direct action, Greenpeace works to preserve the Earth and its ecosystems. Past campaigns have focused on global warming, ozone destruction, nuclear power, fisheries, endangered species, marine ecosystems and the production and disposal of toxic materials.

Idaho Citizen's Network (ICN)
PO Box 1927
Boise, ID 83701
(208) 385-9146, fax (208) 336-0997

ICN strives to develop the collective power of Idaho citizens. Works on health care, groundwater cleanup, and utility issues.

Idaho Rivers United (IRU)
PO Box 633
Boise, ID 83701
(208) 343-7481, fax (208) 343-8184

IRU, a membership-based, statewide river conservation organization, represents the public interest in surface water and hydropower issues. It strives to educate the public and to coordinate citizen efforts to improve state and federal river decisions.

Kootenay-Okanagan Electric Consumers Association
Box 1287
Summerland, BC VOH 1Z0
Canada

ECA was formed to ensure that British Columbians maintain control of their energy and water resources, that BC electric utilities are Canadian controlled and that local energy policy is responsive to the needs of BC residents and the environment. ECA intervenes at West Kootenay Power and BC Hydro rate design and rate hearings, and participates in the BC Hydro collaborative for conservation potential review.

League of Women Voters (LWV)

The League of Women Voters is a non-partisan organization that encourages the informed and active participation of citizens in government and influences public policy through education and advocacy. Positions of the organization are developed based on member study and consensus.

LWV – Idaho
2705 N 32nd St
Boise, ID 83703
(208) 343-8018 or (208) 334-2258

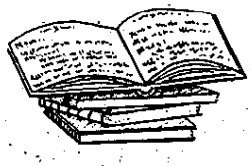
LWV – Oregon
2659 Commercial St SE, Suite 220
Salem, OR 97302
(503) 581-5722

LWV – Montana
5555 Blackbear Rd
Bozeman, MT 59715
(406) 587-2300

LWV – Washington
1411 Fourth Ave Bldg., Suite 803
Seattle, WA 98101
(206) 622-8961, fax (206) 622-4908

Montana Environmental Information Center (MEIC)
PO Box 1184
Helena, MT 59624
(406) 443-2520

MEIC is a state environmental organization that monitors and lobbies legislators and state government agencies on environmental issues, educates the public through mass media and involves local communities. MEIC's mission is to protect and enhance Montana's natural environment.



Natural Resources Defense Council (NRDC)
71 Stevenson St
San Francisco, CA 94105
(415) 777-0220, fax (415) 495-5996

Through litigation, advocacy, and research, NRDC is dedicated to protecting the global environment and preserving the Earth's natural resources. NRDC promotes environmentally safe energy sources and energy conservation throughout the US.

Northwest Conservation Act Coalition (NCAC)
217 Pine St., Suite 1020
Seattle, WA 98101
(206) 621-0094, fax (206) 621-0097

NCAC is a regional alliance of conservation and consumer advocate organizations, utilities, businesses, and citizen activists, seeking the best possible implementation of the Pacific Northwest Electric Power Planning and Conservation Act. NCAC's program of education, advocacy and research emphasizes conservation and environmentally responsible renewable resources as the region's path to an affordable, sustainable energy future.

Northwest Environmental Advocates
133 SW 2nd, Suite 302
Portland, OR 97204-3526
(503) 295-0490, fax (503) 295-6634

Consumer advocacy group that promotes safe, non-nuclear power and works on toxic pollution and water quality issues through grassroots organizing, research, informational outreach and litigation. The RiverWatch program gives free boat tours along the Willamette, Columbia Slough and Lower Columbia to foster a sense of stewardship and to provide stimulus for river restoration and protection. It focuses primarily on Oregon, Washington and areas of the Columbia Basin beyond these state boundaries.

Northern Plains Resource Council (NPRC)
2401 Montana Ave, 2nd Floor
Billings, MT 59101
(406) 248-1154, fax (406) 252-1092

NPRC is a Montana community-based conservation organization. It is committed to land stewardship and social justice principles that ensure future generations a healthy homeland. NPRC believes that communities can prosper and thrive without destroying Montana's environment.

Northwest Rivers Council (NWRC)
1731 Westlake, Suite 202
Seattle, WA 98109
(206) 283-4988, fax (206) 283-4960

NWRC is a regional river conservation organization whose mission is to protect and enhance free-flowing rivers through citizen education, advocacy, and organizing.

Northwest Resource Information Center (NRIC)
PO Box 427
Eagle, ID 83616
(208) 939-0714, fax (208) 939-7263

NRIC is a non-profit organization that consults on natural resource issues, particularly on salmon and steelhead recovery in the Columbia River Basin.

Oregon Environmental Council (OEC)
027 SW Arthur St
Portland, OR 97201
(503) 222-1963, fax (503) 241-4260

OEC is a statewide environmental organization that focuses on citizen lobbying. OEC advocates policies promoting sustainable use of energy and water resources, air and water quality protection, reduced use of hazardous materials and pesticides, sound mining and forestry practices, and recycling.

Oregon Natural Resources Council (ONRC)
Yeon Bldg. 1050
522 SW Fifth Ave
Portland, OR 97204
(503) 223-9001, fax (503) 223-9009

ONRC strives to protect Oregon's natural environment through education, advocacy, and grassroots empowerment.

Pacific Rivers Council (PRC)
PO Box 309
Eugene, OR 97440
(503) 345-0119, fax (503) 345-0710

PRC is a statewide river conservation organization that seeks to "protect, restore and enhance rivers and river systems."

Portland Energy Conservation, Inc. (PECI)
921 SW Washington, Suite 840
Portland, OR 97205
(503) 248-4636, fax (503) 295-0820

PECI is a non-profit consulting business that designs energy conservation programs for commercial and residential sectors. PECI is based in Portland, but consults across the nation.

Salmon for All
PO Box 56
Astoria, OR 97103
(503) 325-3831, fax (503) 325-2725

Salmon for All represents the commercial fishing industry on the Columbia River, including processors and fisherman. Salmon for All lobbies, and is an information clearinghouse for fisherman, processors, state and federal agencies, and the public.

Save Our *Wild* Salmon (SOS)
6532 Phinney Ave E, Suite 15
Seattle, WA 98103
(206) 784-4585 fax (206) 784-4577

SOS is a broad coalition of Northwest fishing, conservation, and energy advocacy groups united in an intensive citizen effort to restore wild salmon populations, salmon economies and cultures, and to help build a sustainable future.

