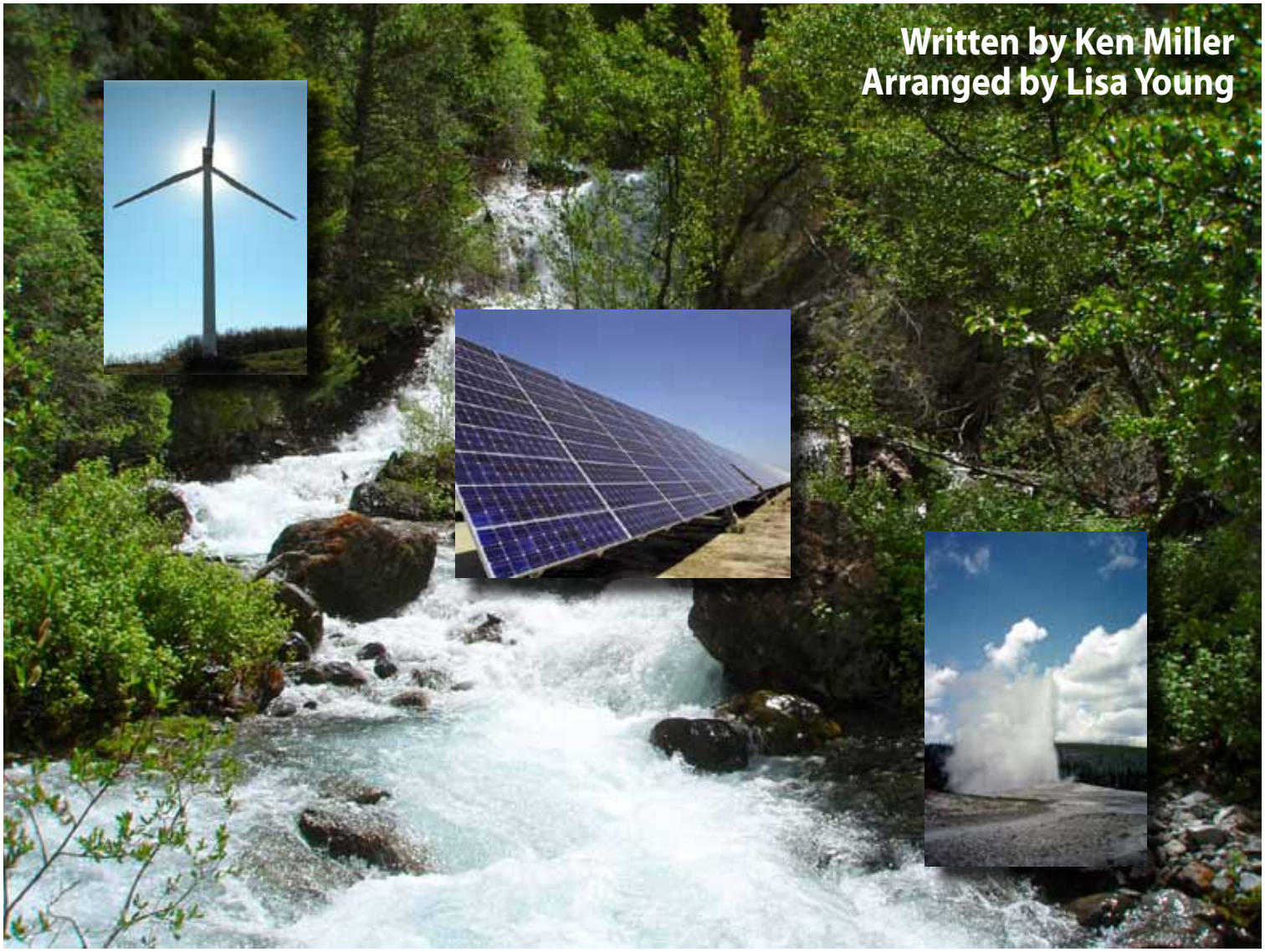
An Activist's Guide to a Sustainable Energy Future

The People's Energy Project:
A Cleaner, Safer, Faster, Cheaper
Energy Future for Idaho & Beyond

The Snake River Alliance, 2011

IDAHO'S CLEAN ENERGY FUTURE



Written by Ken Miller
Arranged by Lisa Young

The Snake River Alliance is pleased to present ***Idaho's Clean Energy Future – An Activist's Guide to a Sustainable Energy Future***.

It is our hope that this Guide will help to demystify energy issues and policies as Idaho moves toward a more sustainable energy future. Our goal is to help empower Idahoans to participate in decisions and planning as our utilities and state agencies determine how we will meet our future electricity needs. This Guide examines key issues confronting electric consumers, our utilities, our utility regulators, our Legislature and our state Administration as we work collectively to wean Idaho off of dirty 20th Century energy resources and adopt clean and affordable energy generation and energy efficiency to adapt to the new world of carbon-free electricity resources.

Idahoans have spoken loud and clear in demanding a more sustainable electricity portfolio from our utilities. This Guide will help us penetrate the bewildering world of energy planning and regulation. Most important, it will equip us with the tools needed to have our voices heard by those charged with deciding whether we receive "green" or "brown" electricity. As with the 2007 Idaho Energy Plan, we intend this Guide to be a living document, evolving along with inevitable changes in energy technologies, environmental imperatives, and of course the increasing will of all Idahoans to reshape our electricity resources in ways that are both sustainable and that deliver long-overdue investments in home-grown, Idaho-based energy solutions that are attainable today.

This Guide was made possible by the generous support of the Edwards Mother Earth Foundation, which has supported the Snake River Alliance's energy efficiency programs since 2008.

May 2011, *updated August 2011*

The Snake River Alliance

Boise, ID

Table of Contents

Introduction

Planning for Idaho's Clean Energy Future

We Idahoans take pride in our independent spirit, our unending creativity and resourcefulness, and perhaps most important our boundless determination that no challenge is bigger than our ability to find answers to some of our most vexing problems.

So it is with energy. Like our neighbors in the Pacific Northwest, and for that matter in most every other state in the country, Idaho faces big and often difficult challenges in meeting our future electric energy needs. We hear a lot these days about the need for Idaho to become what some like to call "energy independent." Truth is, when it comes to electricity to light our homes, to irrigate our farms, and to power the schools, hospitals, factories, and businesses in our towns, we'll never truly be "energy independent" as a state. Just like we'll never be "energy independent" in producing all the fuel we need to power our cars, trucks, tractors, school buses, and airplanes. Or in heating our homes and businesses with natural gas. That's because, other than hydropower, renewable energy, and energy efficiency and conservation, most of Idaho's energy resources are imported from other states. Nearly half our electricity comes from dirty coal-fired plants in Oregon, Nevada, Wyoming, and Utah. Most of our natural gas comes from Canada or from another state via huge pipelines. Gasoline and oil flow into Idaho from neighboring states or far beyond. Idaho has no oil resources, so as long as we use cars powered by gasoline, independence cannot happen. Idaho also has minimal amounts of natural gas, so our homes and businesses will rely on imports indefinitely.

Combining Idaho's reliance on electricity and natural gas imports, as well as our thirst for transportation fuels such as gasoline, diesel, and aviation fuel, all of which come from out of state, Idahoans spend about $3 billion on energy each year. Most of those energy dollars are shipped out of state, creating an even greater sense of urgency for Idaho to step up with energy efficiency and conservation, but also to develop renewable energy resources that can be tapped to meet our energy needs without harming the environment.

Meeting Our New Needs with Efficiency and Renewables

That's the beauty of electricity. Study after study, including the region's guiding four-state Power Plan by the Northwest Power and Conservation Council that we'll discuss later, chart a course for Idaho and our neighbors to meet our future electricity needs with renewable energy and by reducing our demand through energy efficiency and conservation. Think about that: It is not only possible but undeniably doable for Idaho to satisfy its growing electricity demand by using less electricity in ways we haven't yet dreamed of; and also by marshalling the natural resources under our feet in scalding geothermal formations, blowing by us in all that confounded wind, raining down on us from the biggest nuclear reactor ever some 90 million miles away, and even growing in our fields and forests.

Armed with this new 21st Century Energy Roadmap, at least for electricity, we can grow our own electricity right here in Idaho and for good measure go a step further and begin shutting down those coal plants that represent one of Idaho's biggest contributions to the changes that are steadily and provably changing the way our planet functions.

This guide is designed to explain how that can happen. More important, it will help explain how you can be a part of it. Not just by switching out 20th Century light bulbs and doing more of the things we're already doing, but by taking it to the very places where decisions must be made to propel Idaho into the changing energy world taking shape around it. Places like your utility's boardrooms or that most mysterious of state agencies, the Idaho Public Utilities Commission. As you'll see, it's not nearly as daunting as it might seem, and it's time for Idahoans to decide the kinds of energy we want and where it will come from.

The answers to our future electricity needs must come from Idaho's indomitable can-do ethic and home-grown solutions that are attainable and that will provide thousands of home-grown jobs and support our state and local economies.

Idaho can and must satisfy our growing energy needs in ways that are both sustainable and that do not continue to inflict harm to our natural environment and the health of our people. Despite what we hear from some utilities, from would-be developers of

speculative power plants, and from some who remain moored to traditional ways of looking at energy issues, we are ideally suited to meeting our energy needs in ways that are more environmentally benign – and also no more expensive than the old-style energy sources we've grown accustomed to over generations.

You may have heard these solutions be dismissed, even by some in our own utilities, as pie-in-the-sky feel-good solutions to a far more complex problem. That renewable energy can't be counted on when it counts. That these solutions will send energy bills higher. That the grid isn't ready for it. We'll help arm you with defensible rejoinders to these and many other excuses for not moving forward.

The Northwest Power Plan: A Good Roadmap

The Northwest Power and Conservation Council, which we mentioned above and which from now on we'll just call the Power Council, helps plan for the energy future for Idaho, Montana, Oregon and Washington and it has said as much. In its recent Six Power Plan for the Pacific Northwest , the Council projects our region can meet 85 percent of our new electricity needs over the coming 20 years through energy efficiency alone. Almost all of the rest of those needs will be met by wind and other renewable energy resources, the Council reports. But wait! There's more! Aggressive deployment of energy efficiency measures and renewables will also help the region embark on the systematic decommissioning of its coal fleets and even help replace the nominal amount of power that is currently being generated by four Lower Snake River hydropower dams that are partly responsible for endangering Idaho's beloved salmon populations.

The advantages of developing native energy resources are clear: Rather than ship billions of energy dollars out of state each year, we can keep those dollars at home. Local counties and school districts are already benefitting from taxes, royalty payments, increased business and employment from Idaho wind farms and geothermal power plants. Renewable energy projects can deliver huge economic benefits to cash-strapped rural economies. Energy efficiency and conservation initiatives will bring a wave of new "green collar" jobs as a workforce grows to retrofit homes and businesses with energy-saving measures. All it requires is a renewed sense of dedication among our state and local leaders to seize the moment and join our neighboring states in recognizing the value of developing a sustainable and affordable energy economy. The voyage is under way elsewhere as Idaho's neighbors race to embrace an evolving green economy that means dramatically reduced carbon dioxide emissions; achievable but aggressive efforts to meet energy conservation goals; transforming our markets by requiring efficient appliances, electronics, and other energy-consuming devices; and in general incentivizing smart energy policies and behaviors.

We are nothing if not realistic and pragmatic: Anyone who has lived in Idaho for any amount of time knows that changes like the ones needed in Idaho will not come swiftly. Idaho is not California, never will be, and shouldn't be. As Legislatures and governor's offices go, Boise is not Salem or Olympia or even Helena. Progressive energy policies are hard to enact in Idaho. Climate change science enjoys healthy skepticism in arenas of power here, so there can be less motivation to act. And, of course, Idahoans enjoy some of the lowest electric rates in the United States, so acting to reduce consumption is less compelling.

The 2007 Idaho Energy Plan: Efficiency First, then Renewables

It was nonetheless with a sense of urgency that the Idaho Legislature adopted the state's second Energy Plan in 2007. The Plan, which serves as Idaho's roadmap to a more sustainable energy future, says our electricity needs should be met first with energy efficiency and conservation. Then comes renewables. And then, only if necessary, traditional fossil fuel resources.

> *"This Energy Plan recommends increasing investments in energy conservation and in-state renewable resources. Conservation and in-state renewables offer a number of important benefits. Conservation lowers the energy bills of Idaho households and businesses and reduces the flow of dollars outside the state. Conservation and renewables diversify the state's resource base, reducing its dependence on imported fossil fuels and providing insurance against increasing fuel prices."*
>
> *From the Preamble of Idaho's 2007 Energy Plan*

The state's energy plan was the product of a year's worth of meetings by multiple legislative committees formed just for this purpose. It is packed with recommendations on everything from energy efficiency and conservation to renewable energy, natural gas, transportation fuels, and the siting of energy facilities. Many of the recommendations haven't been implemented, but some have in whole or in part. And here's where you come in: The Energy Plan is about to turn five years old, and it calls for the Legislature to revisit it to determine what recommendations are no longer valid and to identify new goals and ideas that the state should pursue. It will, or should be, an important undertaking that holds huge potential to update and improve on the 2007 version – or provide opportunities for mischief among those who want to water down the plan and back the state away from the plan's commitments to clean energy.

It is now clear that the days of polluting, carbon-emitting fossil fuel power plants are numbered. Proposed coal plants are being scrapped routinely across the country as utilities calculate the massive cost of paying for their pollution. Two plants in the Northwest, the Boardman plant in Oregon and the Centralia plant in Washington, are now targeted for early retirements because the people in those two states have demanded cleaner energy. This talk of decommissioning older coal plants comes as we prepare for federal direction in some form that will place a high cost on the climate-changing emissions from coal-fired power plants. But something must take the place of those last-century energy providers, and we in the Pacific Northwest now know that something is a combination of energy efficiency, conservation, and renewable energy.

This report helps to point us in the direction that Idahoans are demanding from their utilities, their elected officials, and from others whose job it is to provide Idahoans with forms of energy that are not only realistic, but that also will make Idaho part of the global clean energy solution. Thanks to the participation by scores of energy experts in Idaho and beyond, we believe this formula for a cleaner energy future for Idaho is practical, affordable, achievable, and above all in the best interest of Idahoans and our environment.

It's our intent that this document will continue to mature along with the promising new energy technologies and with Idahoans' commitment and dedication to clean energy. It's our hope that as more Idahoans become better acquainted with where our energy comes from, how it finds its way to our homes and businesses, and ultimately how it is used, we will all become stronger advocates for energy policies that will meet our future needs while also protecting our health and environment.

Most important, we want to introduce you to some of the tools Idahoans need to participate in the often-complex world of energy policy in Idaho. We'll demystify the befuddling world of how our utilities are regulated, where their power comes from, and how decisions are made on whether they serve you with "green" or "brown" energy.

As we become more comfortable in taking these issues to our utilities and to those who regulate them and to those who write and implement our energy laws, we will become a force for change from the business-as-usual energy world and join others in pursuing a more sustainable energy future.

Chapter 1

Idaho and Climate Change

Believe it or Not, Impacts are Real

Whether you believe Earth's climate is changing or whether you believe it isn't, or whether you believe it's changing but also believe humans are having no impact, the simple fact is that climate change will forever alter the way Idaho consumes energy and how much we all pay for it. The corollary to that simple fact is that the reality of climate change and the threat of its future impacts in Idaho and around the world is one of the core reasons we do what we do in demanding carbon-free energy resources.

It is not our purpose here to delve into all that, other than to acknowledge up front that the gap between those who believe climate change is occurring *and that we should take action to stop and reverse its impacts*, and those who believe melting glaciers and rising temperatures and sea levels is a natural phenomenon, is more pronounced in Idaho than most places. In short, a lot of people in Idaho are not convinced that climate change is taking place. And since many of those people occupy positions that in the near term at least will determine Idaho's role in whether to do anything about it, that presents clean energy advocates with a challenge - and an opportunity:

Whether Idaho policy-makers believe in climate change or the reasons behind it is becoming a non-issue. The fact is, the federal government will join our neighboring Pacific Northwest states in taking action to reduce our carbon emissions, and Idaho will be part of the solution whether it wants to or not. Carbon emissions will be constrained and a price will be placed on them, even in Idaho. Idaho is surrounded by states that have mandates requiring an increasing amount of carbon-free renewable energy, and as a result the days of our reliance on traditional coal generation are numbered. Idaho will have no choice but to participate in a cleaner energy economy that dramatically reduces its greenhouse gas emissions. Try as it might, Idaho cannot "opt out" of a carbon-reduction strategy forever: Its energy future is inextricably tied to policies in the Greater Pacific Northwest and across the nation that are being planned by decision-makers (including utilities) over which it has no control.

Sounds harsh, but those are the facts. Idaho has tip-toed around the climate change issue ever since it became an issue. Idaho has steadfastly avoided participating in any national or regional compact that commits the state to making actual greenhouse gas (GHG) emissions reductions. Still, on May 16, 2007, Gov. Butch Otter issued an Executive Order that said, in part:

> *WHEREAS, human activities contribute to creation of greenhouse gases; and*
>
> *WHEREAS, greenhouse gases are believed to trap heat in the atmosphere and have been linked by the U.S. National Academy of Sciences to drought, reduced snow pack, altered precipitation patterns, more severe forest and rangeland fires, and forest disease; and*
>
> *WHEREAS, the Western Governors' Association projects that rising levels of greenhouse gases in the atmosphere could have economic and environmental impacts on the West in coming decades and;*
>
> *WHEREAS, the causes and effects of rising greenhouse gases, to the degree they are understood, may extend to the Western United States and the State of Idaho, and it is incumbent upon states to take a leadership role in developing responsive state-level policies and programs to reduce greenhouse gas emissions, develop alternative energy sources and use energy efficiently…."*

So according to the governor, humans *are* contributing to the warming of our planet; climate change and associated global warming is in fact occurring and is affecting Idaho; and Idaho needs to join the Fight Climate Change Club.

That message has yet to translate into meaningful legislation, policy, or regulatory directives from the Idaho Legislature or, for that matter, anywhere else in state government.

And that is where you, the Clean Energy Advocate, can become more involved!

Our policy-makers have to understand that Idaho's economic vitality and its interconnectedness with the Pacific Northwest depends in large part on its participating with its neighbors in getting real about addressing this issue.

Gov. Otter, to his credit, enlisted Idaho in The National Climate Registry, which in effect commits Idaho to show up at meetings and join in efforts to identify where our GHG emissions are coming from and provide incentives to those producing those emissions to begin reducing them. Idaho's participation in the Climate Registry does not, however, commit it to actually doing anything to

reduce those emissions.

That would come from the Western Climate Initiative, to which Idaho belongs as an "observer," meaning it will not commit to the Initiative's GHG reduction strategies. The WCI, which includes most western states, is the body that is currently adopting actual GHG reduction targets. As you read this, Idaho's neighbors are planning on how to achieve meaningful reductions in emissions that are warming our planet. They are creating a currency of sorts that will determine how and what kind of energy is moved around the region (coal is out, gas isn't great, & renewables rule) and how the states will fit into the regional picture. Idaho doesn't need to hitch its wagon to the WCI's greenhouse gas reduction train, perhaps, but if it continues to sit on the tracks that train will eventually bump into our rear-ends and push us along whether we like it or not.

Climate Change in Idaho?

We hear about rising sea levels, but we're 500 miles from the ocean. We hear about melting glaciers, but Glacier National Park is 500 miles away, too. So does Idaho really have a dog in the climate change fight?

You might say that.

All of Idaho's natural resources industries, with the possible exception of mining, are at risk from a warming climate. Researchers from the University of Idaho, the University of Washington and elsewhere are documenting conditions in which snow elevations are rising, meaning parts of mountains that once received snow are now receiving rain. Where it does snow, snowmelt is happening sooner than ever, changing Idaho's "hydrograph" - or the nature of its snowmelt and water flow. All of this poses obvious challenges for agriculture, which relies on this water for irrigation, as well as recreation. Native plants and animals are already doing the Climate Shuffle, abandoning warming realms in which they existed for eons in search for conditions in which they can survive.

According to the U.S. Environmental Protection Agency, the last century has seen average temperatures near Boise rise 1 degree, which may seem like small potatoes but in the larger mechanics of climate operations is ominous. The EPA also reports that precipitation in some parts of the state have increased 20 percent, but in others has declined by more than 10 percent. The agency projects those trends will continue – and likely be amplified – as we race toward 2100.

Climate change isn't just about the Earth warming. It's about our planet undergoing profound climate changes that may mean cold where it wasn't so cold, hot where it wasn't so hot, wet where it wasn't so wet, and dry where it wasn't so dry. It's not a question of seeing a fall snowstorm or a cool summer day that belie the phenomenon. It's a change to how our larger climate system will affect our agriculture, recreation, hydropower generation, and almost all facets of life as we Idahoans know it.

According to the U.S. EPA ("Climate Change and Idaho"), while Idaho relies primarily on surface water, groundwater is also extremely important:

> *"Most of Idaho is drained by tributaries to the Columbia River, including the Spokane, Pend Oreille, Kootenai, and Snake rivers. These rivers are regulated by dams and reservoirs to reduce spring flooding and augment summer flows. Runoff in the state is strongly affected by winter snow accumulation and spring snowmelt. A warmer climate could mean less snowfall, more winter rain, and a faster, earlier snowmelt. This could result in lower reservoirs and water supplies in the summer and fall. Additionally, without increases in precipitation, higher summer temperatures and increased evaporation also would contribute to lower stream flows and lake levels in the summer. Drier summer conditions would intensify competition for water among the diverse and growing demands in Idaho. Traditionally, the largest water withdrawals have been for irrigated agriculture, and hydroelectric power production has been an important in-stream user of water. Recently, water demands to support manufacturing and tourism have increased…"*

We could let the EPA go on, but you get the point. That EPA report came out in 1998, but time has proven its prescience. More recently, graduate students at Boise State University's School of Social Work produced a 2007 report, "Climate Change and Idaho: Recommended Legislative Actions for Mitigation."