Sierra Club (Headquarters)
730 Polk St
San Francisco, CA 94109
(415) 776-2211, fax (415) 776-0350

Sierra Club Northwest
1516 Melrose Avenue
Seattle, WA 98122
(206) 621-1696, fax (206) 621-9110

Sierra Club is a national environmental organization with state chapters Its mission is to "save the Earth." Sierra Club has been involved in regional and national energy issues, protection and restoration of Northwest wild salmon, the spotted owl and ancient forest debates and wild rivers.

Sierra Club of Western Canada
1525 Amelia St.
Victoria, BC V8W 2K1
Canada
(604) 386-5255, fax (604) 386-4455

This office is one of two Canadian chapters of the US-based Sierra Club. It has been involved in energy issues, old growth forests, parks and wilderness planning and sustainable development.

Solar Energy Association of Oregon (SEA of O)
027 SW Arthur
Portland, OR 97201
(503) 224-7867, fax (503) 241-4260

SEA of O is dedicated to a sustainable energy future through the promotion of conservation, renewable resources, and sound resource planning. In the past, SEA of O has concentrated on global warming, conservation planning, solar access ordinances and weatherization.

Solar Information Center (SIC)
University of Oregon, Department of Agriculture
Eugene, OR 97403
(503) 346-3696, fax (503) 346-3660

SIC, a student-run organization, serves as a research, education, and information center on solar and other renewable energy resources, and their application in architecture and technology. SIC has a free lecture series and is a source of books, periodicals, abstracts, proceedings, topic films and product files.

Union of Concerned Scientists (UCS)
26 Church St
Cambridge, MA 02238
(617) 547-5552, fax (617) 864-9405

UCS — DC Office
1616 P St NW, Suite 310
Washington, DC 20036
(202) 332-0900, fax (202) 332-0905

UCS is an alliance of scientists and other citizens concerned about the impact of advanced technology on society. Its programs focus on global environmental problems, national energy policy, nuclear power safety and national security. UCS advocates energy strategies that minimize risks to public health and safety, provide for efficient and cost-effective use of energy resources, and minimize damage to the global environment. UCS has many energy-related publications, guides, fact sheets and visual aides available.

Washington Environmental Council (WEC)
5200 University Way NE, Ste 201
Seattle, WA 98103
(206) 527-1599, fax (206) 527-1693

WEC is an alliance of organizations within Washington. WEC's mission is environmental protection, focusing on state legislation, growth management, forestry, water resources, and energy.

▲ Fish and Wildlife Agencies

Columbia Basin Fish and Wildlife Authority
2501 SW First Avenue, Suite 200
Portland, OR 97201
(503) 326-7031, fax (503) 326-7033

Represents the state fish and wildlife agencies from the four states, the two federal agencies, and 13 Indian tribes in the Columbia River Basin to coordinate planning and implementation of the fish and wildlife issues in dealings with the NPPC, BPA and the Corps. The Authority presents only consensus positions of its members.

Columbia River Inter-Tribal Fish Commission (CRITFC)
729 NE Oregon St, Suite 200
Portland, OR 97232
(503) 238-0667, fax (503) 235-4228

CRITFC is composed of the Fish and Wildlife Committees of the Yakima, Warm Springs, Umatilla, and Nez Perce tribes and supplies technical expertise and enforcement resources.

Idaho Fish and Game Department
600 S Walnut St
PO Box 25
Boise, ID 83707
(208) 334-3771, fax (208) 334-2114

A state agency whose mission is to preserve, protect, perpetuate and manage all wildlife within Idaho, and to carry out the activities necessary to administer and enforce the harvest of wildlife.

Montana Department of Fish, Wildlife and Parks
1420 E Sixth Avenue
Helena, MT 59620
(406) 444-2535, fax (406) 444-4952

The state agency responsible for administration of the state park system, administration and enforcement of hunting and fishing in the state, and operation of programs to understand and protect the state's fish and wildlife resources.

National Marine Fisheries Service (NMFS)
US Department of Commerce
7600 Sand Point Way NE
Bin C-15700, Building 1
Seattle, WA 98115
(206) 526-6150, fax (206) 526-6426

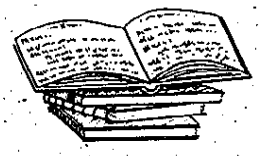
An agency of the National Oceanic and Atmospheric Administration. Provides management, research and services for the protection and rational use of living marine resources. Determines the consequences of the natural environment and human activities on living marine resources, and provides knowledge and services to achieve efficient and judicious management, use, and conservation of the resource.

Northwest Indian Fisheries Commission (NWIFC)
6730 Martin Way E
Olympia, WA 98516
(206) 438-1180, fax (206) 753-8659

This organization is a counterpart to the Columbia River Inter-Tribal Fish Commission, operating in the Puget Sound and Washington coastal area. Nineteen tribes belong. NWIFC doesn't actively participate in NPPC activities, but has a keen interest in hydropower issues in this area.

Oregon State Department of Fish and Wildlife (ODFW)
2501 SW First Avenue
PO Box 59
Portland, OR 97207
(503) 229-5403, fax (503) 229-5406

Responsible for management of fish and wildlife resources and regulation of commercial and recreational harvest.



Washington Dept of Fisheries
Box 43135
Olympia, WA 98504-3135
(206) 902-2200, fax (206) 902-2947

A state agency whose purpose is to protect, perpetuate, and manage the marine food fish, shellfish, and anadromous fish resources of the state.

Washington Dept of Wildlife
600 Capitol Way, N
Olympia, WA 98501-1091
(206) 753-5700, fax (206) 586-5688

Responsible for game fish and wildlife in the state of Washington. Game fish include steelhead, sea-run cutthroat, and resident fish.

▲Federal and Regional Government Agencies

Bonneville Power Administration (BPA)
US Department of Energy
Public Involvement
905 NE 11th St
Box 12999
Portland, OR 97212
(800) 622-4519 or (503) 230-3478
Publications (800) 622-4520

Bonneville is the sole federal power marketing agency in the Northwest and the region's major wholesaler of electricity. It markets and transmits power and coordinates operation to the Federal Columbia River Power System. BPA also owns and operates the nation's largest network of long-distance, high-voltage transmission lines.

BPA Area and District Offices:

There may be other BPA offices in your state. Call the office below to locate the one nearest you.