The BSU study contains no fewer than 18 recommendations – many of which could be implemented by the stroke of a gubernatorial pen or legislative resolution – that Idaho could take to fulfill some of its regional and national responsibilities in the fight

against climate change.

"The calamitous consequences of unmitigated global climate change are daunting, but we were heartened to learn that Idaho and other states had looked at the crisis and had recognized that states have the ability – and the imperative – to take action," the BSU report said.

Fast-forward to the Northwest Power and Conservation Council's 6th Power Plan, a thoroughly vetted energy forecasting document that includes a review of climate change impacts because of the dramatic impacts they will have on the region's hydro resources.

Power Council Warns of Climate Change's Impacts on Energy, Ecosystems

The Power Council, as it's known, issues its regional Power Plan every five years and it addressed the climate change issue in its 5th Plan six years ago. The passage of time has only honed the forecasts and possible scenarios that might befall our region.

What kinds of impacts? There are two overarching impacts: Rising temperatures will mean increased power demands and will also affect the volume and timing of river flows. Changing precipitation will also impact river flows. River flows not only impact the region's fish and wildlife populations, they also impact how a region that relies more heavily on hydropower than any other in the country will get its electricity. Winter flows would be higher in the winter as more winter precipitation falls as rain rather than snow; while a more meager snowpack means lower river flows in the summer – which is when Idahoans have the greatest demand for electricity. Likewise, the Northwest's power system would be better off in the winter; worse off in the summer.

Fast-forward to the Power Council's 6th Plan, issued in 2010, and its Chapter 11 that deals exclusively with climate change issues.

"Climate change presents a daunting challenge for regional power planners," the Council reports. Not only will the warming trends have the impacts mentioned immediately above, "policies enacted to reduce greenhouse gases will influence future resource choices."

For purposes of discussing electricity, the most pressing climate issue is carbon dioxide (CO_2) emissions. The Council says that CO_2 emissions account for 85 percent of greenhouse emissions nationally and that about 38 percent of that comes from electricity generation, mostly coal plants like the ones Idaho relies on for half its electrical power. For our region, power generation is only 23 percent of our CO_2 emissions, because so much of our electricity comes from hydropower.

Idaho so far has ducked most of the measures other states have implemented to reduce CO_2 emissions – measures such as setting standards for emissions and for the amounts of renewable energy utilities must use, or regulating carbon emissions. To meet regional greenhouse gas emission-reduction goals of 30 to 40 percent of 2005 levels by 2030, the Council says the region must:

- Acquire all possible – and very significant - energy efficiency improvements identified in the Council's 6th Power Plan;
- Cut reliance on coal-fired generation in half, which for Idaho will be a huge challenge given the amount of coal it uses;
- Meet the renewable portfolio standards (green energy requirements for utilities) that are in place in three of the region's four states (Bonus Question: Which state has NOT adopted a standard?);
- Preserve the capability of the hydroelectric system within the confines of our legal, moral, and ethical obligations to protect threatened fish and wildlife species.

That's a tall order for any state in the region. For Idaho, whose policy to date is to do as little as possible on its own about climate change until the federal government orders action to be taken, the task is monumental and becoming more so as each year of inaction passes. Keep in mind that 88 percent of our region's power-related CO_2 emissions comes from coal plants, and the need for Idaho utilities to clean up their power acts becomes evident.

But lest anyone jump to the conclusion that building more hydropower is the key to replacing CO_2-emitting generation plants, bear in mind that it is highly unlikely that any new big dams will be built in this region. In fact, keeping the existing ones legal is no small feat: Idaho Power's customers will end up spending more

than $200 million just to relicense the Hells Canyon hydro complex at the Federal Energy Regulatory Commission. That process has been under way for years, and $100 million has already been spent.

So once we accept that Idaho's CO_2 emissions must be reduced – by a lot, given our disproportionate addiction to coal – and that new dams aren't the answer, the question becomes:

How Do We Get There?

"From a broad perspective," the Power Council's 6th Power Plan says, "there are three things we can do to reduce carbon dioxide emissions: Generate electricity from lower or zero carbon-emitting fuel, use less electricity, or sequester or offset carbon that is released."

Easy as pie, right?

Well, not quite, but it's not as overwhelming as it might seem. The Council notes that the groundbreaking 2007 McKinsey and Company report "Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost? U.S. Greenhouse Gas Abatement Mapping Initiative, Executive Report, December 2007" lays a coherent strategy to get where we need to get. For instance, 40 percent of the greenhouse gas emissions reductions can be done at no cost, most of it coming from more efficient buildings or vehicles. The balance would come from actions that will cost, and in some cases cost a lot. Some, like capturing and sequestering CO_2 from power plants and other sources, are not yet ready for prime time. Others, like expanded renewables generation and the integration of hybrid and electric vehicles, are closer on the horizon.

"If the goal is to stabilize greenhouse gas concentrations in the atmosphere, and if the climate change science is correct, policy decisions would not be a question of which mitigation strategies to pursue, but rather how to pursue all possible actions," the Council reports. It's worth noting, however, that the goal isn't to "stabilize" greenhouse gas concentrations, but rather how to reduce them to historic levels.

Action!

As clean energy advocates, the real threats if not the manifest reality of climate change will be what drives many of us to demand change from our state and local policy-makers. The policies range from the very specific to the more global. Contrary to the contrarians' claims, they are not revolutionary changes. They will not send us back to become hunters and gatherers huddling around camp fires in caves. We will not have to surrender our cell phones. We will not have to fork over our TV sets (although, about those plasmas?), and we will not have to mortgage our grandchildren's futures. The ideas are endless, but a few jump out as worth our attention:

- Idaho must join the 21st Century Northwest in identifying its greenhouse emissions, committing to reduce them, and implementing policies to do so. Passive participation in regional or national carbon reduction efforts have not moved Idaho forward. Policy-makers must be held accountable for committing Idaho and its cities and counties to firm reduction targets. Idaho must establish greenhouse gas reduction goals not just for the electricity sector, but for the transportation and other sectors as well. A 50 percent reduction of 1990 emission levels by 2050 is reasonable.
- As recommended by the Boise State University report, the governor should elevate the issue's profile by creating a "State of Idaho Climate Change Advisory Commission."
- Idaho utilities must join the others in our region in shedding their coal-fired electricity generation. Coal plants in Oregon and Washington are now targeted for early retirement; those used by Idaho utilities must face the same fate.
- Idaho simply cannot achieve meaningful CO_2 emissions by nibbling around the edges and focusing its efforts on squeezing

more power from its dams and rivers. Demand that our utilities establish firm timelines to phase out their reliance on coal and simultaneously developing aggressive replacement strategies with bolder energy efficiency and renewable energy planning.

- Idaho should adopt efficiency standards for electric appliances and other equipment, especially television sets. Failure to do so will only continue Idaho's embarrassing role as a dumping ground for companies that cannot market inefficient and unwanted products in states that don't allow them to be sold.
- We can stipulate that Idaho will never adopt a renewable portfolio standard requiring utilities to acquire a percentage of their energy from clean, non-hydro resources. However, we can and should demand that Idaho set standards on the emissions coughed up by utility power plants.
- If Idaho will not adopt a meaningful renewables portfolio standard, it should consider a voluntary standard for its utilities and measure their successes in incorporating more non-hydro renewables into their portfolios. By way of reference: Montana's RPS is 15 percent of investor-owned utilities' sales by 2015; Oregon's varies by utility size but is 25 percent of sales by 2025 for large utilities, 10 percent for medium utilities, and 5 percent for small utilities; Washington's is 15 percent of sales by 2020 plus cost-effective conservation.
- Implement the efficiency and renewables provisions of the 2007 Idaho Energy Plan. Enhanced energy efficiency measures hold the greatest potential for the least expensive carbon reductions in the region. The Energy Plan is rife with recommendations on how to do it, including setting *meaningful* conservation targets for utilities and incentivizing them with rewards for meeting the targets and penalties for failing to do so.

Chapter 2

An Overview of Idaho's Energy Picture

Where We Get Our Juice

Ask most Idahoans where our electricity comes from, and most will say we get most of our electricity from hydropower and the dams that over the past 110 years were built on Idaho's mighty Snake River and its tributaries for flood control, irrigation, and, yes, power generation.

There was a time when that was true. Idaho has long prided itself on its reliance on its rivers and downstream Columbia River dams to produce most of its electricity. But the big-dam-building era has largely passed, and as energy demands in Idaho and the Pacific Northwest continued to rise over time, the region came to rely more heavily on other energy resources to make up the difference.

According to the 2007 Idaho Energy Plan, Idaho's 2005 "fuel mix" broke down something like this:

- Hydropower: 48 percent of our electricity
- Coal: 42 percent;
- Natural gas: 8 percent
- Nuclear 1.4 percent
- Non-hydro renewables such as wind or geothermal: 1 percent

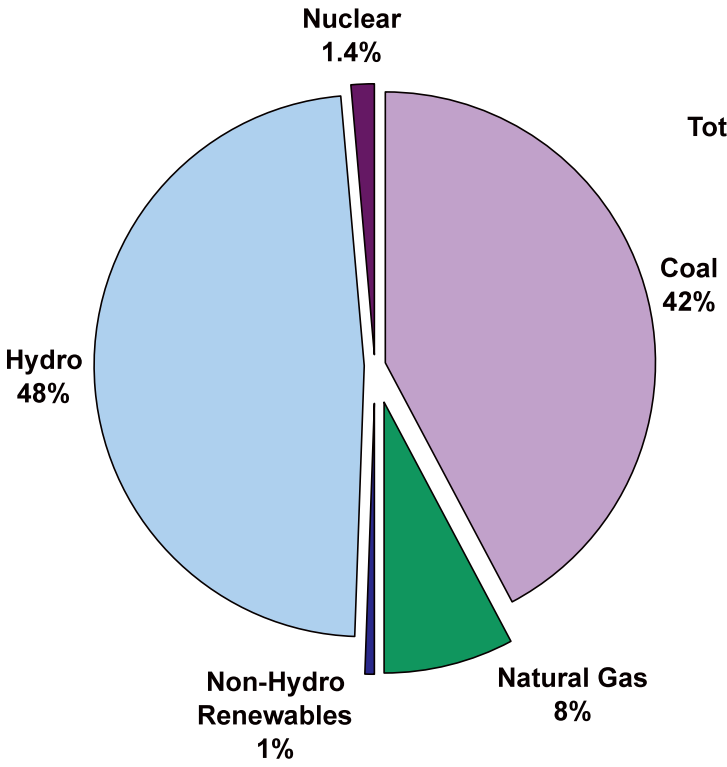
Those figures have shifted slightly since the energy plan was written, as some additional renewable energy has come onto the systems of Idaho utilities and the Bonneville Power Administration. The percentages can also shift slightly from year to year, such as when utilities must draw more heavily on coal or gas or other outside resources in times of low stream flows and the resulting poor hydropower conditions. It's also noteworthy that Idaho's fuel mix varies by utility. For instance, Idaho Power's mix has coal and hydropower about the same, while Avista Utilities relies more heavily on natural gas, and Rocky Mountain Power has far more coal in its portfolio. The state's nearly 30 small municipal and cooperative utilities rely primarily on hydro-rich Bonneville Power Administration for the bulk of their power, with a small percentage coming from nuclear and a growing percentage coming from the wind farms that are springing up across BPA's sprawling Pacific Northwest service territory.

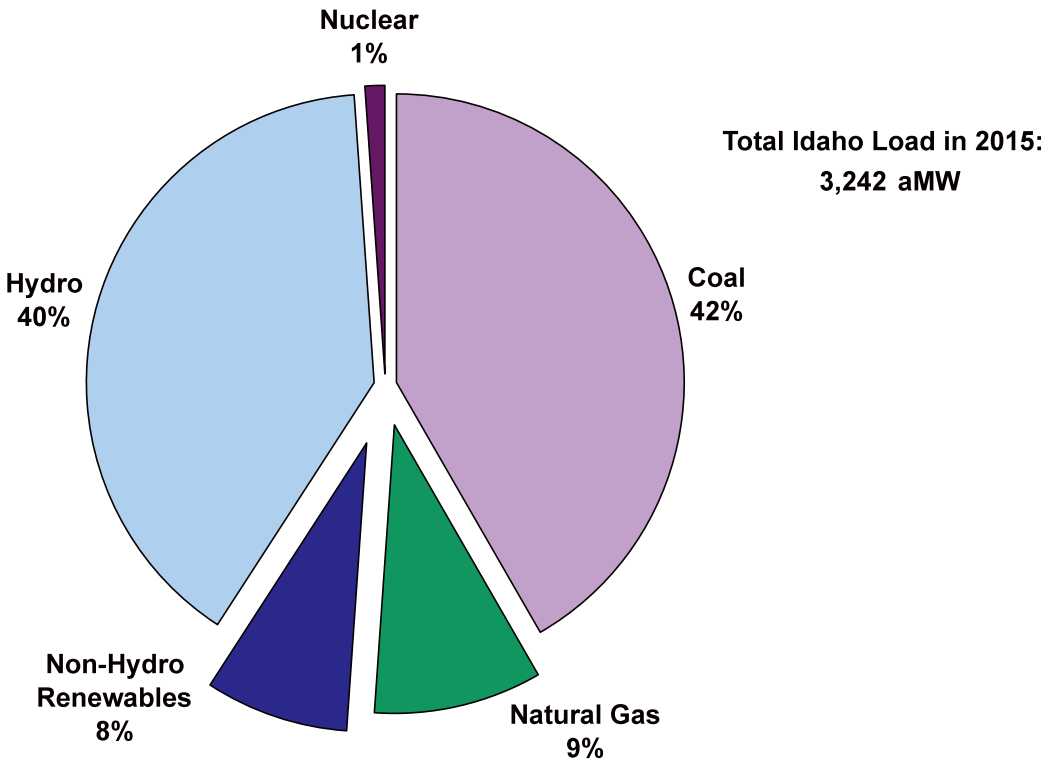
The dilemma in Idaho is the dearth of non-hydro renewable electric power in our state's energy portfolio. While it is true that hydropower is for the most part carbon-free, meeting an important requirement of being a renewable resource, most do not consider it truly renewable. A major reason why utilities and government agencies usually distinguish between hydro and non-hydro renewables is primarily because the region's dozens of dams are directly linked to myriad environmental effects that include impacts on our cherished fish species and other wildlife, as well as diminished river conditions.

For instance, Idaho relies on imported coal, gas, wind, and nuclear power for about 56 percent of its total energy supply, compared to 44 percent for in-state generation (almost all from hydro). If you remove all that out-of-state coal from the calculation, then Idaho magically becomes the lowest carbon-producing state in the nation by virtue of the fact 80 percent of its electricity comes from dams. Keep in mind that's an intellectual exercise only, because Idahoans are still responsible for the environmental damage being done by those coal plants, even though they're located elsewhere. We're just exporting our climate-changing pollution.

It can't be stressed enough that Idaho relies on coal for half of its electricity, yet there are no utility scale coal-fired electric generating plants in Idaho. While we often hear that Idaho has the lowest "carbon footprint" per capita of any state in terms of its electric generation, the reality is that much of our electricity comes from coal plants in Wyoming, Nevada, Oregon and Utah. So while we're not burning coal and creating its devastating environmental impacts here in Idaho, we're essentially exporting our carbon footprint to our neighboring states that must deal with the environmental mess those plants create on the ground, in their air, and in their water. Similarly, hydropower represents about 80 percent of the electricity generated in the state, but less than half of the electricity consumed in the state.

Idaho's heavy reliance on hydro and coal for our electricity is even more important in light of the inevitable federal regulations that will either require utilities to reduce their climate-changing carbon dioxide and related air emissions, or require utilities nationwide to have a minimum amount of renewable energy in their portfolios. With





Source: 2007 Idaho Energy Plan

perhaps 2 percent of our electricity coming from non-hydro renewables, the clock will soon be ticking for Idaho to accelerate development of wind, solar, geothermal, biomass, and other renewable resources. Another trend we're beginning to see in Idaho is that, facing federal carbon restrictions in the near future and with coal off the table, Idaho utilities are turning to coal's only-somewhat-cleaner fossil fuel cousin as an alternative. While large natural gas plants emit far less carbon dioxide than coal plants, they do emit greenhouse gases and will probably continue to produce even more of those emissions as more utilities turn to natural gas turbines to replace coal-fired power generation. Another issue confronting natural gas as an electricity generation resource is it is subject to volatile price fluctuations, exposing electricity consumers to huge swings in their power bills.

Polls by Boise State University and other entities are unambiguous in showing Idahoans want more green power coming into their homes and businesses. The 2007 Idaho Energy Policy Survey conducted by the Center for Advanced Energy Studies at Boise State University asked Idahoans about their priorities in meeting Idaho's energy demands. Fifty percent said we should develop "green" renewable energy sources, followed by 26 percent saying we should do more with energy conservation and efficiency programs. Asked whether human activities are contributing to global warming, 70 percent of Idahoans said we are. And of those, 54 percent said Idaho should reduce its greenhouse gas emissions, something that will require Idaho to rely less on the coal-fired energy it imports. And asked about the single most important energy issue facing Idaho, the leading response was the availability of renewables.

Finally, it has long been documented that Idaho boasts the lowest or almost the lowest electricity rates in the nation, due largely to our historic reliance on hydropower that appears cheap from the consumer perspective but is in fact far more expensive due to the enormous environmental consequences that cost us as utility customers hundreds of millions of dollars annually to mitigate.

While our power rates are one-half to one-third of those in many states, utilities are steadily bracing Idaho consumers that rates will continue to rise and will never revert to their historic lows. That's because it's unlikely major new dams will be built, and as demand grows other more costly electricity resources will need to come online. To be sure, Idaho will likely enjoy rates more favorable than in most states, but our rates will continue to rise. In light of pending federal requirements and financial penalties for greenhouse-emitting fossil fuel plants, utilities must turn to cleaner energy resources and more importantly to expanded energy efficiency and conservation measures.

Idaho's Electricity Demand

So how much electricity do we use in Idaho, and how much will we need in the future to accommodate our growing population and the new businesses that are eager to come here?

The best source for energy consumption data comes from the U.S. Department of Energy's Energy Information Administration , which is the federal government's leading energy statistician. According to the EIA, in 2008 (the most recent year for which comprehensive data is available) Idaho had a net summer peak need of 3,378 megawatts, and we'll take a look at what "peak" needs are below. The actual total demand for electricity is far larger when averaged over the year, coming in at about 2,500 average megawatts – or about the same as three or four good-sized coal-fired power plants.

Also, Idaho's average retail price for electricity in 2008 was a lowest-in-the-nation 5.69 cents per kilowatt hour, which is the pricing unit consumers see on their monthly bills. That price can be higher or lower depending on whether you're in the residential (7 cents), industrial (4.5 cents), commercial (5.7 cents), or irrigation class of customers. By comparison, Hawaii's average retail price was 29 cents and California's was 12.5. Our neighbors in Oregon paid 7.2 cents, compared to 7.7 cents in Montana, 6.5 cents in Washington, 6.5 cents in Utah, and 9.9 cents in Nevada.

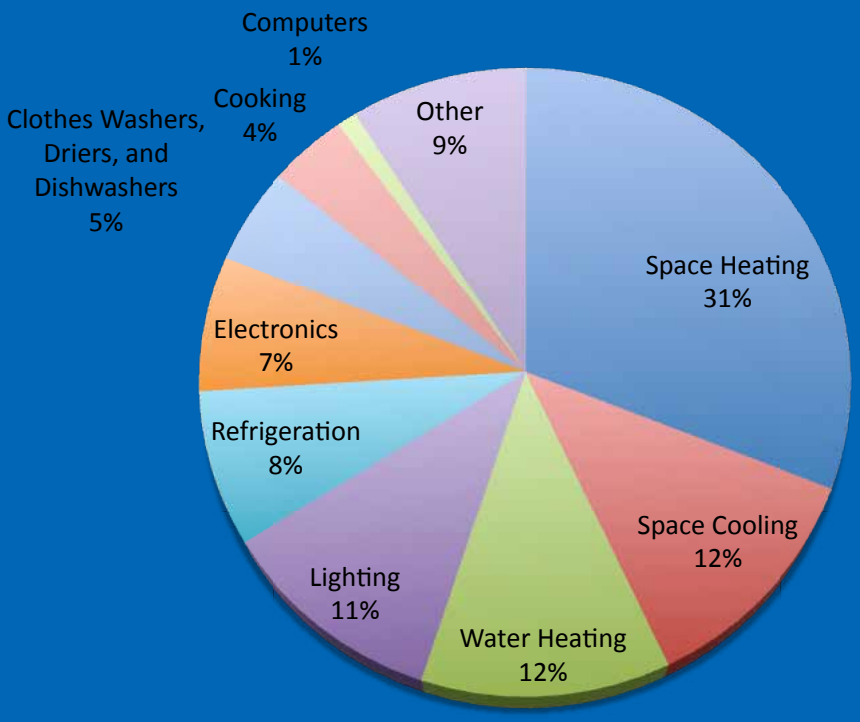
The percentage of electricity used by Idaho utility customer classes (based on power sold) breaks down roughly like this:

- Residential: 36 percent
- Commercial: 25 percent
- Industrial: 39 percent

As we'll see later, the prices for power sold by Idaho's *regulated or investor-owned* electric utilities are set by the Public Utilities Commission in a number of ways, including the utilities' "rate cases" that they file every one or two years. We'll look at how the PUC sets those rates in the chapter on the PUC.

Let's Pretend You're Typical: Here's Where Your Electricity Went

No, none of us are "typical" electricity consumers. Some eschew the TV set, some the microwave, some the clothes drier or the air-conditioner. But if we toss all of us into one bucket and looked at how we use electricity in homes, here's how it would break out, according to the National Academies:



Average Energy Needs versus Peaking Energy Needs

When looking at our electricity needs, it's important to distinguish between the amount we in Idaho use on average, and how much we need during those hot summer days when air conditioners are running full bore at the same time Idaho's farmers are working their pumps hard to irrigate their crops.

The differences between Idaho's "average energy" needs (that which we use on average during various times of the year) and our "peaking" needs (when it's super hot out there) can be huge. But because utilities must always have enough electricity to serve all customers at all times, and also to have some extra in reserve in case a generator or power line goes down, utilities must ensure that they can meet the highest demands they face. They don't have to own all that generation, especially if they can go the markets to buy another utility's surplus power (usually at a premium price), but they have to have access to as much power as their customers will need and the transmission ability to get it here.

Idaho Power is a good example of a utility with a very high summer "peak" demand, which can be as high as a whopping 3,200 megawatts, but a much more manageable average energy demand of about 2,000 average megawatts.

Why is this important? Because as long as a utility's "peak" demand grows faster than its regular old "average" demand, the utility's customers will need to foot the bill for increasing power plants such as expensive natural gas "peaking" plants used to supply power during those rare times of extra high demand. That's why energy-saving programs that can reduce those peak demands are so important: For a fraction of the price of a shiny new power plant, a utility can implement energy-saving measures that make that power plant unnecessary, saving customer dollars and helping to protect the environment.

Exit: Coal

As we discuss elsewhere, Idaho relies heavily on coal for its electricity. Any state that needs out-of-state coal plants and the monumental environmental risks and penalties that go with them to provide half its electricity has a carbon problem. We're not alone; utilities around the country have not only pulled the plugs on proposed coal plants, but are actually beginning the long process of taking them out of service.

The famous Boardman coal plant near the Columbia River in Oregon provides about 10 percent of its output (about 70 megawatts or so) to Idaho Power. Its majority owner, Portland General Electric, saw the hand writing on the energy wall and now plans to decommission Boardman by about 2020 – not 2040 as planned. PGE will have to make up for that lost power, and our clean energy colleagues over on the "West Side" are increasingly confident it will do so with a clean energy replacement. So whether utilities like it or not, their long affection to coal generation is about to change. Similarly, our colleagues in Washington state have worked with TransAlta, the owner of Washington's only coal plant in Centralia, to begin the process of shutting down that plant as well by 2020 and also 2025, as there are two units.

Clearly, the Pacific Northwest is kicking its coal habit. Idaho's main coal-fired utilities, Idaho Power and Rocky Mountain Power, must be pressured to follow suit. They will argue that coal generation is cheap, and some are already arguing that with Republicans in Congress waging war on climate change control measures the pressure is easing on utilities to clean up their acts. But remember this: Idaho Power's shareholders stunned the energy world in May 2009 by passing the first corporate shareholders resolution of its kind, demanding Idaho Power develop a plan to begin reducing its CO_2 emissions. For now, Idaho Power is nibbling around the carbon-reduction edges, trying to squeeze more energy out of its hydropower system so it can take less energy from the coal plants it participates in. Eventually, Idaho Power and Rocky Mountain Power will need to heed the demands of customers like you to plan more aggressively to "decarbonize" and find acceptable forms of energy that are quickly becoming cost-competitive with coal and gas.

Enter: Efficiency and Renewables into the Mix

As we've said, because Idaho has almost no gas or oil reserves for power generation, our power comes mostly from big out-of-

state coal plants, a string of Snake River hydropower dams, and a number of natural gas plants. So as demand for electricity grows, where will it turn for power to "serve" that new "load"?

For starters, let's look to the Pacific Northwest's pre-eminent authority on the region's electricity future, the Northwest Power and Conservation Council. The "Power Council," as it's known in the region, is comprised of two members appointed by each of the four Northwest states and is equipped with the nation's leading collection of energy policy analysts. Every five years, the Power Council produces its "Power Plan" on how the region can meet its energy needs for the coming 20 years. Last year, it surprised even the most ardent clean-energy advocates with its 6th Power Plan, which says in part:

> *"The Pacific Northwest power system is faced with significant uncertainties about the direction and form of climate change policy, future fuel prices, salmon recovery actions, economic growth, and integrating rapidly growing amounts of variable wind generation. And the focus of the Council's power plan is clear, especially with regard to the important near-term actions.*
>
> *In each of its power plans, the Council has found substantial amounts of conservation to be cheaper and more sustainable than most other types of generation. In this Sixth Power Plan, because of the higher costs of alternative generation resources, rapidly developing technology, and heightened concerns about global climate change, conservation holds an even larger potential for the region."*

OK, Power Council, but how, exactly?

> *"The plan finds enough conservation to be available and cost-effective to meet 85 percent of the region's load growth for the next 20 years. If developed aggressively, this conservation, combined with the region's past successful development of energy efficiency could constitute a resource comparable in size to the Northwest federal hydroelectric system. This efficiency resources will complement and protect the Northwest's heritage of clean and affordable power."*

You go, Power Council!

That's exactly right, despite the naysayers who categorically deny that Idaho can lose the carbon and replace it with efficiency and renewables. Their prophesies of a clean coal and nuclear-powered world have been proven wrong time and time again, so it's incumbent on us to continue to show how wrong they are and what we can do to prove it.

First, as the Power Council suggests, we must look to energy efficiency, which we'll discuss in more detail in a later chapter. That's where we will make up a huge part of our new load as more businesses, factories, workers, and others move to Idaho.

Then we must make up the remainder with renewable energy resources, ranging from wind farms, solar farms, and geothermal plants that provide power directly to utilities to smaller solar arrays and other renewables that we'll put on our homes and businesses and barns to provide some of our own power and reduce the amount big utilities need to provide us.

We'll look at them in more detail in a bit, but for purposes of this overview of Idaho's Energy Mix and its future energy picture, rest assured that a clean energy future for Idaho is not only doable, but the tools are already at our disposal.

So What IS a Watt?

Attend a utility meeting or a Public Utilities Commission and one of the first things you realize is that all these energy people simply *love* to talk in code. One of the first things we want to get a grip on is the basic unit of measuring power: The watt.

We all know the difference between a 25 watt and a 75 watt light bulb, but at the level of utilities and power plants and wind farms, we're usually talking more along the lines of kilowatts (a thousand watts), megawatts (a million watts) and gigawatts (a trillion watts).

Megawatts (MW) are often used to describe the output of everything from a single wind turbine (1-3MW) to coal or nuclear plants (600 to 1,000 or more MW) or a gas plant like the Langley Gulch plant Idaho Power is building at New Plymouth (300MW).

A typical megawatt in Idaho might be enough power for 700 or 800 homes or maybe even 1,000, but it depends on the time of year, because we tend to use more electricity in the summer with air-conditioning than in other seasons.

So if a megawatt is how much power is coming out of a power plant, what's an "*average megawatt*"? If a megawatt measures power at a particular time, an average megawatt or average kilowatt measures the amount of power used or needed by a utility over time, maybe a year. We might have a 30MW wind farm, but it's not running all the time and over the course of a year it might produce 30 average megawatts.

Our bills are based on the amount of *kilowatt-hours* we use each month. A kilowatt-hour, for example, is the amount of electricity needed to power 10 100-watt light bulbs for an hour.

Chapter 3

Renewable Energy in Idaho

Idaho's Energy Blows--The Promise of Renewables

With half of Idaho's electricity imported from out of state and billions of energy dollars exported to other states annually, Idaho has never been better positioned to change course and begin developing its own sustainable energy resources. From wind to solar, geothermal, and biomass, Idaho has abundant renewable energy resources that can be built at costs that are competitive or nearly competitive with existing dirty fossil fuel energy sources.

Idaho's 2007 Energy Plan says it about as well we can, so we'll ask the Energy Plan to introduce this chapter on renewables, because, after all, it *is* supposed to be Idaho state policy:

> *"Idaho currently imports more than 80 percent of its energy needs. While developing in-state resources would create jobs and result in economic benefits to Idaho, the state lacks conventional resources such as coal, oil and natural gas. The resources that can be developed in Idaho in the near future are renewable resources such as wind, geothermal, small hydro and biomass (for either electric generation or the production of biofuels such as ethanol or biodiesel). Developing in-state renewable resources will contribute to a secure, reliable energy system by reducing dependence on remote resources that must be transported over long distances, although care must be taken to ensure that intermittent resources such as wind energy can be integrated reliably. In addition, renewable resources provide fuel diversity, reducing Idaho's exposure to high and fluctuating natural gas, oil and coal prices. In-state renewables also typically have superior environmental attributes because of substantially reduced air and water emissions, including carbon dioxide. Finally, in-state renewable resources contribute to economic growth by creating jobs and tax revenues in Idaho, frequently in rural areas that are most in need of new economic stimulus."*

The Energy Plan continues:

> *"Cost has long been the principal barrier to increased investment in local renewable resources. Renewable resources can be more expensive than conventional resources, and the Committee wishes to avoid burdening Idahoans' energy bills with needless investment in high-cost resources. While the Committee endorses renewable resources in general because of the many benefits they provide, it declines to adopt specific targets or standards out of a concern that setting arbitrary targets could conflict with the goals of maintaining Idaho's low-cost energy supply and ensuring access to affordable energy for all Idahoans. At the same time, the Committee recognizes that the cost of renewable resources has declined in recent years just as the cost of fossil fuels has increased, making some renewable resources cost-competitive today, particularly considering that renewables are not subject to fuel price volatility. The Committee also recommends a number of actions to help reduce the cost of renewable resources and make them more competitive with conventional resources."*

Well said, 2007 Idaho Energy Plan!

There was a time – not so long ago – when renewable energy resources such as geothermal, wind and solar were dismissed as boutique energy; nice in easy-to-ignore amounts but nowhere near up to the challenge of traditional burly power plants like coal, hydro, gas or nuclear. The old argument was that the wind doesn't always blow and the sun doesn't always shine, so these were considered "intermittent" energy resources.

Those days are over. Advances in wind forecasting along with spreading wind farms over larger geographic areas continue to flatten the unpredictable nature of wind power. Advances continue in developing storage methods for times when the sun isn't hitting a solar generator. Utilities in the hydro-rich Northwest can use their hydropower generation to help "follow" their power loads, generating added power if renewables tail off or saving the energy-generating water for later when the renewables are fully producing power.

The 2007 Idaho Energy Policy Survey conducted by Boise State University showed half of all respondents want renewable energy to be Idaho's highest priority in meeting our future energy needs, followed by 26 percent supporting energy conservation and efficiency programs. Only one in five support expanding existing hydro and fossil fuel generation. The survey also showed 70 percent of Idahoans believe human activities are contributing to climate change, and 54 percent of those said Idaho should reduce greenhouse gas emissions. Combined with energy efficiency, renewable energy development will help

accomplish these crucial goals.

Unlike other states in the West, Idaho does not have a "renewable portfolio standard" (RPS) or similar requirement directing utilities to obtain a certain percentage of their electricity from renewable resources such as wind, solar, geothermal, or biomass. However, such a requirement is almost certain to be imposed on all states by the federal government, and Idaho must make more progress in boosting its renewable energy portfolio in order to avoid an energy crunch when federal requirements are implemented.

Keep in mind what renewables are: They are energy resources for which the fuel, whether wind, sun, subterranean hot water or plant matter, does not run out. They are "alternative" energy resources, to be sure, but not all "alternative" energy is "renewable." Take nuclear. As we'll discuss below, nuclear proponents are fond of lumping it among clean energy resources, but of course it is not. Uranium, from which a reactor's fuel is fabricated, is not only a finite resource but it's also one that is incredibly dirty and dangerous to mine and process.

Besides, contrary to claims by the nuclear industry, nuclear power is already yielding serious ground to renewables. According to a report by Worldwatch Institute (www.worldwatch.org), "The World Nuclear Industry Status Report 2010-2011," global power generation by renewable energy sources topped that by nuclear energy for the first time in 2010, with 381 gigawatts of renewables compared to 375 gigawatts of nuclear.

Despite the apparent attitude in the Idaho Legislature that the scant amount of renewable energy on Idaho utility systems is already plenty, there is no reason why Idaho should not easily attain a 15 percent integration rate of renewables in utility portfolios, as opposed to the current 2 percent or so. Utilities are fighting tooth and nail before the Public Utilities Commission (PUC) for refuge from having to take on more renewable energy, just as they argued unsuccessfully in the Idaho Legislature in 2011 that so much renewable energy is rushing onto their systems that rates will skyrocket, grids will become unstable, and massive amounts of natural gas or coal generation will be needed to offset the "intermittent" nature of renewables.

On April 22, 2009, Jon Wellinghoff, the chairman of the Federal Energy Regulatory Commission, raised eyebrows when he met with reporters at a U.S. Energy Association meeting.

"We may not need any, ever," Wellinghoff said in response to a question about whether the United States needs new coal or nuclear plants to meet it future electricity needs. As quoted by the New York Times, Wellinghoff said "demand response" measures like air-conditioning cycling programs that reduce electricity demand during times of high load will help offset the variable production of wind and solar.

"I think baseload capacity is going to become an anachronism," Wellinghoff said. "Baseload capacity used to only mean in an economic dispatch, which you dispatch first, what would be the cheapest thing to do. Well, ultimately, wind's going to be the cheapest thing to do, so you'll dispatch that first. People talk about, 'Oh, we need baseload.' It's like people saying we need more computing power, we need mainframes. We don't need mainframes, we have distributed computing."

The key, Wellinghoff said, are technologies like storage for solar plants that can continue to feed power to the grid after sunset. Or "shaping" the way wind energy is delivered and fits with the demand for power.

"So if you can shape your renewables, you don't need fossil fuel or nuclear plants to run all the time. And, in fact, most plants running all the time in your system are an impediment because they're very inflexible. You can't ramp up and ramp down a nuclear plant. And if you have instead the ability to ramp up and ramp down loads in ways that can shape the entire system, then the old concept of baseload becomes an anachronism." The Times said Wellinghoff said there's plenty of renewable energy to meet energy demand: "There's 500 to 700 gigawatts of developable wind throughout the Midwest, all the way to Texas. There's probably another 200 to 300 gigawatts in Montana and Wyoming that can go West."

We tend to side with Wellinghoff and Idaho's Energy Plan (you know, the one that was adopted by the Legislature in 2007 and which is Idaho's guiding energy policy), which is unambiguous in stating, as it did above, that renewable energy holds the key to Idaho's energy future along with woefully underestimated energy efficiency.

Let's take a quick look at the state's renewable resources.

Wind

By far the most promising near-term renewable energy resource for Idaho, wind generation has been slow to develop here. According to the American Wind Energy Association, Idaho ranks 13th nationwide in potential wind capacity, but only 23rd in developed wind projects. In 2010 and 2011, however, several wind projects have received utility contracts that have been sent to the Public Utilities Commission for approval. However, many of those contracts have been held up pending resolution of a case brought by Idaho's Big Three electric utilities to forestall additional renewable contracts until they and the PUC can more thoroughly study grid impacts, costs, and other issues.

The fate of the wind contracts that are in limbo may have taken a turn for the worse in July 2011, when the PUC ruled that 14 of the projects (nine with Idaho Power contracts and five with Rocky Mountain Power contracts) don't qualify for a more favorable rates under the 19978 federal law designed to facilitate the development of small power projects. The PUC ruled that while the wind farms had contracts with the utilities, they were submitted after the Dec. 14, 2010 PUC-imposed deadline for projects to be considered before the PUC dove into its complicated wind and solar contracts case, which is still pending. It's not known whether the affected projects will move forward after negotiating new rates with the utilities, or whether some or all of them will decide to go elsewhere.

While some have estimated Idaho's wind potential at more than 7,000 megawatts, a more realistic estimate is that the state's developable wind potential is closer to 3,000MW. That would be about the same as Idaho's total average energy demand, but it must be remembered that wind power is variable, and with a 30 percent "capacity" rating, a 20MW "nameplate" (or maximum possible) wind farm would actually generate less than 10MW of energy.

Variability and cost are the primary arguments used by opponents of wind development in Idaho. There's no question that wind is variable, and in fact it often doesn't blow on late summer afternoons when utilities need it to meet their high power demands. But the variability can be offset by a number of measures, including the improved wind forecasting that is now available and by using a broad, geographically diverse network of wind farms to balance the power deliveries by relying on the turbines that are producing. That also will require a new regime in which utilities cooperate with one-another to share their wind resources, but such a system can and should be implemented.

Some view wind energy as a "bridge" energy resource that will provide clean energy with no fuel costs until such time as solar power matures to a more mainstream power resource and its price comes down. In any event, wind power can be backed up or "firmed" by other resources such as hydropower or natural gas, and wind can still play a huge role in providing carbon-free energy at affordable prices.

Equally important: Idaho is already seeing wind projects inject vital tax revenues to local governments and rural communities where many of the projects are located. The projects bring jobs, tax revenues, and royalty payments to our communities. In addition, unlike fossil fuel plants, wind farms provide landowners a "second crop" while still using their land for farming, ranching or other uses.

Whether it's because Idaho lacks the investment-friendly policies to attract more wind development, an unfavorable regulatory climate, or reluctant utilities, Idaho can and must do better if it hopes to achieve the stated goal of making the state more energy independent.

It's also important to note that not all wind projects are acceptable, however, just like not all energy projects regardless of fuel source should be considered acceptable in spite of the circumstances. Some projects might not be "sited" in appropriate places and might have disqualifying environmental impacts. That's why each energy generation or transmission project should be evaluated independently.

Geothermal

Geothermal energy can be used in two ways in Idaho: To run turbines to produce electricity, and also to provide indirect energy benefits through heating building space and water, as is seen in the Idaho Capitol and other buildings across downtown Boise. Idaho is among the states with the highest identified geothermal potential: The Western Governors Association's

Bonneville County Reaps Economic Windfall from, Well, *Wind*

Critics of wind energy in Idaho have a habit of overstating the cost of power coming from wind turbines and understating or even ignoring the economic benefits wind farms bring to their communities. Beyond paying state taxes and directly supporting local economies through jobs, communities also benefit from direct payments by wind projects. For example, here's a look at how taxing districts in Bonneville County, home of Idaho Falls in eastern Idaho, have benefitted from $1,250,139.23 in payments by the Wolverine Creek wind farm since it began operating in December 2005. The figures come from the county Treasurer's Office:

- Bonneville County: $520,465.18
- School District No. 93: $680,907.84
- Ammon Cemetery: $7,428.04
- Iona Cemetery: $18,192.16
- Bonneville County Ambulance: $23,146.01

Geothermal Task Force estimates that Idaho can develop 855MW of geothermal energy (about 30 percent of our current electricity needs) by 2015 and an additional 1,670MW by 2025.

Currently, Boise-based U.S. Geothermal's Raft River facility is selling 13MW of electricity (enough to power 2,900 homes, depending on the time of year) to Idaho Power, and has a contract to sell a similar amount to the Eugene Water and Electric Board in Oregon. The company expects much more to come from the Raft River site in southeast Idaho, perhaps 90MW or more.

In addition, U.S. Geothermal has been successful so far in developing a promising geothermal site at Neal Hot Springs across the border in Oregon. Idaho Power has already reached a contract agreement for 20MW of power from that plant once it is built and operating, and more power is expected. U.S. Geothermal is also one of the first geothermal energy developers to secure a federal loan guarantee to facilitate its efforts to secure financing for the Oregon project.

Geothermal is not without challenges. Exploration is very expensive, costing more than $1 million a hole and with no guarantee of finding a developable resource. But U.S. Geothermal has taken a big leadership role in Idaho in exploring the resource and improving technologies to develop it. In addition, geothermal is a "firm" resource available nearly constantly. U.S. Geothermal uses a binary closed-loop system in which water does not come into contact with any materials or chemicals during the energy generation process, so the risk of groundwater pollution is largely mitigated.

Beyond the productive Raft River site, geologists are exploring possible geothermal sites in Valley County and other parts of western Idaho for possible generation development.

Solar

Idaho has immense solar potential, but to date most of it remains undeveloped. Solar energy can produce power through photovoltaic panels installed on homes and businesses, providing energy to help power our buildings. Or it can be used in thermal solar plants, reflecting the sun's energy to produce heat to power turbines. Solar's main hurdle to date has been its cost, which is higher than most other forms of renewable energy. However, technology continues to drive down the cost of photovoltaic panels, which also benefit from state and federal tax incentives.

The Idaho Legislature enacted legislation to include solar as an energy resource that qualifies under Section 58-307 of Idaho Code for purposes of renewable energy development on state endowment lands. In addition, the Legislature approved HCR54, which encourages the governor, the Office of Energy Resources, and the Land Board to work toward the development of energy production of renewable resources on state endowment lands "for the purpose of maximizing the potential returns for education."

So it is now state policy to promote solar and other renewable energy development on endowment lands, and we expect the administration and the Land Board to adhere to the spirit of both bills and promote renewables on state lands. Ultimately, development of renewables on endowment lands will benefit consumers as well as the education recipients for whom the endowment lands were set aside.

In 2004, Idaho adopted a "5,000 Solar Roofs" initiative as part of the national "Million Solar Roofs Initiative" announced by President Clinton in 1997. The effort includes both photovoltaics, which produces electricity directly from sunlight, as well as solar thermal, which produce heat for domestic hot water, space heating, and other uses. The Idaho Solar Initiative was to be implemented by the Idaho P V4You Solar Working Group, which was administered by the Idaho Energy Division (now OER) but which has since ground to a halt. This initiative should be restarted.

Idaho Power recently commissioned a study of solar potential by Black & Veatch, and that study shows immense potential for solar thermal development in Idaho. It also raises the question of how we can better deploy solar as a resource in Idaho. In addition, Idaho Power recently completed its 2011 Integrated Resource Plan, which will determine how the utility will meet its power needs in the coming 20 years. As part of that plan, Idaho Power projects that it may begin adding large solar in the second 10 years of its IRP planning period. The plan envisions a 50MW "solar power tower" generating plant somewhere around 2024. Meanwhile, the IRP notes that Idaho Power plans to issue a request for proposals before the end of 2011 for a solar demonstration project of up to 1MW. Part of that project is intended to familiarize the utility with the operating characteristics of a resource it's unfamiliar with. Idaho Power, like all electric utilities, must be encouraged to attach proper cost and risk assessments to solar, as with all resources. Solar can save the utility by not requiring major transmission additions, and it does not require carbon adders and other environmental costs because its energy comes from a clean source.