Idaho – Boise District Office
304 North Eighth St, Room 450
Boise, ID 83702
(208) 334-9137

Montana – Montana District Office
800 Kensington, Ste 204
Missoula, MT 59801
(406) 329-3060

Oregon – Lower Columbia Area
1500 NE Irving, Suite 250
Portland, OR 97232
(503) 230-4558

Washington – Puget Sound Area
201 Queen Anne Avenue North
Room 400
Seattle, WA 98109
(206) 553-4130

Bureau of Reclamation
US Department of the Interior
1150 N Curtis Rd
Boise, ID 83706-1234
(208) 378-5012, fax (208) 378-5019

Administers the federal program in western states for water resource development and use. The Bureau owns and operates a number of dams in the Northwest including Grand Coulee and several projects on the tributaries of the Columbia River.

Federal Energy Regulatory Commission (FERC)
US Department of Energy
Portland Regional Office
1120 SW Fifth Avenue, Suite 1340
Portland, OR 97204
(503) 326-5840, fax (503) 326-5857

FERC regulates the interstate aspects of the electric power and natural gas industries. Issues and enforces licenses for construction and operation of non-federal hydroelectric projects, and advises federal agencies on the merits of proposed federal multi-purpose water development projects.

Northwest Power Planning Council (NPPC)
851 SW Sixth Avenue, Suite 1100
Portland, OR 97204-1348
(800) 222-3355 or (503) 222-5161
fax (503) 795-3370

NPPC is a regional power planning and policy-making body that includes two governor-appointed members from each NW state. The PNW Electric Power Planning and Conservation Act mandates the Council to strike a balance between wildlife needs and electricity production in the Columbia River System by developing: a regional conservation and electric power plan, a program to protect, mitigate and enhance fish and wildlife, and a program to involve the public in energy decision-making processes.

NPPC Regional Offices:

Idaho NPPC
450 West State St
Boise, ID 83720
(208) 334-2956

Montana NPPC
1301 Lockey
Capitol Station
Helena, MT 59620-0850
(406) 444-3952

Oregon NPPC
505C State Office Building
1400 SW Fifth Avenue
Portland, OR 97201
(503) 229-5171

Western Washington NPPC
925 Plum St, Bldg 4
PO Box 43166
Olympia, WA 98504-3166
(206) 956-2200

Eastern Washington NPPC
Anderson Hall, Room 34
North Ninth and Elm Streets
PO Box B
Cheney, WA 99004
(509) 359-7352

US Army Corps of Engineers – North Pacific Division
PO Box 2870
Portland, OR 97208-2870
(503) 326-3768, fax (503) 326-5523

The agency of the US Army with responsibility for design, construction, and operation of civil works, including multi-purpose dams and navigation projects.

U.S. Dept of Energy (U.S. DOE) Office of Conservation and Renewables
Northwest Region (AK, ID, OR, WA)
800 Fifth Ave, Suite 3950
Seattle, WA 98104
(206) 553-1004, fax (206) 553-2200

Ten offices around the country manage grant programs of the federal Department of Energy. These offices also offer technical information and assistance to homes and businesses regarding conservation and renewable resources.

U.S. DOE
Office of Conservation and Renewables
Rocky Mountain Region (CO, MT, ND, SD, UT, WY)
2801 Youngfield St, Suite 380
Golden, CO 80401-2266
(303) 231-5750, fax (303) 231-5757

▲ State Energy Agencies

Idaho Department of Water Resources (IDWR) – Energy Division
1301 North Orchard St
Boise, ID 83706-2237
(208) 327-7900, fax (208) 327-7866

IDWR is responsible for energy and water resources in the state of Idaho.

Montana Department of Natural Resources and Conservation (DNRC)
1520 East Sixth Avenue
Helena, MT 59620-2301
(406) 444-6873, fax (406) 444-6721

The Energy Division of DNRC is the state energy office and the state energy facility siting agency in Montana. The Water Resources Division is the water management agency for the state.

Oregon Department of Energy (ODOE)
625 Marion St NE
Salem, OR 97310
(503) 378-4040, fax (503) 373-7806

ODOE is responsible for energy planning in Oregon.

Oregon Energy Facility Siting Council
625 Marion St NE
Salem, OR 97310
(503) 378-4040, fax (503) 373-7806

This agency has energy facility siting authority in Oregon. Such facilities include generating plants larger than 25 megawatts, as well as transmission lines (500 kV) and gas pipelines (16" diameter).

Oregon State University Extension Service – Energy Program
800 NE Oregon St, Suite 450
Portland, OR 97232-2162
(503) 731-4104
Publications (800) 457-9394

The Extension Service offers energy publications and videotapes on a variety of topics to make your home or business more energy efficient, training for builders, building operators and energy professionals, and information on the best energy saving products available. Five area offices provide services to meet local needs.

Washington Energy Facility Site Evaluation Council
Washington State Energy Office – PO Box 43165
Olympia, WA 98504-3165
(206) 956-2007, fax (206) 956-2217

This agency has resource siting authority in Washington.

Washington State Energy Office (WSEO)
925 Plum St SE, Town Sq – Bldg 4
Olympia, WA 98504-3165
(206) 956-2000, fax (206) 956-2217

WSEO is Washington's principal energy planning agency.

Washington State Energy Office – Energy Library
925 Plum St, Town Sq – Bldg 4
Olympia, WA 98501-3169
(206) 956-2000, fax (206) 956-2217

Washington State Energy Office – Energy Extension Service (EES)
914 E Jefferson, Room 300
Seattle, WA 98122-5399
(800) 962-9731 or (206) 296-5640, fax (206) 296-5631

EES
1212 N Washington St, Room 106
Spokane, WA 99201-2401
(509) 456-6150

EES is a division of WSEO that provides educational services for consumers throughout Washington.

▲ Public Utility Commissions

Public utility commissions in each state are responsible for ensuring that privately owned utilities provide adequate service at fair and reasonable rates.

Idaho Public Utilities Commission
472 West Washington
Boise, ID 83720-6000
(208) 334-0300, fax (208) 334-3762

Montana Department of Public Service Commission Utility Division
1701 Prospect Avenue
Helena, MT 59620
(406) 444-6180, fax (406) 444-7618

Oregon Public Utility Commission (OPUC)
550 Capitol St NE
Salem, OR 97310-1380
(503) 378-5849, fax (503) 373-7752

Washington Utilities and Transportation Commission (WUTC)
Chandler Plaza Building, FY-11
1300 South Evergreen Park Dr SW
Box 47250
Olympia, WA 98504-7250
(206) 753-6423, fax (206) 586-1150

▲ Local Government Associations

Local government associations are organized to represent cities and counties and to provide technical assistance to them on the operations of a local government. Energy staff may be available to provide private citizens with short term assistance, or longer term assistance for a city or county project. In addition, associations can help provide background information on many topics, help locate the right person to talk to about specific issues and find examples of other local government programs.