The fuel is, of course, free, and solar has another trait that no other renewable energy resource has: It produces power during the

day, when Idaho Power has its greatest need for power to deal with its summertime "peak" energy demands when air-conditioners and irrigation pumps are roaring. This "load following" attribute by solar make it a perfect fit for Idaho.

We also need to convince the Legislature and the Office of Energy Resources to expand the number of solar projects qualifying for state low-interest loans for solar projects, beyond the current $15,000. And we will push for new local building regulations to enhance solar potential, including the adoption of building rules to incentivize solar-friendly housing projects that capture solar benefits through orienting subdivisions and requiring homes be "solar-ready" to qualify for local incentives.

Biomass

Biomass comes in many forms in Idaho, depending in part on where the plants are located. In northern Idaho, wood waste is being used to produce power, while in southern Idaho agricultural crop residue is the fuel source of choice.

Idaho also has ample forms of biomass that, if used in an environmentally prudent manner, can be converted into clean energy. Biomass fuel includes wood or wood products as well as agricultural wastes from crops and livestock. Development of these renewable resources must be done in a way that does not imperil Idaho's cherished forests or that creates additional environmental problems such as threatening air quality, but many of these resources show great promise in converting waste to energy.

Biomass is one of the leading renewable resources being promoted by the Idaho Office of Energy Resources, but is not without its challenges. Power plants use some form of organic materials, and converting those materials into electrical energy must be done in ways that do not add to Idaho's air quality challenges. The largest user of biomass in Idaho today is the industrial sector, which uses significant amount of wood fuels for energy production. In addition, the Office of Energy Resources says biomass can be a source for fuels such as synthetic gas and transportation fuels such as ethanol and biodiesel.

According to the Idaho Office of Energy Resources, biomass in some form has supplied about 9 percent of total energy used in Idaho in recent years. The state energy office predicts that, if developed, biomass as a fuel from forest and logging residue, municipal solid waste, agricultural residues, animal waste, and agricultural processing residue holds immense potential to produce transportation and electric energy.

All of these made-in-Idaho renewable energy resources mean new green jobs, massive amounts of economic investments, and state and local tax benefits that those investments and jobs can deliver. The argument that state budget exigencies are precluding Idaho developing the kinds of business-attracting incentives in place in our neighboring states is not valid: While such incentives might have the short-term impact of certain investments not producing immediate tax revenues, the long-term benefits from such investments dwarf such minor revenue hits.

Idaho must rethink its current energy development policies and create incentives that will cause these 21st Century energy resources to flourish. Not only can they reduce Idaho's reliance on outside (and sometimes unreliable) energy resources, they can also help convert Idaho into an energy exporter in the future.

What About You-Know-What?

Try as they might, proponents of nuclear power argue that it, too, should be considered a "renewable" resource for purposes of state or national "renewable portfolio standards" that require utilities to provide a percentage of their electricity from renewable energy. Except Idaho, of course, which has no standard.

The pro-nuclear argument seems to hinge on the fact that the process of nuclear-powered generation releases little or no greenhouse gases. If that were the criteria to be considered renewable, the nuclear industry might have a point.

But the uranium mined in often outrageous environmental conditions to create the fuel for reactors is an automatic disqualifier. So is the eternal and extremely dangerous waste byproduct of the generating process. And as we have learned through painful examples, so is the generation process itself. There are no con-

ditions under which nuclear can be considered alongside the above resources.

The same holds true with so-called "clean coal technologies" that (while not even developed yet) would capture and sequester the greenhouse gas and other emissions created during the dirty, polluting generation process. As with nuclear, coal is not a renewable resource and never will be. And as with nuclear, the energy generation process fails every possible test to qualify as a renewable resource.

And finally, the issue of hydropower. While it is true that the operations of large dams do not release greenhouse gases, the case for renewability stops there. As a case in point: How many fish navigate upstream from the Hell's Canyon hydro complex? None. And while that should be the end of the story, hydropower advocates insist they are truly renewable because the region and nation are so desperate for no-carbon energy resources to replace coal plants. Well, we're not that desperate, and there are myriad other options. Large dams do incalculable harm to fish and wildlife species, river conditions, and an ecosystem that once defined the Pacific Northwest.

It is likely, however, that in the event of a federal renewable portfolio standard of some kind, utilities such as Idaho Power will not be able to count all hydro for purposes of meeting the requirement. However, utilities will likely get the next best thing: Most bills knocking around Congress would allow utilities to subtract their big hydro from their total power sales before calculating their obligations under a federal renewable requirement. In that case, Idaho Power may well be very close to meeting such a standard, despite its efforts to rebuff new renewable energy additions.

Chapter 4

Energy Efficiency and Conservation

Idaho's First Energy Choice

It's no secret that energy efficiency and conservation represent the Holy Grail of Idaho's clean energy future. It is at the core of every single scenario that sends Idaho on a path of shedding its dirty energy resources and replaces them with clean ones. More than that, energy efficiency is the largest single resource for Idaho and the Northwest to attain a sustainable electricity portfolio.

Naysayers, and there are many of them, cannot fathom a world in which Idaho continues to grow but not a single large power plant is erected to supply the power to accommodate that growth. Yet the roadmap has been created. It does not require draconian reductions in our lifestyle, nor does it require massive investments to revolutionize our electricity sector. In fact, the opposite is true: The new and expanded energy efficiency measures that will supply the power that won't be coming from big, climate-changing thermal power plants will come at costs that are no more than Idaho's historically "cheap" default generation from hydropower, coal and natural gas.

Idaho utilities have made commendable progress in developing programs to conserve energy, and for good reason. Every kilowatt saved through efficiency and conservation reduces the need for expensive new power plants and the environmental impacts they bring. Idahoans know the cheapest energy available to us is the energy we don't use, but don't take our word for it:

> *"To achieve the Committee's energy policy objectives of ensuring a reliable, low-cost energy supply, protecting the environment, and promoting economic growth, this Energy Plan recommends increasing investments in energy conservation and in-state renewable resources. Conservation lowers the energy bills of Idaho households and businesses and reduces the flow of dollars outside the state. Conservation and renewables diversify the state's resource base, reducing its dependence on imported fossil fuels and providing insurance against increasing fuel prices. Conservation and in-state renewables also contribute to Idaho's economic development by creating local jobs and tax revenues, frequently in rural areas that are most in need of new jobs."*
>
> *2007 Idaho Energy Plan*

> *"Demand-side management (DSM) customer programs are an essential component of Idaho Power's resource strategy. Idaho Power works with its customers to promote energy efficiency and produce the same output or provide the same level of service with lower energy consumption."*
>
> *Idaho Power 2009 Integrated Resource Plan*

> *"Improved efficiency of electricity use is by far the lowest-cost and lowest-risk resource available to the region. Cost-effective efficiency should be developed aggressively and on a consistent basis for the foreseeable future. The Council's plan demonstrates that cost-effective efficiency improvements could on average meet 85 percent of the region's growth in energy needs over the next 20 years."*
>
> *Northwest Power and Conservation Council's Sixth Power Plan, 2010*

The 2007 Idaho Energy Plan lays a promising roadmap toward a clean, affordable, and sustainable energy future for Idaho. The Energy Plan, which has been adopted by the Idaho Legislature and embraced by two governors, makes it perfectly clear where Idaho's priorities should be. It also has this to say about Idaho's energy conservation efforts as compared to those elsewhere in the Northwest:

> *"Many large electric utilities in the Pacific Northwest region have displaced between 13 and 18 percent of their retail load through cost-effective conservation investments made over the years, while Idaho investor-owned utilities have displaced an average of 6 percent."*

As clean energy advocates, we are long past the point of asking whether we can do more to secure our clean energy future with low-cost energy efficiency and conservation measures. We're at the point where we *must* do more, and demand that our utilities and the Public Utilities Commission embrace the energy efficiency recommendations in the Energy Plan to find new ways to build upon the progress made so far.

The Idaho Energy Plan also contains several recommendations for action by the Legislature and the Executive Branch, including the Public Utilities Commission, to promote energy conservation and energy efficiency. Four years after the Energy Plan was adopted, many of its recommendations remain just that – recommendations that have not been implemented:

- It calls for the PUC to establish targets for conservation achievements for our utilities and to provide incentives for utilities that meet them, yet this hasn't happened.
- It calls for income tax incentives for investments in energy efficient technologies by Idaho businesses and households and a sales and use tax exemption on the purchase of energy efficient technologies, but neither of these have been implemented or even addressed in the Legislature.

The Phantom Load & Other Scary Tales

Try as we might to shave our kilowatt-hours, our houses are apt to be filled by dozens of energy-suckers that literally drain those electrons right out of our sockets and into thin air. It's a phenomenon variously known as "phantom load" or "vampire load" – and you might be surprised at the amount of wasted electricity it costs.

If your home is close to typical, it is filled with appliances, electronics, and other gadgets that draw small amounts of power even when turned off. It's the electricity equivalent of a leaking pipe out in the yard. Look around your house: Is the DVD player's panel lights on even though it's "turned off"? Does the TV or the box on top have lights on, even when the set is off? How about the stereo? Is the cell-phone or iPod charger plugged in but not attached to anything? All of these devices are prone to turning a vampire loose the moment you turn them "off."

Add it all up, energy experts say, and this phantom load can account for 5 to 10 percent of the energy used in many homes each year, or about the same amount of electricity generated by more than a dozen coal plants. If you spend $1,000 a year on electric bills, that's $100 you're sending to the power company for electricity you're not even using! And it's especially more important in this era of ever-increasing power hogs such as flat screen TVs and other electronics.

It's not always convenient to unplug all these blinking, energy-sucking gadgets when they're not needed (unplugging the microwave, for instance, can be a pain), but if you take a survey of the dozens of electronic appliances running on "standby power" around your house, you'll no doubt discover many that can be unplugged with minimal inconvenience, especially by using a power strip that can completely shut down a computer and the printer and other accessories, for instance, and drive a stake through the vampire load's heart.

Besides using power strips to truly turn devices off, another cool way to chase away the vampires is to purchase or borrow a device often called a "watt meter" to see how much power devices are consuming when not used. Most watt meters cost less than $40 – sometimes much less, and you may be able to rent one from your local library. You simply plug them into an outlet and then plug a device into the meter, and you can see how much power it's using when turned on and then turned off.

- It recommends the Executive Branch take a number of steps to increase its energy efficiency efforts, but many agencies have yet to do so.
- It also calls for incentives for investments in residential and business renewable energy technologies, and once again the recommendation has fallen on deaf ears.

In Idaho, many utility efficiency and conservation programs are funded through a state-approved energy efficiency "rider" or other kind of surcharge on our electric bills. The funds collected from customers as a percentage of their bills help fund efficiency and conservation programs. Energy efficiency refers to obtaining the same amount of energy benefits but using less electricity, such as with more efficient light bulbs. Conservation refers to using less energy, such as by turning off lights in unoccupied rooms or using clothes lines rather than dryers.

Often referred to as "demand-side" resources because they save energy on the customer's side of the meter rather than "supply-side" resources such as power plants, efficiency can be aimed at reducing a utility's overall energy demand or its more expensive "peak" demand during high-consumption times of the year.

Peak demand programs are implemented in Idaho in the summer and allow the utility to cycle down residential air-conditioners or farmers' irrigation pumps, sparing utilities from having to turn to more expensive short-term generation resources. They're often called "demand response" programs because the reduced energy demand comes in response to a utility call to reduce consumption from a particular device. Most efficiency programs are aimed at reducing overall power consumption, such as through weatherization, improved lighting or heating and air-conditioning systems.

Combined, these efficiency and demand response programs accomplish five goals that are critical to a clean energy policy: They put DSM as a utility resource on the same plane as a power plant or other generation resource; they reduce the need for new thermal power plants and can accelerate the process of phasing out existing ones; they contribute to a more stable grid and power system; they help reduce bill amounts; and they facilitate the integration of renewable energy resources.

While Idaho's natural gas utilities have been slow to adopt efficiency measures, each of the three electric utilities has steadily added to and expanded their suite of efficiency and demand response programs. But like power plants and other "supply side" resources, these "demand-side" resources must be approved, or in utility regulatory parlance deemed "prudent" by the Public Utilities Commission in order for the utilities to recover their investments in efficiency programs.

In the case of Idaho Power, which spends more on energy efficiency programs than any Idaho utility, its 2010 DSM programs savings increased 31 percent from 2009 – or enough to supply 13,500 average homes in the utility's territory. The demand reduction programs, those used to reduce peak demand, rose from 218 megawatts to 336MW in 2010, which by comparison is twice the output from the utility's Bennett Mountain gas peaking plant near Mountain Home. The utility spent $46 million on these programs, up $11 million from the year before. In fact, the rate of Idaho Power's efficiency program spending is increasing at such a clip in the past few years that it projects it will have a "negative balance" in its efficiency account of more than $17 million by the end of this year. That's how much more its spending on efficiency than it's taking in from its on-bill rider.

Idaho Power is interested in finding new ways to fund the expanding energy efficiency programs through ways other than just the rider. One of its ideas, which is included in Idaho Power's 2011 general rate case that is before the PUC, will be for the company to earn a return on some of its energy-saving programs, much as it does for its investments in power plants. That would help elevate non-generation DSM programs to their rightful place alongside power plants for accounting purposes.

As impressive as these numbers are, Idaho utilities cannot rest on their laurels, and the PUC needs to continue to push as hard as possible for the utilities to capture more savings. In regulatory speak, Idaho's electric utilities are required to capture "all cost-effective" energy efficiency, meaning all the energy efficiency whose cost-benefit ratio indicates the programs are worthwhile. But that standard will continue to evolve and the bar will always be raised each year as technology improvements make it possible to implement new efficiency programs that maybe didn't meet the cost-effective test earlier.

For those interested in learning more about Idaho Power's energy efficiency programs, go to www.idahopower.com/energyefficiency, where you can also download a copy of the company's 96-page "30 Simple Things You Can Do to Save Energy."

In the case of Avista, go to www.avistautilities.com and click the "Energy Savings" link.

If you're a Rocky Mountain Power customer, go to www.rockymountainpower.net and then the "Efficiency and Environment" button.

Do Your Curls!

When it comes to compact fluorescent light bulbs (CFLs), let's put one myth to rest: They are not toxic spills waiting to happen.

Two of the main hurdles between CFLs and broader use continue to be complaints that their light just isn't right and that they contain highly toxic mercury. The first is generally rooted in a bad experience with an old-generation CFL, but today's bulbs no longer carry that burden. The second issue – mercury – is just as easily debunked if done right.

First, compare a traditional incandescent light bulb to a CFL. True, CFLs contain minute amounts (4 milligrams or so) of mercury, while traditional bulbs are mercury-free. However, CFLs are 75 percent more efficient, so incandescent are actually responsible for far more mercury emissions from the thermal power plants that produce our power. The Energy Independence and Security Act of 2007 is requiring a transition to these more efficient lights over time. Beginning in 2012-2014, lighting must be 25-30 percent more efficient. By 2020, lights must be at least as efficient as a CFL – effectively dooming the era of traditional inefficient bulbs.

Some quick CFL tips, courtesy of the U.S. Environmental Protection Agency's Energy Star (www.energystar.gov):

- Get the most out of your CFL's life by leaving them on for at least 15 minutes. Flipping them on and off doesn't do you or the CFL any good.
- Use three-way CFLs on three-way sockets, and use dimmable CFLs on dimmable switches.
- CFLs like to breathe to stay cool, so put them in open fixtures because closed fixtures can generate heat, which CFLs hate!
- Enclosed fixtures are ideal for outdoor use as they protect CFLs from the elements.
- Many consumers shun CFLs because they don't know how to get rid of them after they burn out. CFL disposal varies by jurisdictions, so check your local solid waste agency to determine the best way to dispose of spent CFLs. In addition, check with your electric utility or a local "big box" hardware store to see if they take them.

Chapter 5

Transmission

Why, Yes, You *Should* Care About the Electric Grid--Smart or Not

Moving all those eager-beaver green electrons flying out of wind turbines 300 miles away over creaky old transmission systems, down through substations, across more creaky old distribution systems, into your house and into your patiently waiting compact fluorescent is no small feat.

Much is said nowadays about the need to build a "smart grid" to more efficiently deliver power from distant generation resources to our homes and businesses, and for good reason. The coming decade and beyond will bring about the largest transformation of electricity delivery since the development of the modern power transmission system. In this chapter we'll look at how the electricity transmission and grid systems work, and more important how a lot of very smart people around the country are developing all kinds of new technologies that collectively are referred to as the "smart grid."

Today's hefty electric grid is a vast network of interconnected transmission lines attached to giant towers that carry usually big amounts of electricity from generation stations such as coal or hydroelectric plants across great distances to "load centers" where the power is needed, as we'll see below. For the most part, those big power generation plants are located in remote areas either because that's where the power source is, as with dams or coal plants or wind farms, or because most people don't want to live anywhere near a coal plant.

So long as more than half of all electricity consumed in Idaho is generated in another state, power lines and other transmission equipment are a fact of life here. One of our goals is that "distributed generation" located much closer to where it's needed will reduce the need for Big Transmission. These "non-wires" energy solutions, like solar on our homes or community-based wind generation, will soon be here to help solve our energy challenges, but they're not here yet in quantities that make a difference.

While today's transmission system was a modern marvel as it grew over time, it's no longer adequate to meet 21st Century needs. Far from it: There are simply more of us and despite our best efforts to use energy more efficiently than ever, many of us indirectly or directly use much more than we used to. We simply have more things that need energy, and it's not just the phone chargers, computers and accessories, or electronic equipment that are driving up consumption.

As a result, many really important transmission lines cannot handle much, if any, additional generation, including renewable generation, needed to meet this new electric load. At times many of these power lines operate at or near capacity. To better understand the issues surrounding transmission in and around Idaho, let's first take a look at how those electrons normally get from a power plant to your house.

Electricity 101: A Long, Strange Trip

We start at a power plant, and since it doesn't much matter what kind we'll make ours a wind farm in which the turbines collectively generate a good deal of power to deliver to a utility and ultimately to you. As the wind blows, our wind farm's blades begin to slowly spin and eventually produce electricity.

The generators feed the electricity into a power plant substation, where the power is cranked up to something like 230 kilovolts or 500 kilovolts ("500kv") to get it ready for its long trip. Once it leaves the substation near the power plant, the electrons hit the Electricity Interstate, all revved up and speeding along a high-voltage line such as a 345-kilovolt transmission line that's strung between those big towers you can see from a distance or drive under when your car radio is filled with that static, power line noise.

As it nears its destination, the electricity is greeted by another substation that acts like an interstate off-ramp and is stepped down from its super-charged level to something more manageable by the smaller "distribution" lines that will eventually deliver those electrons to you. You've probably seen some of these substations around, maybe in your own neighborhood: A bunch of wires coming in and going out with a bunch of metal box-like devices and all surrounded by a chain-link fence.

As it gets even closer to your house, the electricity taps on the breaks a little bit more with the help of smaller substations and ultimately one of those cylinder-looking transformers atop your nearby power pole, the one with the "Garage Sale" or "Lost Dog" flier attached, where it finally delivers the 120 or 240 volts we're more familiar with and into to our toasters.

Getting a line on transmission

The backbone of today's transmission system consists of nearly 160,000 miles of high-voltage transmission lines. The interstate transmission system is regulated by the Federal Energy Regulatory Commission (FERC) and managed by different regional transmission organizations. That's because, with the exception of Texas, most of our transmission systems cross state boundaries and electricity is often traded among utilities, so someone has to be the traffic cop.

Because customer demand or "load" in Idaho varies dramatically by time of year and time of day, and because power plants might go out of service, the transmission system must be strong enough to manage these swings to ensure there is always enough power available on the utility's grid system and that the transmission to move it to keep the lights on is always available. Of course, there are times when the transmission system simply cannot carry more electricity, or when too many generators go down. That's when we see blackouts. It was a series of blackouts in the past two decades, including a major one in the Northeast United States and Canada in 2003, that led the federal government to launch the massive overhaul of the system.

Think of the electric power grid as essentially a network of pipes that allow the flow of electrons from the generator to the consumer. Some of those electrons are green, coming from wind farms or other renewable generation resources. Some are brown, coming from fossil fuel generators such as coal, gas, or nuclear plants. The transmission system doesn't distinguish between the two: The electrons will seek the most efficient route to their destination, taking detours when the transmission line is congested or when a line goes down. Anything to keep moving and get to their destination. The beauty of the interconnected electricity grid is that there are countless ways for electricity to find its way, at least under normal conditions. The North American Electric Reliability Council (NERC) was created in 1968 to ensure that the grid can handle line failures or other disruptions and still function. NERC also requires utilities to have power reserves to meet the greatest possible demand on the system. One problem with the current grid system and with relying on distant generation resources is that power lines bleed energy through heat over great distances, so much so that it's estimated we lose 10 percent of the generated electricity through "line loss."

So who owns the wires in the Pacific Northwest? The Bonneville Power Administration (BPA), the U.S. Department of Energy's regional federal power marketing agency, provides about half the electricity used in the region (almost all from hydropower projects) and owns about 75 percent of the transmission. Some utilities own much of their own transmission system. Idaho Power, for instance, owns more than 4,600 miles of high-voltage transmission lines. Under federal law, however, all transmission owners must provide "open access" to those needing to move electricity so long as there's extra room on their lines.

One advantage of the open access is that Idaho is for the most part a "summer peaking" state, meaning its highest loads occur in the summer when air-conditioning and irrigation pumps are busiest, while much of the west side of the Pacific Northwest is "winter peaking." So when Idaho needs to buy extra power in the summer, it's likely available. And when Idaho has extra power in the winter, that's when our neighbors to the west need it. Unfortunately, the transmission lines connecting Idaho to its neighbors are often very crowded, making the movement of electricity within the region problematic, especially since no major transmission construction has taken place in our region since the late 1980s.

One of the big problems with today's overcrowded electricity transmission systems is that there is little room for new generation – especially renewable generation. While there may be solar, wind, geothermal or other renewable developments ready to build, they won't get far if there is no room on the grid for their power. Which is currently becoming a problem in moving renewable energy from eastern Idaho to the Treasure Valley: The big east-west transmission system may be adequate some times of the year, but not in the summertime when it's needed most. Likewise for the transmission lines connecting Idaho to the Pacific Northwest, which is why Idaho Power is proposing to build a large new line between the Treasure Valley and the Boardman area west of Pendleton.

Idaho is not alone: Nevada has the potential to provide huge amounts of solar electricity to western markets, but lacks the transmission to get it there. Or in the Midwest, where the vast amount of wind energy is only as accessible as the choked transmission

system to the urban markets that need it. The American Wind Energy Association and the Solar Energy Industries Association produced a joint report that estimated 300,000 megawatts of wind projects were being delayed for the lack of available grid space, and that 13,000MW of California solar energy was in the same boat.

Jon Wellinghoff, chair of the U.S. Federal Energy Regulatory Commission, noted in 2009 that 75 percent of the nation's energy demand is on the east and west sides of the country, but most of the wind potential is in the central United States and solar in the Southwest.

"We have a lot of location-constrained, low-cost economic, renewable resources like wind and geothermal and solar that have to be delivered to the loads," Wellinghoff said, noting that a lot of the renewable energy potential is not near the locations that need it. "We have to have the transmission to deliver that as well," he said. "So we need to do both. We need to do distributed systems, energy efficiency, and we also need to move those economic, low-cost renewable resources to the loads. My focus is making sure that we can integrate renewables into that transmission system because if we can't make that transmission system work, then none of this is going to work. It won't work for the renewables, it won't work for the coal, it won't work for the nuclear. Ultimately, the transmission system has to be the glue that hangs this all together in a way that we can get these resources to loads."

Many states and utilities are pressing for immediate transmission improvements, particularly with the advent of state "renewable portfolio standards" that require utilities to obtain a percentage of their power from renewable energy, only to find they can't get the power reliably delivered.

Enter the Smart Grid

So what's the answer, aside from trying to build our way out of the problem by building big new power lines that can carry more electricity than existing ones – *and that cost about $2 million a mile to install?*

First, evolving energy efficiency and conservation measures will greatly reduce the need for new power plants and transmission lines. Energy efficiency is not only the cheapest kilowatt available for customers, it also helps defer the need for expensive power plants and the transmission infrastructure they require. Equally important is what we call "distributed generation," a concept in which smaller generation devices are built closer to home and "distributed" all over, which also eases pressure on Big Transmission. And then there's the "smart grid," which can mean different things to different people.

In a March 2009 presentation to the Northwest Power and Conservation Council in Boise, Terry Oliver, the Chief Technology Innovation Officer for the Bonneville Power Administration, described the smart grid this way:

- The term 'smart grid' represents a vision for a digital upgrade of distribution and long distance transmission grids to both optimize current operations, as well as open up new markets for alternative energy production.
- Use of robust two-way communications, advanced sensors, and distributed computing technology will improve the efficiency, reliability and safety of power delivery and use.
- One United States Department of Energy study calculated that internal modernization of U.S. grids with smart grid capabilities would save between $46 billion and $117 billion over the next 20 years.
- If smart grid technologies made the United States grid just 5 percent more efficient, it would equate to eliminating the fuel and greenhouse gas emissions from 53 million cars.

Whew!

So the smart grid isn't just one or two new-fangled technologies to make our grid more efficient. It actually makes what is now a pretty dumb grid a lot more *intelligent* with the help of real-time communications between utilities and consumers, or between the grid and your appliances. It will enable storage of energy, something that is currently extremely difficult. It lets consumers and their appliances interact consciously and subconsciously with utilities. It allows utilities to avoid construction of expensive "peaking" generating facilities such as rarely used natural gas peaking plants by reducing demand during times of extremely heavy use. It allows the grid to heal itself when plants or power lines go down by immediately finding other routes to move electricity around a problem. It allows widespread use of "distributed generation" such as home-scale wind turbines and photovoltaic systems. It uses "smart meters" that allow your utility to let you know how much your electricity is costing at any given time – more during times of high demand and less during times of low demand. These smart meters will let our appliances know the cheapest time to operate, which saves energy and money.

As the nation begins shifting toward plug-in electric vehicles, it stands to reason that these new-generation cars and trucks might add to our overall electricity demand and create a need for more generation. But in a smart grid world, the vehicles and

Source: Pacific Northwest National Laboratory

Hey! Where'd Those Electrons Go?

One of the vexing things about moving a boatload of electrons from something like a coal plant to something like your refrigerator is that it's impossible to ship electricity long distances over transmission lines, through substations, over more lines and eventually to your house without losing a little bit of that electricity.

In a nifty little book, "What You Need to Know About Energy" (that's downloadable for free at http://sites.nationalacademies.org/Energy/Energy_043338) the National Academy of Sciences put together a cool way to look at what happens to electric power between the generator and you, the consumer.

Let's assume (much as we'd rather not) that the electricity is coming from a coal plant. The coal is burned in a power plant to release the energy stored in the coal and to generate the heat needed to produce steam to power the turbines to generate electricity. And, thanks again to the National Academies, let's assume the energy content of the coal going into that power plant is 100 units:

So, 100 units of energy content go into the coal plant, but the power plant loses 62 units of that energy just while generating the power. Amazingly, a typical coal-fired power plant may be 38 percent efficient, meaning as much as 62 percent of the energy in that coal never even makes it to the grid.

Whoops! We're now down to just 38 units of energy surviving the generation process and entering the transmission system.

With those 38 units hopping on the power lines, another two units are lost to "line losses."

Uh, oh! We're now down to 36 units of energy coming into your house.

So now we're down to about one-third of the power that came from the power plant as those 36 units of energy come into your home to illuminate an energy-wasting incandescent light bulb (not a CFL!). The bulb releases 34 units of energy in HEAT, and uses just 2 units of energy to actually produce light.

So of the 100 units of energy that went into the power plant, just 2 units were used in the light coming from that old-style light bulb. The rest were lost to heat and transmission losses.

How efficient is that?

their smart chargers will work to the grid's advantage, as the hybrids can actually sell power back to the grid when not in use and recharge during the night when electricity demands are not nearly as high. The cars then become "batteries" themselves, storing power for the grid when they don't need the electricity to run.

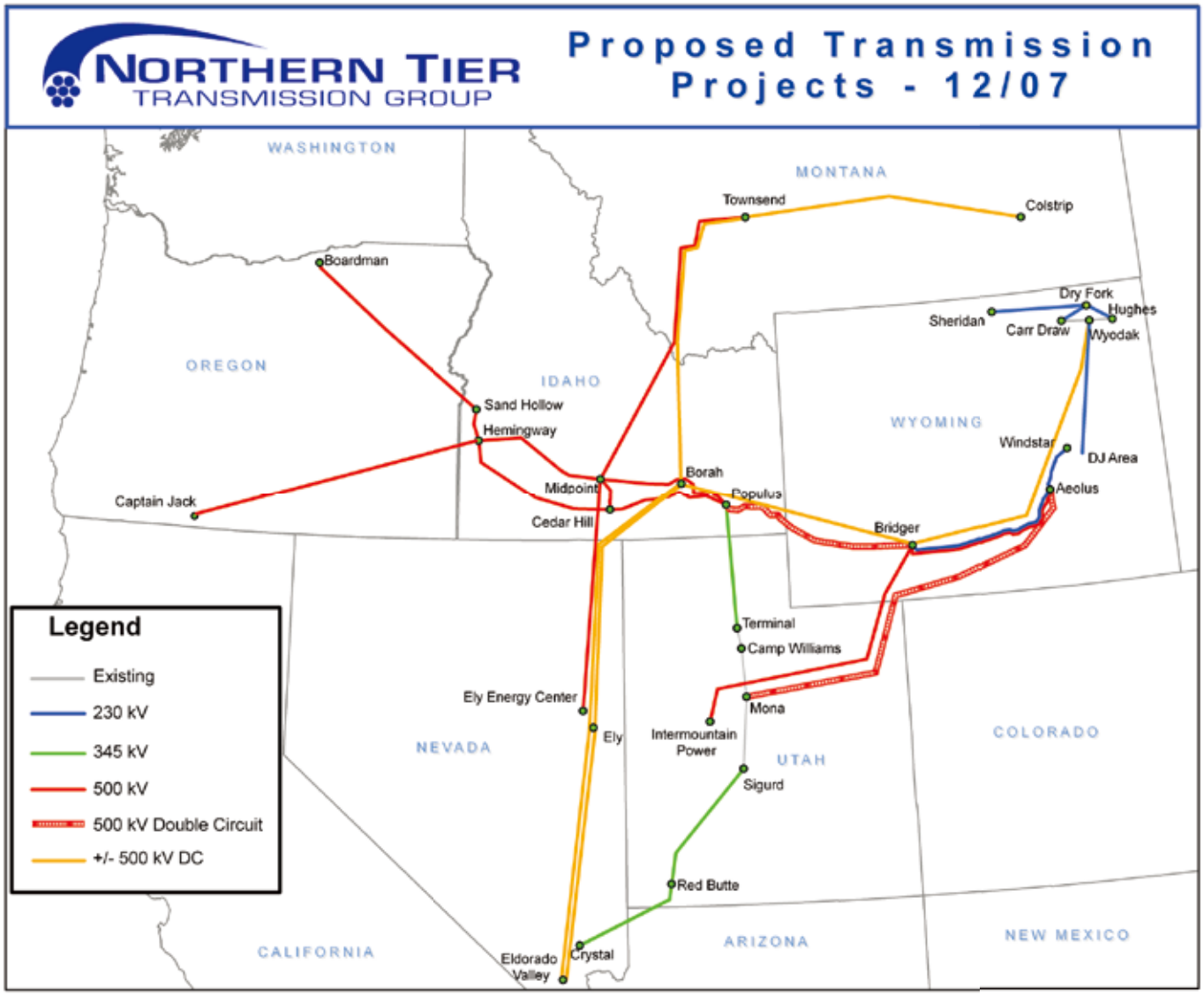
In short, the smart grid reinvents the traditional wires-based transmission system into a grid that saves energy by using it smarter and that builds a more robust network to move those electrons in the most efficient ways possible. Beyond the energy-saving and carbon-reducing technologies coming our way, the smart grid also eases us off the old-style centralized energy distribution system that is susceptible to attacks or natural disasters in favor of a decentralized grid that is more stable, more efficient, and less prone to cascading blackouts and other disruptions.

The U.S. Department of Energy likens the advent of the smart grid to the development of the Internet or the nation's interstate highway system. In a useful primer on smart grid technologies (http://www.oe.energy.gov/smartgrid.htm), DOE also says a smarter grid will help the United States greatly reduce its "carbon footprint" by reducing our electricity consumption and by moving massive amounts of carbon-free renewable energy onto the grid, making it possible to begin phasing out greenhouse gas-spewing coal plants.

"With the appropriate application of ingenious ideas, advanced technology, entrepreneurial energy and political will, there will also come a time when you won't remember life before the smart grid," DOE says. That's because, unlike today when you have little real control over such things as the cost of your electricity or the best time to use it, you and your appliances will be in direct communication with your utility, and vice-versa. Not necessarily in a creepy Big Brother way, but in ways that will empower you to use energy in the most efficient and least expensive ways possible. You'll know beforehand whether you'll be paying 7 cents a kilowatt hour or 12 cents before firing up the washing machine.

On the utility's side of your meter, and using the same kinds of monitors, sensors, and high-speed communication, the utility will have far more control over obtaining electricity from the best available resources. For instance, it can act quickly during times of heavy consumption to reduce that peak demand and the expensive power costs that go with it. With today's technology, utility grid operators have little control over when demand goes up or down, or by how much. A smarter grid gives those operators new tools to manage the load and to meet growing demand without necessarily having to install expensive new generation and transmission. It helps put us on a path to "non-wires" solutions to meeting our coming energy needs.

As the old grid begins to give way to a new one that's much more efficient and dynamic, it will be renewable energy that is one of the main drivers.


NORTHERN TIER
TRANSMISSION GROUP
Proposed Transmission Projects - 12/07
WASHINGTON
OREGON
CALIFORNIA
IDAHO
NEVADA
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
Townsend
Colstrip
Boardman
Dry Fork
Sheridan
Hughes
Carr Draw
Wyodak
Sand Hollow
Hemingway
Windstar
DJ Area
Aeolus
Captain Jack
Midpoint
Borah
Populus
Cedar Hill
Bridger
Terminal
Camp Williams
Ely Energy Center
Mona
Ely
Intermountain Power
Sigurd
Red Butte
Eldorado Valley
Crystal
Legend
Existing
230 kV
345 kV
500 kV
500 kV Double Circuit
+/- 500 kV DC

String 'Em Up: Proposed Idaho Transmission Projects

While "non-wires" solutions to providing electricity are often preferred over the construction of extremely expensive, unsightly, and environmentally problematic Big Transmission projects, development of some new transmission is inevitable given the transmission "choke points" in Idaho from east to west, north to south, and from Boise to the Pacific Northwest.

Some of these transmission projects have merit in that they can allow utilities access to distant renewable energy resources such as wind farms in Wyoming, Oregon, Washington, and Montana. Being able to move renewable energy into Idaho when it's needed here and out to other markets when it's needed there can be a good thing. Especially since current transmission constraints make moving large amounts of power into and out of other markets during certain times nearly impossible.

Besides being off-the-charts expensive at more than $2 million a mile, building these mega-transmission projects is hugely complicated and usually controversial as the projects by their nature traverse all kinds of private and public lands, not to mention multiple government jurisdictions. There are excellent reasons for these projects to require exhaustive environmental review. Here's a look at some of the high profile transmission projects that are in the works with direct impacts on Idaho – as well as links to sites where you can learn more and become involved in the public input process. All or some segments of these lines are rated at 500 kilovolts (500kv), which are among the highest-rated power lines in use today and which are distinguished by enormous towers and broad rights-of-way.

Gateway West

The best-known of the current transmission projects, Gateway West is being developed by PacifiCorp and Idaho Power. The 1,250-mile project would run from the Dave Johnson coal plant Glenrock, Wyo., east of Casper, through some heavy wind territory and through the Jim Bridger coal complex near Rock Springs and then into Idaho and eventually to Murphy, south of Nampa in Owyhee County. It is tentatively scheduled to be completed in 2014, but that timetable will almost certainly slip. Developers say the project will provide greater access to renewable energy resources in Wyoming and the east-west movement of that power. They also say it will ease pressure on the existing smaller lines, which during some parts of the year are near capacity – making it difficult for Idaho and Wyoming wind projects to tie into the system.

Because of its size, Gateway West has posed significant challenges to the two utility developers in both states. In Idaho, Idaho Power and PacifiCorp have been holding numerous public meetings in or near affected communities to attempt to answer concerns about possible private property condemnation and how the line fits in with community development and other plans. In addition, Idaho Power must work with the U.S. Bureau of Land Management and U.S. Forest Service on possible routes and development of a federal environmental impact statement. The Wyoming BLM office is the lead agency in conducting federal environmental reviews, which will allow the public a chance to comment on the line, the route, and its impacts on private, state and federal lands and other issues. The much-delayed Draft Environmental Impact Statement is now scheduled to be released for comment in Fall 2011.

For more information on the Gateway West project, visit www.gatewaywestproject.com and www.wy.blm.gov/nepa/cfodocs/gateway_west

Boardman to Hemingway

This Idaho Power project would link the Hemingway substation at the west end of the Gateway West project to a station near Boardman, Ore., on the Columbia River, where Idaho Power has a 10 percent share of the Boardman coal plant and where it could access the rich Pacific Northwest wind and other resources.

Idaho Power says the line is needed to relieve pressure on the heavily used existing transmission system from its southwest Idaho load center to the Pacific Northwest. It also says the line can help move power from Idaho to the Northwest in the winter, when Idaho's demand slacks off and the Pacific Northwest's is higher, and vice versa in the summer, when Idaho Power's peak use is highest.

The 300-mile line has not been without controversy. Idaho Power decided to delay permitting and construction of Boardman to Hemingway ("B2H") after residents and officials in communities such as Parma, Idaho and Ontario, Ore., and others complained the company failed to adequately brief them on the project and the proposed route. Oregon utility regulators agreed with Idaho Power that the process needed to be slowed down to allow for community meetings and other outreach. Unlike in Idaho, Oregon has a state facility "siting" authority that will carefully review this energy project before it can move forward. Among the issues beyond the aesthetics of 156-foot-tall steel lattice towers are worries that the lines could interfere with crop dusting the onion fields on both sides of the Idaho-Oregon border. So instead of the line being built by 2012, construction may not begin until 2013 with an eye toward completion in 2015.

For more information on the line and public involvement opportunities, visit www.boardmantohemingway.com

Mountain States Intertie

South Dakota-based NorthWestern Energy plans to build a high voltage line from Townsend in southwestern Montana into Idaho and down to the central MidPoint substation between Jerome and Shoshone, where the line is designed to link up with other lines to eventually carry electricity into Nevada and the Southwest.

Mountain States Intertie (MSTI) developers also say the project will relieve congestion in the western grid and help move the estimated 30,000MW of clean and renewable energy that western governors say they'll need on the grid by 2015 in order to meet various state renewable standards that require a percentage of many states' utilities to provide from renewable resources. Idaho does not have such a requirement, but it is central to the larger renewables goal because so much of the transmission will cross the state.

The Montana Department of Environmental Quality is the lead agency for the project, which NorthWestern hopes to complete by 2013 or 2014. The project is being coordinated by the Northern Tier Transmission Group (see below). The project is aimed at bringing Montana coal and renewable energy into high-load regions to the south and west.

The MSTI project has been delayed due to legal and other issues, and given the delays of more than a year, the U.S. Bureau of Land Management has withdrawn the preferred route identified in its environmental review. While that doesn't kill the project, it's likely to move the expected completion date back, perhaps significantly.

There will be opportunities for public comment and involvement as the project moves forward. For more information about the Mountain States Intertie project, visit www.msti500kv.com

The Northern Tier Transmission Group (NTTG)

The Northern Tier Transmission Group is made up of multiple utility and transmission providers and other stakeholders and is charged with promoting a more efficient use of the grid and coordinating region-wide transmission projects in the Pacific Northwest and the region's mountain states and Canadian provinces. The NTTG covers Albert, Montana, Wyoming, Colorado, New Mexico and all states and provinces to the west. It works to ensure utility-specific transmission projects or projects undertaken by multiple utilities. Working with state and provincial governments and other stakeholders, NTTG also promotes grid-wide transmission reliability and efforts to reduce transmission congestion across the region. Participating utilities include Deseret Power Electrical Cooperative in Utah, Idaho Power, NorthWestern Energy, PacifiCorp, and the Utah Associated Municipal Power Systems (UAMPS). Combined, those utilities own more than 27,000 miles of high-voltage transmission lines and serve 2.6 million electric customers.

For more information, visit www.nttg.biz

Chapter 6

Idaho's Energy Utilities

The Big Three, BPA, & the Muni's and Co-Ops

As we begin to figure out how to influence utilities when they choose between energy efficiency or building new power plants or between using clean renewable energy or dirty coal and gas, it helps first to get a better idea of the nature of Idaho's many diverse utilities and how they operate.

Idaho has two primary kinds of electric utilities. Eight of 10 Idaho electricity customers get their power from large, private "investor-owned utilities" – Idaho Power Co., Avista Utilities, and PacifiCorp, which in Idaho is known as Rocky Mountain Power. These three "IOUs" have clearly defined "service territories" and each of them is governed by the rules and decisions of the Idaho Public Utilities Commission (PUC), which we address in more depth in another chapter.

Boise-based Idaho Power, by far the state's largest utility, serves customers roughly from Riggins in west central Idaho down to southwest Idaho (including Boise) and across the southern tier of the state to the Pocatello and Blackfoot area. Salt Lake City-based Rocky Mountain Power/PacifiCorp, a subsidiary of MidAmerican Energy Holdings Co., serves a much smaller customer base in eastern Idaho, as well as in Utah and Wyoming; and Spokane-based Avista operates in the Idaho Panhandle, western Montana, and into Washington. There is actually a fourth electric utility that's regulated by the PUC, and that's the Atlanta Power Co (see the small triangle in the middle of Idaho on the service map).

In addition to those private utilities, Idaho has 11 municipal utilities, such as Idaho Falls Power, and another 17 rural cooperatives scattered among the pockets not served by the big IOUs. They receive the bulk of their power from the giant Bonneville Power Administration, the U.S. Department of Energy agency that serves utilities across the Pacific Northwest from its network of hydropower projects and also from a nuclear power plant – the only source of nuclear energy serving Idaho utilities. Unlike the Big Three electric utilities, these power providers are not answerable to the Idaho Public Utilities Commission. Rather, they are answerable to city residents in the case of a utility like Idaho Falls Power, or to their individual cooperative members.

On the natural gas front, most of Idaho is served by either Intermountain Gas or, in the north, by Avista's gas operation. Both of these are regulated by the PUC, and as with electric utilities, they also file periodic rate cases (though less frequently than electric utilities) and they file their long-term plans for how they'll get the gas they need to meet customer demand.