Association of Idaho Cities
3314 Grace St
Boise, ID 83703
(208) 344-8594, fax (208) 344-8677

Association of Oregon Counties
PO Box 12729
Salem, OR 97309-0729
(503) 585-8351

Association of Washington Cities
1076 Franklin St NE
Olympia, WA 98501-1346
(206) 753-4137, fax (206) 753-4896

Idaho Association of Counties
PO Box 1623
Boise, ID 83701
(208) 345-9126, fax (208) 345-0379

League of Oregon Cities
PO Box 928
Salem, OR 97308
(503) 588-6550, fax (503) 378-5859

Montana Association of Counties
2711 Airport Rd
Helena, MT 59601
(406) 442-5209, fax (406)442-5238

Montana League of Cities and Towns
PO Box 1704
Helena, MT 59624
(406) 442-8768, fax (406) 442-9231

Montana Local Government Energy Office
101 E Broadway, Suite 513
Missoula, MT 59802
(406) 721-7294, fax (406) 543-1281

A local government service agency representing the Montana Association of Counties and Montana League of Cities and Towns. The agency provides energy conservation technical assistance and energy management services to local governments in Montana.

Washington State Association of Counties
206 Tenth Ave SE
Olympia, WA 98501
(206) 753-1886, fax (206) 753-2842

▲ Research Institutions and Information Services

American Council for an Energy-Efficient Economy (ACEEE)
2140 Shattuck Ave, Suite 202
Berkeley, CA 94704
(510) 549-9914, fax (510) 549-9984

ACEEE – DC Office
1001 Connecticut Ave NW, Suite 801
Washington, DC 20036
(202) 429-8873, fax (202) 429-2248

ACEEE gathers, evaluates and distributes information to stimulate greater energy efficiency. Conducts studies, publishes books and reports, provides expert testimony and organizes conferences to facilitate information exchange between individuals developing new techniques in energy efficiency and those who can put new ideas to work. For publications and conference information, call the California office. Call ACEEE in Washington, DC for technical, research, lobbying or legal information.

Conservation and Renewable Energy Inquiry and Referral Service (CAREIRS)
PO Box 3048
Merrifield, VA 22116
(800) 523-2929

As one of the U.S. Department of Energy's information sources, CAREIRS provides fact sheets and bibliographies on the full spectrum of energy efficiency and renewable energy technologies. It also maintains a referral network of hundreds of public and private organizations to respond to requests that are regional- or state-specific, or highly technical in nature. Typical CAREIRS users include homeowners, public officials, civic organizations, small businesses, students, educators, and libraries.

Electric Ideas Clearinghouse
Washington State Energy Office
925 Plum St SE, Bldg 4
PO Box 43171
Olympia, WA 98504-3171
(800) 872-3568, fax (800) 872-3882
Elect. Bulletin Board (800) 762-3319

The Electric Ideas Clearinghouse is a source for commercial and industrial energy-efficiency information. It offers technical assistance, product information, training opportunities, and written materials for architects, engineers, designers, utilities and the general public.

Electric Power Research Institute (EPRI)
3412 Hillview Avenue
PO Box 10412
Palo Alto, CA 94303-2954
(415) 855-2000, fax (415) 855-2929

EPRI was organized by the nation's utility industry to manage and coordinate research activities. Research areas focus on enhancing the value of electricity, investigating emerging health and environmental issues, expanding future energy system options, and improving the productivity of utility resources. EPRI has research documents available.

Institute for Local Self-Reliance
2425 18th St NW
Washington, DC 20009
(202) 232-4108

The Institute is a private, nonprofit research and technical assistance organization that helps cities become more energy self-reliant and provides technical assistance to community groups developing community energy audit programs.

Lawrence Berkeley Laboratory (LBL) Public Information Department
Building 50C
1 Cyclotron Rd
Berkeley, CA 94720
(510) 486-5771, fax (510) 486-6641

LBL is a national research laboratory managed by the University of California for the U.S. Dept. of Energy. LBL performs leading reseach in the energy sciences, general sciences and life sciences, and operates national experimental facilities. Many research publications are available.

National Energy Information Center (NEIC)
Forrestal Bldg., 1F-048
1000 Independence Ave SW
Washington, DC 20585
(202) 586-8800, TDD (202) 586-1181

NEIC is a branch of the Energy Information Administration, US Department of Energy. The NEIC makes available information on energy sources, reserves, production, consumption, distribution, imports, exports and related economic and statistical information, both historical and forecasted. The Center provides information on DOE programs, fact sheets and publications for nontechnical readers, information about EIA and its programs, data analysis from EIA publications and referral services for other sources of energy information.

National Appropriate Technology Assistance Service (NATAS)
PO Box 2525
Butte, MT 59702
(800) 428-2525

NATAS provides specific information and technical assistance to help implement projects that use energy efficiency and renewable energy technologies, including energy-efficient building technologies, weatherization techniques, solar heating and cooling, wind, biomass, alternative fuels, recycling, small-scale hydro and photovoltaics. NATAS helps homeowners, builders, small businesses and others compare and select heating and cooling systems, as well as other energy-efficient equipment, troubleshoot systems or components, and assess recent developments in technologies.

National Renewable Energy Laboratories (NREL) Technical Inquiry Service
1617 Cole Blvd.
Golden, CO 80401
(303) 231-1365, fax (303) 231-1448

NREL produces technical publications and articles, "awareness" publications, and videos and exhibits on energy efficiency and renewable energy. NREL also provides information on the status of research on particular renewable resources.

Oak Ridge National Laboratories, US Dept of Energy (ORNL) Public Affairs
PO Box 2008
Oak Ridge, TN 37831-6266
(615) 574-4160, fax (615) 574-0595

A research division of the U.S. Department of Energy. Laboratory activities are focused on basic and applied research, on technology development and on other technological challenges that are important to the Department of Energy and to the nation. Research is conducted in the following areas: energy production and conservation technologies, physical and life sciences, environmental protection and waste management, science and technology transfer and education.

Renew America
1400 16th St NW, Suite 710
Washington, DC 20036
(202) 232-2252, fax (202) 232-2617

Renew America is a non-profit, tax-exempt clearinghouse for environmental solutions. By seeking out and promoting successful programs, RA offers positive, constructive models to help communities meet environmental challenges.

Rocky Mountain Institute (RMI)
1739 Snowmass Creek Rd
Snowmass, CO 81654
(303) 927-3851, fax (303) 927-4178

RMI is a non-profit research and educational foundation. Its goal is to foster the efficient and sustainable use of resources as a path to global security. RMI has research and information exchange programs on water, agriculture, energy, economic renewal, and global security. The energy outreach program handles questions on everything from utility conservation programs and policies to the latest efficient technologies for homeowners. The economic renewal program provides support to communities starting energy efficiency plans. RMI is also conducting two experimental projects in green development and transportation to encourage sustainable growth in local communities.

Safe Energy Communication Council (SECC)
1717 Massachusetts Avenue NW,
Suite 805
Washington, DC 20036
(202) 483-8491, fax (202) 234-9194

SECC is a national environmental coalition dedicated to promoting energy efficiency and renewable resources. SECC has established energy information programs, publications, media workshops, strategy consultation, and technical assistance for grassroots and national organizations.

Tellus Institute
11 Arlington St
Boston, MA 02116-3411
(617) 266-5400, fax (617) 266-8303

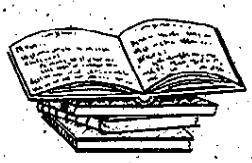
Tellus Institute is a team of scientists, planners and policy analysts organized into a non-profit research and consulting organization. The Institute conducts policy and scientific research on specific problems and issues in order to design rational, equitable resource and environmental strategies for the public good. The Energy Systems Research Group (ESRG) focuses on energy supply and planning, energy conservation and least-cost planning, utility rate design, and other energy-related topics.

World Resources Institute (WRI)
1709 New York Avenue NW, Ste 700
Washington, DC 20006
(202) 638-6300, fax (202) 638-0036

WRI is a research and policy institute helping governments, the private sector, environmental and development organizations, and others address a fundamental question: How can societies meet human needs and nurture economic growth without destroying the natural resources and environmental integrity that make prosperity possible? Through its policy studies, WRI aims to generate accurate information about global resources and environmental conditions, analyze emerging issues and develop creative yet workable policy responses. WRI publishes a variety of reports and papers; undertakes briefings, seminars and conferences; and offers material for use in the press and on the air.

Worldwatch Institute
1776 Massachusetts Avenue NW
Washington, DC 20036
(202) 452-1999

Worldwatch is an independent, non-profit research organization created to analyze and to focus attention on global problems. Worldwatch publishes a yearly State of the World and issues papers for a worldwide audience of decision makers, scholars and the general public.



▲ Demonstration Facilities

Lighting Design Lab
400 East Pine St, Suite 100
Seattle, WA 98122
(206) 325-9711, fax (206) 329-9532

The Lighting Design Lab was created to help architects, engineers, businesses and interested individuals discover the energy-efficient possibilities of light. Staff members work one-on-one with clients to develop lighting strategies suited to their specific projects. The hands-on facility, a region-wide calendar of events and numerous educational services help make the lab the primary source for lighting information in the region. Services and facilities are free to lighting professionals.

Portland General Electric Energy Resource Center
7895 SW Mohawk St
Tualatin, OR 97062
(503) 691-3913, fax (503) 691-3999

The ERC provides published information, state-of-the-art equipment, training classes, educational seminars, and staff specialists in Commercial Food Service Facilities Design, HVAC, Industrial Processes, Lighting and Electrical Applications. ERC facilitates technology transfer to architects and design engineers, building owners and managers, and industrial plant managers and engineers.

▲ Utility and Industry Groups

American Solar Energy Society (ASES)
2400 Central Avenue, G-1
Boulder, CO 80301
(303) 443-3130, fax (303) 443-3212

American Wind Energy Association (AWEA)
777 North Capitol St NE, Ste 805
Washington, DC 20002
(202) 408-8988, fax (202) 408-8536

Conservation and Renewable Energy Systems (CARES)
6918 NE 4th Plain Blvd, Suite B
Vancouver, WA 98661
(206) 750-7710, fax (206) 750-7705

CARES is a joint operating agency of eight Washington Public Utility Districts. It develops and finances energy conservation and renewable resources for its utility members.

Geothermal Resources Council
2001 Second St, Suite 5
Davis, CA 95616
(916) 758-2360, fax (916) 758-2839

Geothermal Education Office
664 Hilary Dr
Tiburon, CA 94920
(800) 866-4GEO

Pacific Northwest Utilities Conference Committee (PNUCC)
101 SW Main St
One Main Place, Suite 810
Portland, OR 97204-3216
(503) 223-9343, fax (503) 294-1250

PNUCC represents the three major customer groups of Bonneville: public utilities, investor-owned utilities, and direct service industries. PNUCC provides a forum where its diverse membership can share information and views and work toward consensus. Policy development and technical analysis is provided by staff, with support from member advisory committees. It also publishes an annual regional electric load forecast.

Public Power Council
500 NE Multnomah, Suite 729
Portland, OR 97232
(503) 232-2427 or (206) 694-8593, fax (503) 239-5959

PPC represents and advocates the common legal and technical interests of the Northwest's public utilities. PPC interacts with BPA, NPPC and other regional and national groups on subjects including BPA rate proceedings and power marketing policies, public preference issues, power supply planning, conservation, legislative concerns ,and related issues. ▲

Further Reading

Here are additional sources for information on energy topics discussed in this handbook. The list is correlated to the handbook sections, so you can go directly to the information you want to follow-up on. Telephone numbers of organizations listed are provided whenever possible. For more resources, contact your state energy office, research institutions and information services, and other groups in **Contacts** (page 62).

Why Energy Matters

Alliance to Save Energy, American Council for an Energy-Efficient Economy, Natural Resources Defense Council and the Union of Concerned Scientists (1991), *America's Energy Choices: Investing in a Strong Economy and Clean Environment*. UCS, Cambridge, MA. (617-547-5552)

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Resources of Choice

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Weinberg, Carl J. and Williams, Robert H. (1990), "Energy from the Sun." Scientific American, Vol. 263, No. 3, September 1990.

Plugging People Into Power

Renew America (1992), *Environmental Success Index 1992*. Renew America. (202-232-2252).