Idaho's top five utilities ranked by power sold in 2008:

- Idaho Power: 13.8 million megawatt hours
- Avista: 3.5 million
- PacifiCorp (Rocky Mountain Power): 3.4 million
- City of Idaho Falls: 667,000
- Kootenai Electric Coop: 406,000

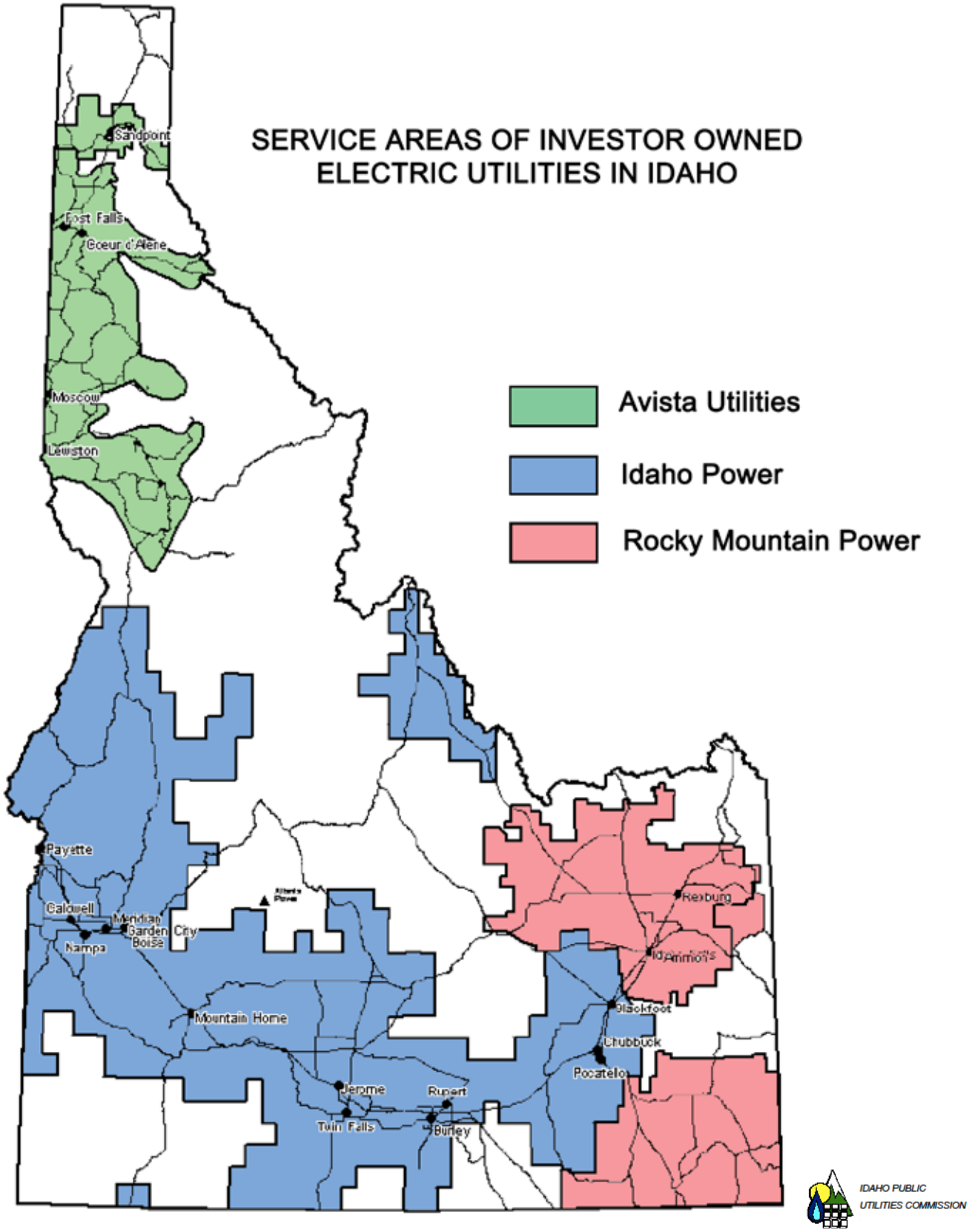
Before we get into how the utilities work, let's take a snapshot look at the players: The Big 3, Bonneville, and the municipals and co-ops. Beginning with what is by far the biggest utility in Idaho:

Idaho Power Co.

www.idahopower.com

Idaho Power Co. serves an estimated 490,000 customers, almost all of which are in southern Idaho, with about 5 percent of the customers in eastern Oregon. The fastest-growing utility in the state, Idaho Power expects to add up to 12,000 new customers a year through 2025. Of its customers, about 408,000 are residential, 65,000 are commercial or industrial, and 18,500 are irrigators. Its 24,000-square-mile service territory includes nearly 5,000 miles of big transmission lines and 27,000 miles of "distribution" lines, which are the ones that run from substations to customers overhead or underground.

The state's largest utility has an "average firm load" of less than 2,000 average megawatts. It owns 3,255MW in "nameplate generation" – meaning the maximum amount of power its dams and thermal generating plants can produce. Examples of the generation plants Idaho Power owns or partly owns include the huge Brownlee-Oxbow-Hells Canyon hydropower complex, which can crank out a combined 1.1 *gigawatts*, or 1,166 megawatts at full capacity; the Jim Bridger coal plants in Wyoming, which can produce 770 megawatts; the Evander Andrews natural gas peaking plants near Mountain Home, which can produce about 217MW at full


SERVICE AREAS OF INVESTOR OWNED
ELECTRIC UTILITIES IN IDAHO
Avista Utilities
Idaho Power
Rocky Mountain Power
Sandpoint
Post Falls
Coeur d'Alene
Moscow
Lewiston
Payette
Caldwell
Meridian
Garden City
Boise
Nampa
Mountain Home
Jerome
Twin Falls
Rupert
Burley
Pocatello
Chubbuck
Blackfoot
Rexburg
Idaho Falls
IDAHO PUBLIC
UTILITIES COMMISSION

steam; and CJ Strike Reservoir, which can produce about 83MW. Idaho Power also has a diesel generator in Salmon, which is for emergency backup. What about Lucky Peak Reservoir near Boise? That power is actually purchased by Seattle City Light!

All told, Idaho Power's generation resources include 17 hydroelectric plants and part-ownership in three large coal plants, including a shared ownership with PacifiCorp at the Jim Bridger coal plant complex in Wyoming, with Nevada Power at the North Valmy power plants in Nevada, and with Portland General Electric and others with the Boardman plant in Oregon. The company also operates a small fleet of simple cycle natural gas peaking power plants at Bennett Mountain and Evander Andrews, which are visible from Interstate 84 just west of Mountain Home.

These generation plants rarely produce the maximum amount they were built for, whether due to water conditions, power plant maintenance, or other factors. Still, that would seem plenty of power to meet Idaho Power's need for 2,000 average megawatts to serve its customers, until you consider the company's "peak load" is more than 3,000MW and rising. And that's a huge problem for Idaho Power, which has more energy than it needs for most days of the year, but is very tight on power during these peak times.

Unlike many Northwest utilities, Idaho Power is a "summer peaking" utility, meaning its customers demand the most electricity in summer months, when the booming residential customer base fires up their air-conditioners while farmers need more power to run their irrigation systems. Given that Idaho Power's greatest need is to meet its peak demand, the company has devoted some of its conservation and energy efficiency measures to shaving that summer peak. Those programs include one in which residential customers in some areas can volunteer to have their air-conditioners "cycled" off periodically for brief periods in the summer in exchange for a $7-per-month rebate from June-August, and another in which farmers agree to do much the same thing with their irrigation pumps for much larger payments. The ability of the company to "shift" that electrical consumption helps it reduce those troublesome demand "peaks" – and reduce the need for pricy gas plants that would need to be fired up to supply the power instead.

Idaho Power's power supply mix looks like this:

- 40 percent coal
- 38 percent hydropower
- 14 percent market purchases
- 1 percent natural gas and diesel
- 7 percent long term purchases, including wind, geothermal, biomass, small hydroelectric and combined heat and power

Avista Utilities

www.avistautilities.com

Known until 1999 as Washington Water Power Co., Avista Utilities provides electricity to about 356,000 customers and natural gas to about 316,000 customers in Washington, Idaho, and western Montana. Its Idaho Panhandle territory includes about 113,000 customers and its service territory covers more than 30,000 square miles and a population of 1.6 million. Idaho accounts for 32 percent of Avista's customer sales, with Washington representing 58 percent and Oregon 9.6 percent. It is the only of the three major Idaho electric utilities to also provide natural gas service.

The utility's average electric load is about 1,075 average megawatts. Like Idaho Power, it has a "peak" demand problem of its own, with a 1,700MW winter peak and a 1,500 summer peak.

Avista owns about 2,700 miles of large transmission lines and another 18,200 of distribution lines running to its customers. It also runs 7,600 miles of natural gas distribution mains.

Avista's electricity comes primarily from eight hydroelectric plants on two rivers, as well as natural gas, some coal, and wood waste combustion plants. Avista relies more on natural gas plants than any other Idaho electric utility, but more than a third of its electricity comes from hydropower. Examples of its generation resources include 1,000MW of hydropower from such projects as Cabinet Gorge and Noxon Rapids on the Clark Fork and Post Falls; a 150MW natural gas plant at Rathdrum; and a 222MW share of the huge Colstrip coal complex near Billings, MT.

Avista's power supply mix looks like this:

- 50 percent hydropower
- 35 percent natural gas

- 10 percent coal
- 2 percent biomass
- 2 percent wind
- 1 percent other contracts

Rocky Mountain Power (PacifiCorp)

www.pacificorp.com

Rocky Mountain Power serves an estimated 70,000 southern Idaho customers. While its parent company PacifiCorp also serves customers in Washington, Oregon and California, most of the power for its "east side" service territory in Utah, Wyoming and Idaho comes from PacifiCorp's fleet of coal plants. The company is known as Pacific Power in California, Oregon and Washington.

Of the utilities serving Idaho, Rocky Mountain Power and its parent PacifiCorp are the longest in coal-fired generation. It is also the utility that serves the most states in the region, which is important in that it is subject to utility regulators in each of those states in a service territory that covers 136,000 square miles. Additionally, because Washington and Oregon have "renewable portfolio standards" that require utilities to provide a certain percentage of their total power from renewables, PacifiCorp has had to increase the amount of renewables on its system in recent years.

PacifiCorp serves 787,000 customers in Utah, 133,000 in Wyoming, 70,000 in Idaho, 555,000 in Oregon, 126,000 in Washington, and 45,000 in California. By class, 1.4 million of its 1.7 million customers are residential, 214,000 are commercial, 34,000 are industrial or irrigation, and 4,000 are listed as "other."

The company owns 15,900 miles of big transmission lines, 62,000 miles of overhead distribution lines, and 14,500 miles in underground distribution lines.

The company's historic reliance on coal, combined with the likelihood of federal carbon regulations, is prompting PacifiCorp/Rocky Mountain Power to speed up the integration of new renewables into its system. For example, the company purchases about 64.5MW of wind power from the 43-turbine Wolverine Creek wind farm east of Idaho Falls. PacifiCorp has more than 1,000MW of owned wind on its system, and another 600MW of wind under contract from others. It says its owned and contracted wind has increased by more than 1,400MW since 2006.

PacifiCorp's power comes from 11 coal plants; 47 hydropower plants; six natural gas plants; 12 wind facilities; including Wolverine Creek, Idaho's first major wind farm; and two geothermal facilities.

Rocky Mountain Power's power supply mix looks like this:

- 55 percent coal
- 13.5 percent hydropower
- 22.3 percent natural gas
- 9.3 percent renewables, almost all wind

Bonneville Power Administration (BPA)

www.bpa.gov

BPA, the region's federal power marketing agency, was created in 1937 and provides about one-third of the electricity used in the region, although the percentage is far less in Idaho. It sells power to more than 140 utilities. Like a lot of utilities, Bonneville is charged with promoting energy efficiency and renewable energy, and many of its customer utilities credit Bonneville for much of their institutional energy efficiency efforts. Unlike a number of utilities, however, Bonneville and its federal partner agencies are also responsible for undertaking widespread programs to help restore the many fish stocks that have been impacted by the system's dams.

BPA is part of the U.S. Department of Energy, but is funded primarily through electricity generation and transmission receipts.

BPA's electricity – and by extension the power used by Idaho's co-ops and municipals – comes from 31 U.S. Bureau of Reclamation and U.S. Army Corps of Engineers dams on the Columbia River and its tributaries, as well as some wind and a nuclear reactor near Hanford, WA. The agency works with other federal entities such as the Bureau of Reclamation and the Corps of Engineers to manage the dams and the Federal Columbia River Power System (FCRPS). Bonneville also controls much of the region's electric transmission, with 15,000 miles of lines across its 300,000-square mile service area in the Northwest.

Besides marketing power, one of BPA's key functions deals with the ongoing efforts to restore endangered fish runs that have been severely impacted by the FCRPS. Those efforts include changing river flows during certain times of the year, working on fish-passage methods to facilitate movement of fish up and down stream, and control of fish predators such as sea lions and birds. Conservation, tribal, and government organizations are among those who have sued federal agencies over dam management on the Columbia River, and in particular the four dams on the Lower Snake River that have been targeted by many for breaching as a way to rescue Idaho-bound fish species from extinction.

BPA's customers include 57 electric cooperatives, 42 municipalities, 29 public utility district, seven federal agencies, six investor-owned utilities, three direct-service industries, a port district, and two tribal utilities.

BPA's power portfolio depends on the time of year and river flows. Its January one-hour peak capacity is 89.1 percent hydro, 6.3 percent nuclear, and 4.6 percent contracts for power such as wind. Its 12-month annual average is 78.8 percent hydro, 11.6 percent nuclear, and 9.6 percent contracts for wind and other power resources.

Municipals/Cooperatives

Idaho's non-regulated utilities serve about 12 percent of Idaho's total electric load. There are 11 municipal and 17 rural cooperative utilities, the largest being Idaho Falls Power. These utilities are members of the Idaho Consumer Owned Utilities Association (www.icua.coop) and acquire most of their electricity from the Bonneville Power Administration. While municipals and cooperatives are much more prevalent in places like Washington state, with Seattle City Light and Snohomish County Public Utilities District among the region's largest public utilities, they are not nearly as widespread in Idaho.

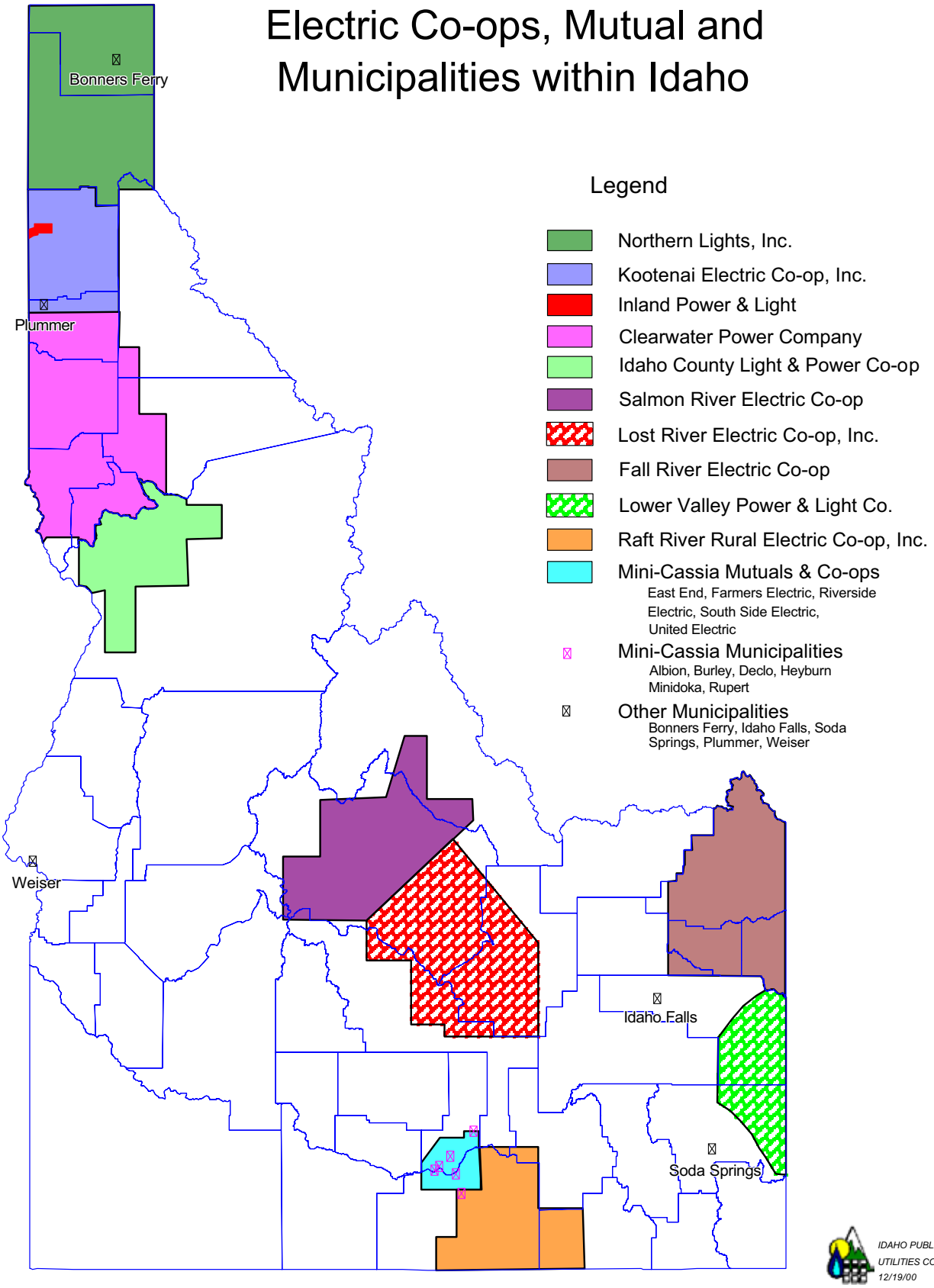
They dot the entire state, from Raft River Rural Electric in Malta and the City of Soda Springs in southeast Idaho to Salmon River Electric Coop in Challis, to Northern Lights in Sandpoint and Kootenai Electric in Hayden, to Idaho County Light and Power in Grangeville. The municipals are typically managed by local town or city councils; the cooperatives are managed by elected boards. All are accountable to their customers, who in the case of cooperatives are all part owners.

Here's the full list of Idaho's cooperative and municipal utilities:

- Northern Lights, Inc.
- Kootenai Electric Co-op, Inc.
- Inland Power & Light
- Clearwater Power Co.
- Idaho County Light &Power Co-op
- Salmon River Electric Co-op
- Lost River Electric Co-op
- Fall River Electric Co-op
- Lower Valley Power & Light Co.
- Rafter River Rural Electric Co-op
- Mini-Cassia Mutuals and Cooperatives including East End, Farmers Electric, Riverside Electric, South Side Electric, United Electric
- Municipalities including Idaho Falls, Soda Springs, Bonners Ferry, Plummer, Weiser, Albion, Burley, Declo, Heyburn, Minidoka, and Rupert

So that's the line-up. These are utilities where decisions are made in board rooms or city council meetings. A decision on whether to build a half-billion-dollar gas plant might be made by directors answerable to company shareholders, or by voters who elect city council members who also serve as directors of the home-town utility. Regardless, all utilities have to make fundamental deci-

Electric Co-ops, Mutual and Municipalities within Idaho



sions on how they are going to keep the lights on.

Each electric utility must know at all times how much power its customers need, and just as important where that power will come from and how the utility will get it to the customer. On an hourly and daily basis, utility planners keep a close eye on how much electricity is being used, but also on a number of other factors, such as weather, that might influence short-term use of electricity. They also keep an eye on what power is available on the market should they need to buy some, and also how the transmission traffic is shaping up in the event they need to obtain some additional power.

They also need to engage in long-term planning on how much energy they figure they can save through conservation measures. Whether a recession means a stagnant business market and flat energy demands, or worse, declining demands. Whether they need to begin long-term planning to build a new generation plant and the expensive transmission infrastructure to move that new electricity to customers. When to ask regulators or voters or directors for a rate increase to offset rising costs. The decisions a utility must make to meet its most basic obligation – serving all customers at all times – are never ending.

They also present us with chances to have our voices heard, as intimidating as that might seem.

Reaching Out and Touching Your Utility

Because the Big Three utilities are regulated by Idaho's PUC, they work under different rules than BPA or the cooperatives and municipals. Still, all of them have some things in common. And there are a number of ways we, the humble utility customer, can tell our utilities how we feel about their decisions and the way they do business. We'll touch on some of them in more detail in the chapter on the PUC, but here are some ways we get our points across to utilities big or small.

It's the longer term where you can get more involved in utility operations and planning. Idaho's Big Three utilities are required by the Idaho PUC (and because they operate in other states they're accountable to other states' regulators as well) to produce periodic "integrated resource plans" every other year and submit them to the PUC for review. These plans, known as "IRPs" usually entail the involvement of various stakeholders who are brought in for meetings over the span of months to advise utilities on whether they should beef up their efficiency goals so they can avoid having to build new generation plants, or if they need new generation what kind of plants they should consider.

In Idaho, the public is invited to attend these IRP meetings. Idaho Power's meetings are held in Boise, although when the IRPs are ready for public review the utility holds meetings around its service territory to explain the plan and invite questions. Avista and Rocky Mountain Power do much the same. When the plans are ready for review, we all have a chance to comment to the utility about things we like or don't like, and regardless of whether the utilities listen to us, we can also raise our concerns when the utilities submit their IRPs to the Public Utilities Commission for review. The PUC doesn't approve or deny the IRP, but it does listen to public concerns and makes a note of them for future reference when it "acknowledges" the utility plans.

We can also make our voices heard when utilities file those mysterious "rate cases," which they do every year or two to ensure they're earning the PUC-allowed rate of return on their operations. Investor-owned utilities are state-sanctioned monopolies, mind you, and as such they aren't allowed bottomless profits. They are, however, allowed a reasonable return as determined by the state regulators. Often, these rates cases involve more than simply how much a utility's rates should be or what its return should be. Sometimes we look at more detailed ways the utility does business, and it's in these rate cases where you can speak up.

It's usually not enough to simply say your bills are too high and you're mad as heck and you're not going to take it anymore. You're free to do that, of course, and the PUC will listen to you, but when it comes to speaking out about a utility's practices or the way it does business in rate cases or other matters, it always helps to be as specific as possible.

If you're served by a cooperative or municipal utility, such as Fall River Electric or Idaho Falls Power, you won't be working through the PUC. You'll be interacting directly with the cooperative itself, or in the case of a city-owned utility like Idaho Falls with your city officials. Sometimes that's better than being one of 480,000 Idaho Power customers feeling like a voice in the wilderness in taking your case to the PUC. Idaho's non-regulated utilities may get most of their power from Portland-based Bonneville Power Administration, but their decision-makers are generally in your home town or nearby.

Utilities like to pride themselves on their customer service, but dealing with them can sometimes be a lesson in frustration. The key is not giving up: If you have a complaint about service or about the way your utility does business, and the utility doesn't respond to you, you have recourse. In all cases, regardless of what kind of utility provides your power, someone oversees that utility. It may be the PUC and or it may be the town council, but you should never accept a non-response to your concerns.

We'll leave you with an inspirational story to prove the point: In 2009, a number of shareholders of IDACORP, which owns Idaho Power, became increasingly concerned about the company's unwillingness to pay serious attention to the growing amount of greenhouse gasses, especially carbon dioxide, its coal plants were emitting. After trying multiple times to get the company's attention, those shareholders took the next step and filed a shareholders' initiative to be considered at the IDACORP shareholders meeting. The initiative directed IDACORP to develop a plan to show how it would reduce its CO_2 emissions. Such initiatives almost never succeed, and none directing a utility to clean up its CO_2 act had ever succeeded. Until this one. Despite IDACORP's urging that shareholders reject the initiative until such time (if ever) that the federal government directs utilities to act to reduce greenhouse gas emissions, the shareholders rejected management's advice and approved the initiative – making IDACORP the first electric utility to be ordered by its own shareholders to clean up after itself.

Chapter 7

The Public Utilities Commission

Like it or Not, the PUC is Where the Energy Action Is

One of the first hurdles clean energy advocates face when trying to impact the state's energy policies and the way utilities do business is the bewildering maze of state and federal entities that have a finger in the energy pie. From the Idaho Public Utilities Commission to the state Office of Energy Resources and federal agencies, it's daunting enough to figure out who does what without trying to understand how to press the right levers. But once you get your foot in the door and poke around their websites, the challenge of interacting with these decision-makers becomes far less intimidating. Some might even find it invigorating!

It's important because as each year passes and as Idaho is forced to become more of a participant in the regional and national energy policy arena, the action continues to drift away from the Idaho Legislature, which in recent years has declined to explore innovative energy policies let alone implement them. Instead, the Idaho Public Utilities Commission (PUC) is increasingly the place where energy policies are developed, revised, and tinkered with in ways that are often not reported on by the Idaho media (many of which are as afraid of the PUC as we are) but that nonetheless have far more impacts on you than anything the Legislature has done with regard to energy.

If you want to have your voice heard and join the fight for good, sound energy policies in Idaho, you're almost going to have to pay a visit to the PUC sooner or later, whether it's actually testifying at a formal hearing or speaking out at a less formal PUC meeting or even sending your views or comments by snail mail or e-mail. So let's roll up our sleeves and take a look under the regulatory hood.

The Public Utilities Commission: There are no Dragons There. Really.

The Idaho PUC (www.puc.idaho.gov) is the state's regulatory body over such things as electric, gas, water, and telephone utilities and even railroads (sorry, you're on your own with your television dish or cable complaints).

The PUC is comprised of three full-time commissioners who are appointed by and serve at the pleasure of governor for staggered six-year terms. One of the commissioners must be from a minority party, and these days that's Commissioner Marsha Smith. She's joined on the Commission by Mack Redford and Paul Kjellander, who returned to the PUC in the spring of 2011 after leaving to head the Office of Energy Resources when it was formed.

The PUC is mostly funded by fees imposed on the utilities and railroads it regulates. Those fees not only pay commissioner salaries, they also pay for a substantial staff of engineers, accountants, safety inspectors, investigators, economists, public-contact staff and the all-important support personnel. Each utility in Idaho is under the jurisdiction of every state where it operates, which means they have to answer to multiple public utilities commissions, or whatever a particular state calls it. Idaho Power, for instance, is regulated in Idaho as well as Oregon, where is has a very small customer base.

With regard to the major utilities we're most interested in, the PUC's main oversight is over Idaho Power (electricity), Avista Utilities (electricity and gas), Rocky Mountain Power (electricity), and Intermountain Gas. As we discuss in the chapter on utilities, the PUC does not regulate the more than 20 electric utilities that are run by city governments (municipals), or that are mutually owned or cooperatives. It also doesn't regulate the federal Bonneville Power Administration, nor does it regulate in significant detail trans-

Commissioner Marsha Smith

Commissioner Mack Redford

Commissioner Paul Kjellander

mission issues, since those are often interstate in nature and regulated by federal agencies. It does, however, weigh in on utility plans to undertake big new transmission investments, especially since those investments directly affect customers through rates.

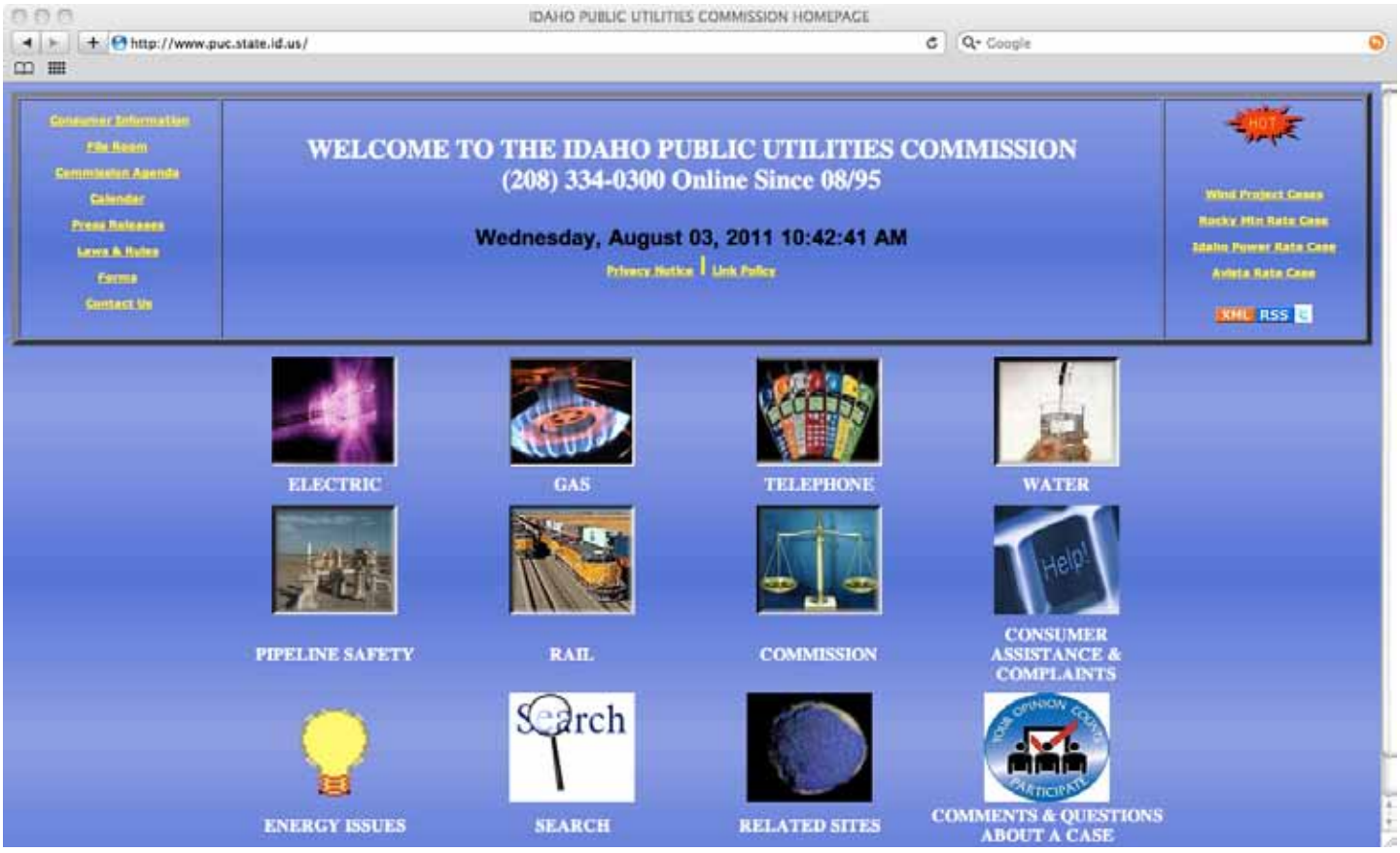
The PUC handles everything from consumer complaints against utilities to utility "general rate cases"; specific utility cases such as approving contracts with power suppliers like a wind farm; approving the recovery in rates of new power generation projects; and the every-other-year utility "integrated resource plans" that serve as roadmaps for how utilities will meet their future energy requirements.

The public face of the Commission is generally the frequent "decision meetings" at which the PUC can take up any of a number of pending cases before it. Be warned, however: These meetings often last just minutes and rare is the decision meeting in which there is more than a minimal amount of banter, because the Commission does most of its deliberating in private. Attending a few of these meetings can quickly give you the flavor of how they operate, and it's worth the minimal amount of time just to get more familiar with the lay of the PUC land. These meetings are generally held at 1:30 p.m. on Mondays, but not always, so it's good to check ahead by going to the PUC's home page and then checking out the calendar or commission agenda.

Much of the PUC's work is through open cases, sometimes called "dockets," which can resemble court proceedings. The public can participate in these cases by "intervening," which is a formal process generally left to groups representing certain utility customer classes or interests. More often, public participation at the PUC is by attending or appearing in public meetings and of course through written or e-mailed comments. In some public meetings or hearings, such as for a utility's rate case, it is not unusual for witnesses to testify under oath, although that process isn't as intimidating as it sounds.

Accessing PUC Information

Navigating the PUC's website is relatively easy and intuitive, and spending time there brings a quick understanding of how the Commission and its staff work. Call up the page at the above link and let's look around:



- Icons for electric, gas, telephone, water, pipeline safety, rail, commission, consumer assistance and complaints, energy issues, search, related sites, and comments and questions about a case are pretty self-explanatory. They'll take you to areas where there is more general public information, consumer tips, utility backgrounds, that sort of thing.
- The buttons to the left are where much of the action is.
- "Consumer Information," "Calendar," and "Commission Agenda" are self-evident, but the "Consumer Information" section is a great place to get acquainted with the PUC.
- Spend some time reading the press releases. They're written in lay terms and make following a complicated case far easier. It's also a great way to begin to learn the lingo of PUC-Land.
- "File Room" is a beehive of activity. It's where you can find PUC orders and all the open and closed cases (by type of utility, such as electric) that the commission has dealt with or has open before it. Give it a try and go to "electric cases" (our favorite section) and there's a list of the open cases, or dockets. It's more than alphabet and numeric soup, however. The first three letters in each case tell you which utility is involved – IPC for Idaho Power, AVU for Avista, and PAC for PacifiCorp (Rocky Mountain Power). The GNR cases are generic and usually apply to more than one utility. FER denotes the Federal Energy Regulatory Commission, BPA is for Bonneville Power Administration, and SUP are cases that have been appealed to the state Supreme Court, which is where appeals of PUC actions are sent.

It's all surprisingly straightforward, although the actual content can be kind of confusing at first. Keep in mind that, as opaque and even impenetrable as the PUC seems much of the time, it is by Idaho standards a fairly user-friendly agency. The people at the PUC, including the Commissioners, for the most part are genuinely interested in what utility customers think, and they're well known for reading the information the public sends to them. You can view some public comments in the individual cases to see how others choose to communicate with the PUC. Sometimes it's as basic as an e-mail; other times people choose to dress up their comments in more formality. The choice is for the most part all yours.

You'll notice that in most cases, the PUC staff also submits comments for the Commission's consideration. In theory, while the staff provides the technical expertise, its role as a commenter in a case receives the same weight as yours. There are times where the PUC staff submitted lengthy comments and recommendations, only to have the Commission rule differently.

Cases at the PUC

As we've mentioned, the PUC's biggest job in the electricity sector is probably to oversee utility general rate cases. These cases, filed every other year or so, and sometimes more frequently, are the cases in which utilities seek to recover their costs and their state-authorized return on their investments. The state regulates these utilities because the utilities are essentially state-sanctioned monopolies with identified service territories. In exchange for being regulated, utilities and their shareholders are entitled to receive a return on their investments. Once a utility files a rate case, it triggers what can be a year-long process in which a number of parties "intervene" in the case to pick it apart to examine the utility's expenses and its operations. Groups representing customer classes such as industrial customers, irrigators, or low-income customers are often looking for ways to minimize the impacts of higher rates on those they represent.

The public at-large is not represented before the PUC in these and other cases because, unlike most states, Idaho does not have an independent consumer advocate to represent the interests of regular customers before the Commission. In some states, this position is within the attorney general's office; in others it is a free-standing position. In any case, it's an important role that is not currently served in Idaho, where residential customers are among the only customer groups that don't have professional representation before the PUC. Sometimes, this role can be filled by groups such as conservation organizations like the Snake River Alliance, Idaho Conservation League, or the NW Energy Coalition, but this isn't always the case.

You do have opportunities to participate in rate cases, however. Depending on the utility, the PUC will hold public sessions around the utility's service area to brief customers on the basics of a particular rate case and to hear public comment. There are also hearings you can attend to raise concerns you might have about the case and how it might affect you and your power bill.

In addition to rate cases, the PUC's menu of cases includes such things as contracts filed by utilities to purchase power from renewable energy projects such as wind farms. By looking the case up in the "file room" mentioned above, you can locate the PUC order that lays out the public participation and comment timelines and procedures. That information is also included (often in more easy-to-understand form) in the PUC staff's press releases, which are also found in the list of documents for any particular case.

You might also be interested in commenting on a utility's "integrated resource plan," which outlines how your utility plans to meet

its future electricity or gas needs over the coming 20 years. These are often illuminating documents, and while they're not binding on the utility they give a good sense of the kinds of "supply side resources" (generation like gas plants) or "demand side resources" (energy efficiency) the utility plans to use to meet its obligations to supply power. The PUC doesn't actually "approve" utility IRPs; it "acknowledges" receipt of them. Generally, if a utility plans a major expense like a big new generation plant or transmission line, it is included in these plans. If not, the PUC may take a more skeptical look at why the utility is seeing to recover costs for something it didn't previously identify.

Other cases that attract public interest include utility filings to have major projects, such as a big gas plant, recognized by the PUC so that it can later seek to put the project's costs "in rates" – or have the costs recovered through utility bills. Each year, utilities also file their annual "power cost adjustments," in which they seek surcharges from customers or rebates to customers if the cost of providing power was higher or lower than expected. For instance, Idaho Power might file a "PCA" that will result in a rate discount for customers if it had an unusually plentiful water year that resulted in lower power costs. The reverse might be true in times of lean water years, when Idaho Power's electricity was more expensive because it had to rely on more expensive resources or outside purchase for its power than inexpensive hydropower.

As we've said, the PUC can be a pretty user-friendly agency, and a call or e-mail to staff will usually result in a prompt answer to questions you might have, or further tips on how you can have your voice heard in a particular case.

The PUC may be where most of Idaho's energy regulations, pricing, and other action is, but it's not the only place. Idaho also has an energy office of sorts that reports to the governor's office. It's a work in progress, having been created only a few years ago, but there are some good things taking place over there.

Idaho Office of Energy Resources

www.energy.idaho.gov

Formerly housed in the Idaho Department of Water Resources as the Idaho Energy Division, this four-year-old office was elevated to a position directly under the governor. OER does not regulate energy entities, but rather it dispenses energy-related information to the public and also analyzes key energy issues to help develop the administration's energy positions. OER also serves as a clearinghouse of state and federal incentives and financial assistance for energy efficiency and renewable energy investments, as well as updates on OER's geothermal, wind, solar and bioenergy programs. OER is funded primarily through federal and other grants, as opposed to state funds.

Among OER's big initiatives is its Idaho Strategic Energy Alliance (ISEA, http://www.energy.idaho.gov/energyalliance), which includes several task forces that have been tasked to examine and then report on several key energy-related issues, such as efficiency, wind, geothermal, forestry, solar, transmission, biofuels, etc. Many of the task forces studying these issues have completed their issue-specific reports, which are posted online and well worth examining.

The ISEA is governed by the Governor's Council, which is made up of gubernatorial cabinet members. Next is the ISEA Board of Directors, which is made up largely of interest group representatives such as the utilities, the Idaho Farm Bureau, a PUC representative, and Simplot. And then the task forces.

For all practical purposes, OER is the governor's lead advisor on all things energy. It also serves as a useful clearinghouse of state-run energy programs and information on such things as transmission projects and renewable energy resources.

Northwest Power and Conservation Council

www.nwppc.org

The Portland-based NW Power and Conservation Council, often referred to as the "Power Council," is the regional entity that was created by Congress as part of the 1980 Northwest Power Act to help Pacific Northwest states with policies relating to the Columbia River and its tributaries. The Council is made up of two gubernatorial representatives from each of the four Northwest states. Idaho's representatives are William Booth and Jim Yost. The Council is funded by power revenues from the Bonneville Power Administration. It is the primary forum for states, tribes, local governments and stakeholder federal agencies to work together on energy and fish issues. Those federal agencies include BPA, the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Federal Energy Regulatory Commission.

The Council's work is divided into fish and wildlife issues such as salmon recovery and power issues. Every five years, the Council adopts its 20-year Power Plan, and the 6th Power Plan was approved in February 2010. The Plan serves as a regional roadmap for meeting energy needs reaching out to 20 years and provides the public an excellent opportunity to weigh in on pressing energy issues. We recommend you review the 6th Plan, which is easy to find on the Council's website. Many of you took the opportunity to comment on the draft plan, which was finalized as a very useful tool in understanding energy issues in the Pacific Northwest.

The Council's website is also an invaluable source of energy-related information and historical and cultural information about the Pacific Northwest.

Bonneville Power Administration

www.bpa.gov

We discuss BPA in more detail in the utilities chapter, but Bonneville is the Pacific Northwest's largest power and transmission provider. While BPA's role in Idaho is not nearly as great as it is in Oregon and Washington, it nonetheless wields significant influence in generation and transmission policies across the region.

As an arm of the U.S. Department of Energy, BPA was created in 1937 to deliver and sell power from Bonneville Dam. Bonneville's reach steadily grew along with the expansion of the federal government's Columbia River energy system, which provides about 45 percent of the power consumed in the Pacific Northwest. Its mission today is primarily to provide power to its utility, tribal, direct-service and other customers; but it is also charged with participating in mitigating the well-established impacts that the dams and other infrastructure of the Federal Columbia River Power System continue to have on fish and wildlife and the Columbia Basin environment.

In Idaho, Bonneville provides the lion's share of the electricity delivered to municipal and cooperative utilities, although some like Idaho Falls Power and Fall River Electric in eastern Idaho also own some of their own generation and purchase some power on the markets.

Chapter 8

Low Income Utility Challenges

Fixed-Income Customers Have Fewer Options in Keeping the Lights and Heat On

It may be true that when it comes to promoting sustainable and progressive energy policies in Idaho, a rising tide actually *does* raise all boats. Well, most of them, anyway. But while Idaho's lower-income or fixed-income utility customers can benefit from efforts to keep gas and electric rates as low as possible, or from technical advances like lighting that get more bang for the bulb, it is undeniable that the less fortunate among us are saddled with utility bills that gobble up a disproportionately larger share of their household income. By some estimates, fixed-income electric customers devote about 14 percent of their annual income for energy, compared to less than four percent. And in many cases, the options of doing something about it are more limited, whether because the home might be a rental or because the age of the home might make energy-saving improvements financially impractical if not impossible.

That's why, for clean energy advocates, energy *affordability* is a guiding principal right alongside identifying and plugging into clean and environmentally responsible energy resources. Incredibly, the 2007 Idaho Energy Plan contains almost no mention of the unique challenges facing the most vulnerable of Idaho's gas and electric customers. There was such language in the draft form of the plan, but the majority party removed it before the plan was approved. Committee Democrats filed a minority report to the Energy Plan that said, in part:

> *"Low-income families are particularly vulnerable to energy price increases and supply disruptions. During extreme weather conditions, people living in poverty may have to choose between buying fuel to heat or cool their homes and buying food for themselves and their families.*
>
> *In Idaho, average annual household energy costs (including electricity, natural gas, and gasoline) are $3,000. Low-income households shoulder a disproportionate energy burden. Approximately 21,000 Idaho households live with incomes below 50 percent of the federal poverty level. These households spend on average 36 percent of their annual income on household electricity, natural gas and heating fuels (before accounting for gasoline expenditures), compared to 3 percent for the average Idaho household. An additional 14,000 Idaho households live with incomes between 50 percent and 74 percent of the federal poverty level, spending 14 percent of their incomes on household electricity, natural gas and heating fuels."*
>
> *2007 Idaho Energy Plan Minority Report on Energy Assistance*

Pretty sobering stuff, and troubling. A big part of the problem is that lower income utility customers often face seemingly insurmountable challenges in becoming energy-smart electricity and gas consumers. There are federally funded and utility-funded programs to assist customers struggling to pay their power bills, and as important as those programs are, however, they don't get to the root problem of porous, energy-leaking buildings; inefficient appliances; and outdated fixtures that bleed expensive electricity. In Idaho, for instance, studies show every dollar invested in weatherization returns $3.77 in direct energy savings and other benefits. And the more homes that are weatherized, the more power is saved and the more we reduce the need for expensive new generation plants. Idaho community action agencies – the true workhorses in the fight for energy affordability and low-income assistance efforts in Idaho – managed to plow tens of millions of dollars in federal stimulus energy dollars into weatherizing thousands of Idaho homes. Still, those agencies are the first to admit they were able to just scratch the surface, let alone shrink the waiting line for assistance.