Oregon Department of Energy (1992), "Energy Conservation Doesn't Just Happen: A Workbook on the Cannon Beach Energy-Conservation Project." ODOE. (503-378-4040)

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Glossary

active solar energy system

A solar heating and cooling system that relies on an external power source to circulate a working fluid which distributes heat and cool air within a building.

alternating current (AC)

An electric current in which the electrons flow in alternate directions. In North American energy grids, this reversal of flow is governed at 60 cycles per second (Hertz).

anadromous

A term describing fish that hatch in freshwater, migrate to the ocean where they mature, and then return to freshwater to spawn. Salmon and steelhead trout are anadromous fish.

average cost pricing

A method of pricing electricity which melds the expensive and relatively cheaper resources on a system into a flat rate per kWh. (See **inverted rate**).

average megawatt (MWa)

Equivalent to one megawatt of capacity produced continuously over a period of one year. (1 megawatt x 8,760 hours in one year = 8,760 megawatt-hours or 8,760,000 kilowatt-hours.) An average megawatt may also be referred to as a megawatt equivalent (MWe).

avoided cost

The cost of power from the next power plant a utility would have to build to meet growing demand. This cost would be "avoided" if a less expensive conservation or generating option were substituted for the incremental power plant.

base load resources

Base load electricity generating resources are operated around the clock except for maintenance and unscheduled outages.

biomass

A source of solar energy chemically stored in plants and other organic matter as a result of photosynthesis. Biomass energy sources include terrestrial and marine plants and agricultural, forestry and municipal wastes. Biomass can be burned directly or converted into fuels such as ethanol, methanol, or methane.

bridge fuel

An interim energy source for use during the transition to more sustainable resources. Natural gas is often referred to as a "bridge fuel" for the transition from fossil fuels to renewable resources.

British thermal unit (Btu)

The amount of heat necessary to raise the temperature of one pound of water one degree Fahrenheit (3,413 Btus equals one kilowatt-hour). One Btu is also the amount of heat given off by a single match. The U.S. annual consumption of energy from all sources is about 85 quadrillion (85 x 1015) Btus. (See **quad**).

capacity

The maximum power that a machine or system can produce or carry safely. The capacity of generating equipment is generally expressed in kilowatts or megawatts, and refers to the power it could produce in a single instant. In terms of transmission lines, capacity refers to the maximum load a line is capable of carrying safely. Related terms: Peak capability, peak generation, firm peak load, and carrying capability.

carbon tax

A tax applied to a fuels based on their carbon content. This kind of tax is designed to reflect the environmental impact of the greenhouse gases produced when such fuels are burned.

cogeneration

The simultaneous production of electricity and useful thermal energy. Cogeneration can be accomplished by using waste heat from industrial processes to power an electricity generator. Conversely, waste heat from an electric generating plant can be used for industrial processes, space or water heating applications. (See **thermally-matched cogeneration**).

conservation

Efficiency of energy use, production, transmission, or distribution that yields a decrease in energy consumption while providing the same, or higher, levels of service.

conservation transfers

The exchange of conserved energy from one utility service territory to another. Conservation transfers allow a utility that needs new energy supplies to invest in conservation in an area served by another utility, and use the power "freed up" to serve its own needs.

conventional resources

Non-renewable energy resources that utilities have traditionally relied upon, primarily fossil and nuclear plants.

cost-effective

A term used to describe a resource or combination of resources which cost no more than the power plant that a utility would otherwise have to build to serve growing loads. (See **avoided cost**).

cost of service

The cost of providing electrical service for a particular group of customers — residential, commercial, industrial, or irrigation.

critical water

The "worst case" water scenario based on historical drought conditions. Given such conditions, the hydropower system will generate about 12,500 MWa — this is also referred to as "firm" hydro output. In an average year, the Northwest hydropower system will produce about 16,600 MWa, and in a very wet year it will produce about 20,000 MWa.

customer charge

A flat fee utility customers pay no matter how much they consume.

customer class

Utility customers are identified with a group or class that has several characteristics in common. Examples of typical customers classes include: residential, irrigation, commercial, and industrial.

declining block rate

Electricity rates that decrease in price per unit as more energy is consumed. For example, an electricity consumer pays 3 cents per kilowatt hour for the first 500 kilowatt hours used, then 2.5 cents for the second 1500 kilowatt hours used. It is typically accompanied by a high customer charge.

decoupling

A regulatory design that breaks the link between utility revenues and energy sales. This design more closely aligns utilities' financial interests with broader societal goals of a clean environment and an efficient economy. Financial incentives can be incorporated into decoupling to encourage utility investment in conservation.

demand charge

The fee that utility customers pay based on the maximum amount of energy they use at any one moment in time.

demand-side management (DSM)

A utility strategy for changing the demand for electricity or natural gas, while still meeting customer needs, through programs that encourage customers to use energy more efficiently. In some cases, DSM programs encourage consumers to reduce their energy needs during peak hours — times when demand for electricity or gas is highest.

direct application renewable resource

Technologies that use renewable energy sources to perform a task without converting the energy into electricity. These resources and their functions may include wood for space heat, solar for space heat and drying, geothermal space and water heating, and wind machines used for mechanical drive (such as pumping).

direct current (DC)

An electrical current in which the electrons flow continuously in one direction. Direct current is used in specialized applications in commercial electrical generation, transmission and distribution systems.

distribution

The transfer of electricity from the transmission network to the consumer. Distribution systems generally include the equipment to transfer power from the substation to the consumer's meter.

downwinders

This term refers to people who have lived in the vicinity of federal nuclear installations, and have been affected by radioactive releases from bomb production and weapons testing. "Downwinders" is commonly used to refer to people who are adversely affected by pollution sources located near them.

efficiency

The ratio of the amount of useful energy output to the energy input for a given device.

electromagnetic fields (EMF)

Fields of force caused by electric voltage and current that surround all electrical equipment, including household appliances and power lines. Electric fields are present in electrical appliances whenever they are plugged in. Magnetic fields exists only when current is flowing — when appliances are plugged in and turned on. Both kinds of fields decrease with distance. Growing concerns about the potential health effects of EMF associated with alternating current have prompted scientific studies around the world.

energy

That which does, or is capable of doing work, such as lighting a room or running a motor. Energy is measured in terms of the work it is capable of doing. Electrical energy is commonly measured in kilowatt-hours, or average megawatts.

energy charge

A fee utility customers pay that is based on the amount of energy — therms or kilowatt hours — that they use over time.

energy-intensity

A measure of the amount of energy used to produce a given unit of output relative to other producers. For example, the U.S. economy uses about 60% more energy per unit of Gross National Product (GNP) as Japan. Thus, our economy is more energy intensive than Japan's.

environmental impact statement (EIS)

A study outlining the environmental costs and benefits of developments that are likely to have "significant" environmental effects. The study must identify and defend a " preferred alternative" and involve affected communities in the decision-making process. Environmental Impact Statements are required by federal and state laws prior to developing major energy or other types of projects.

externalities

Any costs or benefits not accounted for in the price of goods or services. Specifically, the term given to the effects of pollution and other environmental impacts from power plants or conservation measures. Equivalent terms: environmental externalities and environmental costs.

firm energy

That portion of a customer's energy load for which service is assured by the utility provider.

fishways

Passage structures, such as screens or ladders, that allow fish to pass through a hydroelectric facility bypassing turbines and other harmful components.

fixed cost

Costs of generation projects that must be paid regardless of the amount of energy produced. Such costs normally include capital costs, interest, insurance and taxes.

flat rate

Electricity rates which charge the same price per unit for all energy consumed.

fuel cell

An electricity generating device that relies on a chemical reaction to produce current, in a similar fashion as conventional batteries. For example, in a "phosphoric acid" fuel cell, natural gas can be electrolytically reacted with air to produce both electricity and heat. For transportation, a catalyst is used to separate hydrogen into hydrogen ions and electric current. The leftover ions react with oxygen to produce water as a by-product.

fuel switching

A change in the energy source for a given application. Fuel switching often describes the replacement of electric space and water heat with natural gas.

generation

The act or process of producing electricity from other forms of energy.

generating resources

Resources that provide electricity by converting one form of energy to another, as opposed to non-generating resources, such as conservation and passive renewable measures.

geothermal

Useful energy derived from the natural heat of the earth as manifested in hot rocks, hot water, hot brines or steam.

gigawatt-hour (GWh)

A unit of electrical energy equal to 1,000 megawatt-hours. 9 GWh equals approximately one average megawatt (MWa).

greenhouse gas

Any number of gases that trap heat in the atmosphere. Examples include carbon dioxide, methane, and chlorofluorocarbons.

head

The elevation difference between the body of water above the dam or diversion structure and the tailwater of a hydroelectric power plant.

hydroelectric power

The generation of electricity using falling water to turn turbines.

intervenor

An individual, group, or institution officially involved in a rate case. Intervenors have the right to be represented by attorneys, to cross-examine witnesses and to present witnesses and testimony on their own. Intervenors receive all official mailings connected with the case.

inverted rate

Electricity rates that increase in price per unit as more energy is consumed. For example, an electricity customer pays 2 cents per kilowatt-hour for the first 500 kilowatt-hours used, and 5 cents per kilowatt-hour for the next 1000 kilowatt-hours used.

kilowatt (kW)

The electrical unit of power that equal 1,000 watts. One kW will light ten 100-watt bulbs for an instant.

kilowatt-hour (kWh)

A basic unit of electrical energy that equals one kW of power applied for one hour.

least-cost planning (LCP)

Least-cost planning, or "integrated resource planning," is a name given to the power planning framework that recognizes load uncertainty, embodies an emphasis on risk management and reviews all available and reliable resources to meet future loads. The term "least cost" takes into consideration all costs of a resource, including capital, labor, fuel, maintenance, decommissioning, known environmental impacts, and difficult-to-quantify effects of selecting one resource over another. This process seeks to minimize total consumer costs.

levelized life-cycle costs

The present value of a resource's cost (including capital, financing and operating costs) converted to a stream of equal annual payments. This stream of payments can be converted to a unit cost of energy by dividing them by the number of kilowatt-hours produced or saved by the resource in associated years. By levelizing costs, resources with different lifetimes and generating capabilities can be compared to one another.

load

The amount of electric power required at a given point on a system, or the aggregate requirements of the system.

load management

A strategy that attempts to reduce the amount of power required during the periods of highest demand. Such strategies may be components of utility demand side management programs.

marginal cost

The cost of producing the last unit of energy required (the incremental cost of production).

megawatt (MW)

The electrical unit of power that equals one million watts or one thousand kW. A large coal plant is typically about 1,000 megawatts.

municipal solid waste (MSW)

Refuse offering the potential for energy recovery. Technically, residential, commercial, and institutional discards.

negawatts

A newly coined term that refers to saved energy that would otherwise have to be generated at a power plant.

nominal dollars

Dollars that include the effects of inflation. These are dollars that, at the time they are spent, have no adjustments made for the amount of inflation that has affected their value over time. (See **real dollars**).

nonfirm energy

Energy produced by the hydropower system that is available when water conditions are better than critical and after reservoir refill is assured. It is available in varying amounts depending upon season and weather conditions.

non-renewable resources

Sources of energy that are based on finite fuels, such as coal, gas, oil, and nuclear.

Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Regional Act)

Federal legislation joining the four Northwest states in regional energy planning and the protection and enhancement of fish and wildlife as they relate to the Bonneville Power Administration's system operations.

passive solar energy system

A solar heating and cooling system consisting of an energy-efficient building designed to utilize natural energy flows to transfer heat inside and outside the building, as needed, without relying on the forced circulation of a heating or cooling fluid.

peak capacity

The maximum capacity of a system to meet peak demand.

peak demand

The highest demand for power on a system. In the Northwest, this occurs on the coldest day of the year.

photovoltaic

A semiconductor that converts sunlight directly into electrical energy.

Public Utility Regulatory Policy Act of 1978 (PURPA)

Federal legislation that requires utilities to purchase electricity from qualified independent power producers at a price that reflects what the utilities would have to pay for the construction of new generating resources. PURPA was designed to encourage the development of small-scale cogeneration and renewable resources, and bring competition to the utility industry.

public involvement processes

Public forums required by law to involve the public in energy policies and issues. Held by energy decision makers such as NPPC, BPA, and most electric and gas utilities, these processes may involve one or more meeting(s), public hearings, and written comment periods to gather citizen input on a particular issue.

quad

Abbreviation for an amount equaling 1 x 10^{15} units. A quad is often used to measure British thermal units, for example, one quadrillion Btus equals 172 million barrels of oil energy equivalent.

real dollars

Dollars that are adjusted to net out the effects of inflation. They represent constant purchasing power. (See **nominal dollars**).

regional exchanges

The transfer of power among geographical areas. Utilities can sometimes avoid construction of new power facilities by exchanging power with other regions.

renewable resources

Inexhaustible energy sources that are supplied on a continuous or periodically sustained basis. These sources include solar energy in its direct and indirect forms including wind, hydroelectric power, biomass, ocean thermal gradients, waves, ocean currents, tidal power, and some geothermal energy.

revenue requirement

The amount of revenue a utility must take in to cover the sum of its estimated operation and maintenance expenses, debt-service, and taxes. During the rate-setting process, the calculation of revenue requirements is compared to revenue produced by current rates to determine whether a rate increase is needed, and if so, to determine the overall size of the increase.

siting and licensing

The process of preparing a power plant and associated services, such as transmission lines, for construction and operation. Steps include locating a site, developing the design, conducting a feasibility study, preparing an EIS, meeting applicable regulatory requirements and obtaining the necessary licenses and permits for construction of the facilities.

solar access ordinance

A municipal law that protects access to the sun's rays by, for instance, restricting the location of shade trees or requiring that subdivisions be laid out so as to maximize the usefulness of solar energy.

supply-side resources

Fuels and technologies used to generate electricity.

system cost

All direct costs of a measure or resource over its effective life.

tariff

A listing of the rates charged by a utility, or of specific conservation programs to be paid for through rates.

therm

Equivalent to 100,000 **Btus**. (See **British thermal unit**).

thermally-matched cogeneration

Cogeneration is the simultaneous production of electricity and heat or steam from industrial processes. Cogeneration is most efficient when it is thermally-matched — when the electricity production is sized in proportion to the heat production.

thermal resource

A facility that produces electricity by using a heat engine to power an electric generator. The heat may be supplied by burning coal, oil, natural gas, biomass, or other fuel, by nuclear fission, or by solar or geothermal resources.

transmission

The act or process of long-distance transport of electrical energy, generally accomplished by elevating the electric current to high voltages.

watt

The electrical unit used to measure power, the rate of doing work.

wind farm

A collection of wind turbines in a designated area, all interconnected to a single transmission source.

Acronyms

ACEEE American Council for an Energy Efficient Economy

AERO Alternative Energy Resources Organization

ASES American Solar Energy Society

AWEA American Wind Energy Association

BC British Columbia

BPA Bonneville Power Administration (U.S. DOE)

Btu British Thermal Unit

CAA Community Action Agency

CAP Community Action Program

CAREIRS Conservation and Renewable Energy Inquiry and Referral Service

CCC Citizen's Conservation Committee (Seattle City Light)

CEERT Coalition for Energy Efficiency and Renewable Technologies

COOP Cooperative (utility)

CO_2 Carbon Dioxide

CRITFC Columbia River Inter-Tribal Fish Commission

CUB Citizens Utility Board

DCD Department of Community Development

DNRC Department of Natural Resources and Conservation (MT)

DOE Department of Energy

DSI Direct Service Industry

DSM Demand-Side Management

ECC Energy Conservation Coalition

EES Energy Extension Service (Washington State Energy Office)

EIS Environmental Impact Statement

EMF Electro-Magnetic Fields

EOC Energy Outreach Center

EPRI Electric Power Research Institute

FELCC Firm Energy Load Carrying Capability

FERC Federal Energy Regulatory Commission (U.S. DOE)

FERN Fair Electric Rates Now

FOE Friends of the Earth

FUSE Fair Use of Snohomish Energy

GAO General Accounting Office (federal)

GWh Gigawatt hour

GNP Gross National Product

HTPP Hydro Thermal Power Program

HVAC Heating Ventilation Air Conditioning

ICN Idaho Citizen's Network

IDWR Idaho Department of Water Resources

IOU Investor-Owned Utility

IPP Independent Power Producer

IRP Integrated Resource Planning

IRU Idaho Rivers United

kW Kilowatt(s)

kWh Kilowatt-hour

LBL Lawrence Berkeley Laboratory

LCP Least-Cost Planning

LDC Local Distribution Company

LIRA Low Income Rate Assistance Program

LWFR Land and Water Fund of the Rockies

LWV League of Women Voters

MAP Model Action Plan

MEIC Montana Environmental Information Center

MMBtu Million British Thermal Units

MPC Montana Power Company

MSW Municipal Solid Waste

MW Megawatt(s)

MWa Average Megawatt(s)

NATAS National Appropriate Technology Assistance Service

NCAC Northwest Conservation Act Coalition

NEIC National Energy Information Center

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NPPC Northwest Power Planning Council

NREL National Renewable Energy Laboratories

NPRC Northern Plains Resource Council

NRDC Natural Resources Defense Council

Abbreviations

$B Billions of dollars

WWII World War Two

WWP Washington Water Power (utility)

Bonneville Bonneville Power Administration

Coalition Northwest Conservation Act Coaltion

Cogen. Cogeneration

Corps U.S. Army Corps of Engineers

Council Northwest Power Planning Council

MAP Campaign "MAP to the Region's Energy Future" Campaign (NCAC, 1991)

Model Plan Model Electric Power and Conservation Plan (NCAC, 1982)

Regional Act Northwest Electric Power Planning and Conservation Act (U.S. Congress, 1980)

Regional Plan Northwest Conservation and Electric Power Plans

NRIC Northwest Resource Information Center

NWIFC Northwest Indian Fisheries Commission

NWRC Northwest Rivers Council

ODFW Oregon Department of Fish and Wildlife

OEC Oregon Environmental Council

ONRC Oregon Natural Resources Council

OPUC Oregon Public Utility Commission

ORC Oregon Rivers Council (now Pacific Rivers Council)

ORNL Oak Ridge National Laboratories (U.S. DOE)

PECI Portland Energy Conservation, Inc.

PIP Programs In Perspective (Bonneville Power Administration)

PNUCC Pacific Northwest Utilities Conference Committee

PNW Pacific Northwest

PPC Public Power Council

PSA Public Service Announcement

PSC Public Service Commission

PUC Public Utility Commission

PUD Public Utility District (People's Utility District in Oregon)

PURPA Public Utilities Regulatory Policy Act

PV Photovoltaic (solar cell)

PVUSA Photovoltaics for Utility Scale Application

ODOE Oregon Department Of Energy

RAG Resource Advisory Group (Seattle City Light)

R&D Research and Development

RD&D Research, Development and Demonstration

RFP Request For Proposal

RMI Rocky Mountain Institute

SCLDF Sierra Club Legal Defense Fund

SEA of O Solar Energy Association of Oregon

SECC Safe Energy Communication Council

SEPA State Environmental Policy Act

SIC Solar Information Center

SNAP Spokane Neighborhood Action Program

SO_2 Sulfur Dioxide

SOS Save Our *Wild* Salmon

T&D Transmission and Distribution

UCS Union of Concerned Scientists

U.S. DOE United States Department of Energy

WEC Washington Environmental Council

WPPSS Washington Public Power Supply System

WRI World Resources Institute

WSEO Washington State Energy Office

WUTC Washington Utilities and Transportation Commission