It's a Struggle Just to Keep Up With Rising Bills

Even before the recession, most people on fixed incomes were already doing all they could to keep their power bills under control, but the rates we are all paying continue to rise nonetheless as utilities build more generation plants or string up new power lines. As "cheap" as electricity is in Idaho, it will only get more expensive from here on out – and as a result it will command a greater cut of the fixed-income household budget. Energy assistance programs to install efficient light bulbs or to pay bills are invaluable, yet waiting lists can run into the years while Idahoans still struggle under the weight of rising power bills. And most of these are people who are employed, sometimes in multiple jobs.

And what happens after utilities finally pull the plug on a customer who has been unable to pay? Eventually, the customer will manage to have power restored, but not before the utility – and *all* of its customers – pay the additional costs of disconnecting and reconnecting customers and all the other associated costs. And those costs can be considerable, from the actual pulling of the plug to the costs of carrying bad debt on a utility's books and trying to collect that debt. All customers share those costs, so any measures that can prevent disconnecting a customer's

power should be pursued, if not for the obvious humanitarian reasons than for the benefit of all utility customers.

Unlike most states, Idaho doesn't have a consumer advocate, which in other states is an independent office that represents the interests of regular folks before the state's utility regulatory commission. This is a shortcoming that can and must be remedied with a small amount of money. When utilities file rate cases or other procedures before the Idaho Public Utilities Commission, more often than not attorneys representing large customers "intervene" in the cases, as do lawyers for industrial customers, for irrigators, and others. But aside from nonprofit groups like the Snake River Alliance, Idaho Conservation League, the Community Action Partnership Association of Idaho, Idaho Community Action Network, United Vision for Idaho, the NW Energy Coalition, and the Renewable Northwest Project, nobody truly represents you, the residential utility customer, at the PUC. Rate cases and other procedures before the PUC can get pretty complicated, and often it is the low-income utility customer whose voice goes unheard in such cases. Nowhere is the need for expert representation before the highly technical PUC more important than in the low-income community.

Why is it important? Because there are possible ways to push for our interests, if only we had professional advocates to do so. Take an electric utility's general rate case, for instance. There are ways to structure rates for residential customers that can foster more energy conservation, but they must be done carefully. For instance, some utilities are testing the merits of multiple or "tiered" rates in which customers who use smaller amounts of electricity pay lower rates. But as they use more and move up into a higher tier, those rates go up along with the increased consumption. The idea is to encourage conservation by trying to get customers to reduce power consumption so they can stay in the lower-cost rate tier. That can work, but sometimes customers can't fully control their energy use. As we've said, many customers on fixed incomes live in some of the most energy inefficient homes or in rentals where landlords may be hesitant to invest in energy efficiency, so these most needy customers might be penalized by being bumped into more expensive rate tiers due to factors beyond their control. Likewise, caution must be paid when utilities, armed with the new "smart meters" that are being installed across Idaho, consider implementing "time of use" pricing mechanisms that change electricity prices depending on the time of day. While that can help discourage electricity use at times when utilities are facing their heaviest loads, it's worth remembering that of all electricity customers, low-income residents have the least flexibility in shifting their power consumption.

Another helpful tool – again, not available in Idaho – would be to allow utilities to have more than one rate for a certain class of customer, such as the residential class. Idaho law forbids what's known as "discrimination" within rate classes by having one rate for some residential customers and a higher one for others. There have been half-hearted attempts in the Legislature to work around this problem, without success. This is a shortcoming in Idaho law and utility regulation that can and should be fixed.

Once again, from the 2007 Idaho Energy Plan's Minority Report:

> *"The second of the five objectives of the Idaho Energy Plan is to 'maintain Idaho's low-cost energy supply and* ***ensure access to affordable energy for all Idahoans*** *(emphasis added). The undersigned believe that, consistent with this objective, the Energy Plan should include specific policies and/or actions that indicate support for efforts to work towards the stated objective. To ensure that a lack of heat and power does not jeopardize the health and safety of our most vulnerable citizens, the Energy Plan of the state of Idaho should recognize a goal of a baseline level of affordable energy service available to* ***all*** *Idaho households. For this to happen, the Idaho Energy Plan should endorse the concept that Idaho utilities be allowed to offer reduced rates with a tiered rate design that offers quantities of energy at a reduced 'lifeline' rate, and indicate support for state funds to supplement the other available energy assistance and weatherization programs."*

Some say the advent of the new "smart grid" can help fixed-income customers, like all customers, by reducing the need for new peaking power plants and by building a more efficient electricity transmission and distribution system that will also reduce costs. But low-income advocates caution that all the hype over the smart grid and the billions of dollars the federal government and utilities are investing in it needs to be considered along with some potential unintended consequences, including making it easier to disconnect customers remotely for nonpayment. Utility consumer advocates warn that smart grid advances must include robust and even expanded consumer protection measures because they have the potential to depersonalize the relationship between the utility and its customers.

Struggling to Pay Your Power Bills? There *Is* Help!

For a growing number of electric and gas utility customers in Idaho, simply keeping the lights on and the gas flowing can mean big sacrifices elsewhere in the home budget, like for groceries or health care.

Fortunately, there are some safety valves for income-qualified utility customers. They can differ in Idaho from utility to utility, income level to income level, and region to region, but there are places to turn for assistance.

A good first start is the federal Low Income Home Energy Assistance Program (LIHEAP), which can be reached at (208) 442-9991 or at www.idahocommunityaction.org/programs/programsenergyassistance/

That link will take you to the Community Action Partnership Association of Idaho (CAPAI), a private, non-profit association of agencies that administer the LIHEAP program and other assistance programs in Idaho. A rule of thumb for the LIHEAP income criteria in Idaho is $1,575 a month for a family of one, $2,059 for a family of two, $2,544 for a family of three, and so on. The criteria can change, so it's a good idea to contact your regional CAPAI offices, which also administer weatherization assistance and other energy programs.

community Action PARTNERSHIP
Helping People. Changing Lives.

LIHEAP in the U.S. Department of Health and Human Services' Administration for Children & Families also has an Idaho-specific web page that serves as a clearinghouse for low-income energy assistance programs in Idaho. Go to http://liheap.ncat.org/profiles/Idaho.htm

In addition, Idaho's three major electric utilities, Avista, Idaho Power, and Rocky Mountain Power, administer their own low-income energy efficiency programs. Some utilities, including Intermountain Gas Co., also have last-resort emergency assistance funds that are supported by other customers, shareholders, employees and others. The LIHEAP web link directly above contains utility contact information to get you started.

Efficiency and Weatherization are Huge, But More is Needed

There are no easy answers, but there are ways to ease the burden on fixed-income Idahoans, and reduce some of these added costs along the way. Idaho and its utilities must remain committed to squeezing every bit of energy efficiency we can out of our system. And then squeeze some more. Some energy-saving measures might not seem "cost effective" as it is defined by utilities and state regulators, but over the long run they deliver benefits far beyond their investments. Weatherization is a great example. Idaho and its assistance agencies made a big dent in the huge backload of homes needing weatherization thanks to the rush of federal "stimulus" money, but a backlog still remains even after those dollars have been put to use. Once again, in the long run, sound energy efficiency and conservation measures for all customers have the potential to delay or even eliminate the need to build expensive new "supply-side" generation resources like new gas plants, which cost hundreds of millions of dollars and which drive everyone's power bills even higher.

To its credit, the Idaho PUC initiated its own "Inquiry About Energy Affordability Issues" in 2008. In directing Idaho's energy utilities to participate in workshops dealing with low-income issues, the Commission said:

> *"The Commission recognizes that there are a variety of factors contributing to significant upward pressure on electric and natural gas rates in Idaho and energy affordability has become a central issue for many Idaho households and businesses. Utilities are facing the prospect of more customers being unable to pay their energy bills in full and/or on time. Customers who are unemployed, have lower incomes, and/or have fixed incomes that fail to keep pace with inflation are disproportionately affected by rising energy costs, since they must devote an increasingly larger share of their income to paying for natural gas and electricity."*

After holding workshops and receiving a mountain of feedback from stakeholders, the PUC issued an extraordinary report in February 2009. Participating in the workshop, along with PUC staff, were Idaho Power, Rocky Mountain Power, Avista Utilities, Intermountain Gas, the Northwest Industrial Gas Users, Community Action Partnership Association of Idaho, the Idaho Community Action Network, and the Snake River Alliance. Among the PUC's recommendations was one that was introduced in the Legislature but, inexplicably, was not enacted to allow the within-class "discrimination" in rates referenced above in order to help low-income consumers with their power bills. That change requires legislation, and the recommendation would have been voluntary for Idaho utilities. The Commission report noted that 101,000 Idaho households qualified for assistance under the federal Low-Income Home Energy Assistance Program (LIHEAP) in 2008, but only 32,843 of those households received assistance due to a lack of adequate funding. The LIHEAP program in 2007-2008 had $9,410,895 in funding, but would have needed an additional $19,492,902 to cover all households with an average benefit amount of $286 per household. The report can be found at www.puc.idaho.gov and by clicking "File Room" and then "Closed Cases" and then "Multi-Utility" and then scrolling to GNR-U-08-01.

The bottom line is that energy affordability is much more than a loosely defined goal in the 2007 Idaho Energy Plan. It is a daily fact of life for tens of thousands of Idahoans who are seeing ever-increasing shares of their household income devoted to power bills or going out the door in the form of energy inefficiency. The upside to all of this is that the important answers to dealing with the problem are well within our reach. Some are state policies that can be tweaked at little or no cost. Some require a little more heft, such as creating a state position to truly represent the interests of some of Idaho's most vulnerable. But unlike some energy solutions that might require large investments, most of these are so doable there is no excuse for continued failure to act.

Chapter 9

The 2007 Idaho Energy Plan

It's All in There in Writing!

"This Energy Plan is the culmination of Idaho's first organized review of state-level energy issues in 25 years, and is perhaps the first time that the Legislature has been involved in developing specific policy direction for state agencies, energy companies, and consumers. Energy is a critically important industry for which the state has a great deal of regulatory responsibility. We strongly recommend that the Legislature and other state policy-makers maintain vigilant oversight of the implementation of this Energy Plan and stay abreast of energy issues by frequently revisiting these recommendations to ensure that they continue to advance Idaho's interests."

Submittal letter accompanying the 2007 Idaho Energy Plan to the Idaho Legislature

By Interim Energy Committee Co-Chairs Sen. Curt McKenzie and Rep. George Eskridge

Well, it was certainly worth a try.

In 2006, during a legislative session marked by a fierce debate over a proposed coal-fired power plant near Jerome, Idaho legislators were surprised to learn that Idaho actually had a state energy plan. Trouble was, the plan was a quarter-century old, few knew it existed, and while it was a noble effort – groundbreaking, even, for its time - the plan languished for years, never updated or implemented, until memory of it all but disappeared.

So with the Jerome County coal plant issue erupting and other energy-related developments springing up all around it, the Legislature directed its Interim Energy, Environment and Technology to craft a new plan and set aside $300,000 for the effort. It was an exhaustive and imperfect effort, but on balance a pretty thorough one. Stakeholders from all sides of the energy issues were invited to participate on subcommittees that ranged from energy generation to transmission to the siting of facilities to energy efficiency. Meetings lasted all summer and into the fall. An immense amount of work was devoted to the plan, and the Legislature's hired consultant, San Francisco-based Energy and Environmental Economics, Inc., developed a solid set of recommendations on how Idaho can address its looming energy needs and challenges.

A year after the Energy Plan idea was cooked up and after countless hearings, the Legislature overwhelmingly approved the 2007 Idaho Energy Plan, packed with 18 policies and 44 separate actions to inform and guide Idaho's energy future. It was an ambitious attempt to help take Idaho's "energy temperature" and to offer recommendations on how the state can best meet its future energy needs, including electricity, natural gas, and transportation. There are numerous progressive recommendations in the plan, but in many cases that's all they are – recommendations. Some of the Energy Plan's recommendations have been acted on, and some have even been accomplished in one way or another. But the majority of the recommendations await action some four years after the plan was adopted.

The most egregious culprit in The Case of the Spurned Energy Plan is the Legislature itself. The Public Utilities Commission and the Office of Energy Resources have taken on some of the ideas put forth in the plan, but the Legislature's actions have been basically limited to farm-friendly incentives to promote ethanol (since expired) for transportation fuels to an incentive for renewable energy, which the Idaho Senate killed in the 2011 session by refusing to extend the incentive beyond its expiration in the summer of 2011.

So what's new is old again, at least so far as what passes for Idaho energy policies are concerned. The 2007 Idaho Energy Plan is at risk of becoming as irrelevant as the dusty old plan that was adopted a quarter century before.

Idaho remains at risk of falling further still behind other Western states in addressing greenhouse gas emissions, putting the state in a potentially difficult position when the inevitable clean energy and climate mandates emerge in Washington, D.C. Idaho also continues to lose ground to its neighbors and other states in bringing more renewable energy into its energy mix, despite the expectation that federal legislation will force the state's hand. The 2007 Idaho Energy Plan was written to address these concerns and to put the state on a path to a more sustainable, affordable and reliable energy future.

There are many areas where the 2007 Idaho Energy Plan doesn't go far enough, particularly when it comes to sending stronger

signals and taking proactive steps to promote renewable energy and conservation. It also falls far short on the issue of climate change and greenhouse gas emissions, scarcely mentioning either and making no recommendations on how Idaho can proactively do its part in reducing its emissions of greenhouse gases and in preparing for inevitable federal reductions of them.

Nonetheless, it's a significant first step - and it *is* the energy policy of the state of Idaho, after all.

The plan identifies energy conservation and efficiency as Idaho's electrical resource of first choice, followed by renewable energy and finally conventional thermal energy such as coal or gas. The plan is unambiguous in directing the Legislature, the Governor's Office, and the Public Utilities Commission to embark on actions to breathe life into the plan. Some recommendations have been implemented in part, but many continue to languish due to budget constraints or a lack of will.

Of critical importance to clean energy advocates, the Legislature recommended that Idaho:

- Set conservation targets for Idaho's regulated electric utilities and provide incentives for utilities to meet them.
- Offer income tax incentives for renewable generation investments in homes and businesses, and create incentives for utilities that invest in renewables.
- Offer sales or use tax exemptions to encourage consumers to buy energy efficient appliances and other technologies.
- Require utilities to report to their customers where they obtain their power. Such a "fuel mix disclosure" requirement would help educate consumers on the kinds of power they're buying and empower them to press for change, such as more renewables.
- Direct non-regulated utilities such as cooperatives and those owned by municipalities to report to the state energy office how they're meeting conservation and efficiency goals.

The 2007 Plan remains faithful to Idaho's legendary aversion to mandates. It creates a climate in which progressive energy policies can be advanced through carrots rather than sticks. While some of the Energy Plan's recommendations are stalled because they require tax incentives that might impact Idaho's tenuous general fund budget, many of the recommendations don't impact the budget at all. They simply require the dedication of policy-makers to move them forward.

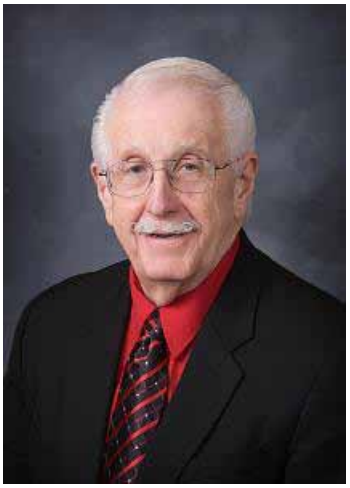
Here's Where YOU Come In

So while we've not done nearly enough with the state's energy roadmap, all is not lost. The 2007 Plan calls for the Legislature to revisit the Plan after five years, which in Legislative Years means the 2012 session. Mindful of the coming review, the 2011 Legislature adopted HCR4, reinstating the long-running Interim Energy, Environment, and Technology Committee to do business in between sessions with special direction to review the Energy Plan. Among the "whereases" in the Resolution:

> *WHEREAS, it is the goal of the 2007 Integrated State Energy Plan to maintain the health, safety and welfare of Idaho's citizens, the quality and financial security of existing agricultural businesses and industries, the economic growth of the state of Idaho, and the environmental quality and natural resources of this state; and*
>
> *WHEREAS, it is the goal of that the 2007 Integrated State Energy Plan be a living vibrant document; and*
>
> *WHEREAS, the Committee met in 2009 and 2010 and monitored the 2007 Integrated State Energy Plan, followed the fluctuation in petroleum prices and heard testimony regarding issues facing regulated utilities, municipal utilities and cooperative, industry, and alternate energy sources,*
>
> *NOW, THEREFORE, BE IT RESOLVED by the members of the First Regular Session of the Sixty-first Idaho Legislature, the House of Representatives and the Senate concurring therein, that the Legislative Council is authorized to appoint a committee to undertake and complete a study of the 2007 Integrated State Energy Plan that provides for the state's power generation needs and protects the health and safety of the citizens of Idaho and the products produced in this state, and make any recommendations for necessary changes in both state law and the plan regarding energy in the state and to monitor other energy, environment and technology related issues…."*

For better or for worse, the Idaho Legislature recognizes its job to take a look at the 2007 Plan to see how it can be updated. Of course, given the horrendous work of the 2011 Legislature on energy issues (killing the renewables tax incentive and refusing hearings for other renewables bills), it's possible that revisiting the Energy Plan might mean taking advantage of a new opportunity to screw it up.

But we're optimists. With energy advocates like you who are willing to roll up your sleeves and get dirty in the legislative process,



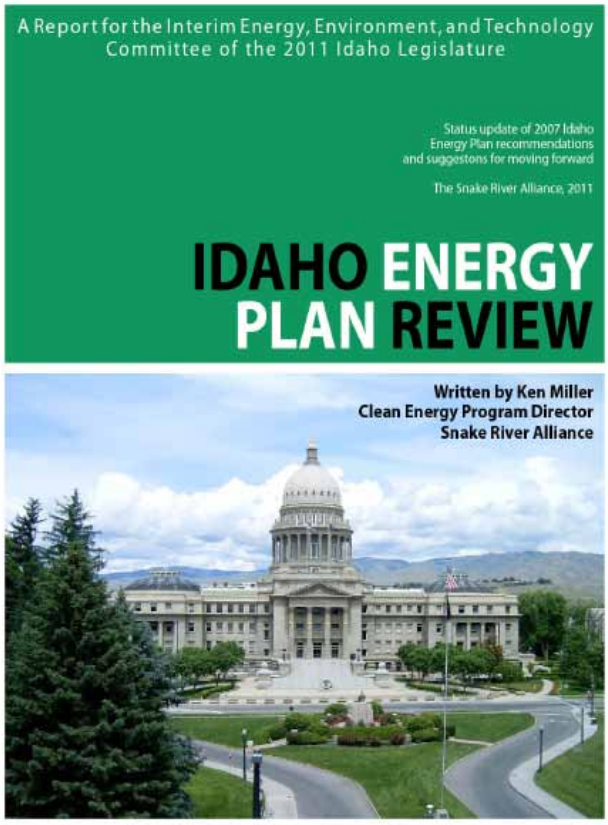
Representive George Eskridge

Senator Curt McKenzie

this can be an opportunity to not only improve the state's Energy Plan, but also to ward off the inevitable mischief that critics of renewable energy and energy efficiency have hinted at. The first step is to review the 2007 Idaho Energy Plan, which you can find at www.energy.idaho.gov. In reading it you can see the intent of the Plan and, more important, judge for yourself how far short the Legislature, the Governor's Office and others have fallen in meeting the spirit if not the letter of the Plan.

Then, stay abreast of the Legislature's website at www.legislature.idaho.gov for notices on when the Interim Energy Committee will be meeting and how you can become involved. You can also call Legislative Services at http://legislature.idaho.gov/lso/lso.htm for updates on coming action on the Plan. It's important that as many Idahoans as possible try to participate in person, online, or via the mail to communicate the need to keep the 2007 Idaho Energy Plan as strong as possible and to reinforce the important energy efficiency and renewable energy recommendations that have not been acted upon.

The co-chairs of the Interim Committee will continue to be Rep. George Eskridge and Sen. Curt McKenzie, both of whom need to hear from clean energy advocates about the need for a thorough update of the Energy Plan and that the Plan remains committed first to energy efficiency and then to renewable energy as the top priorities in meeting Idaho's electric energy needs.



The Alliance recently produced a report analyzing the status of 34 of the 44 Energy Plan recommendations, and determined that of those 34 recommendations, seven are considered by the Alliance to be complete or largely complete in terms of their implementation. Another 17 recommendations were considered incomplete with little or no progress in implementing them. Ten of the recommendations reviewed were considered partially implemented. The report also explains each of the recommendations and provides suggestions for how the Interim Committee should move forward. The Alliance presented this report to the Committee at its first meeting on July 12, 2011, and will continue to provide input on the review process as it proceeds.

Our "Idaho Energy Plan Review" is available for free download at www.snakeriveralliance.org

APPENDICES

Energy Acronyms

As you dive into the world of energy policies, you'll soon discover that energy aficionados take a perverse delight in speaking in tongues. Nowhere is this more evident than in the liberal use of acronyms in Energy Speak. We feel your pain, so here's a list of some of the most frequent abbreviations and acronyms you're likely to encounter as you wander the realm of energy geeks.

A/C: Air-conditioning

ACEEE: American Council for an Energy Efficient Economy

AMI: Advanced metering infrastructure

AWEA: American Wind Energy Association

BPA: Bonneville Power Administration

Btu: British thermal unit

CO_2: Carbon dioxide

DSM: Demand-side management

EPRI: Electric Power Research Institute

FERC: Federal Energy Regulatory Commission

GHG: Greenhouse gas emission(s)

HVAC: Heating Ventilation and Air-Conditioning

IOU: Investor-owned utility

IPP: Independent Power Producer

IPUC: Idaho Public Utilities Commission

IRP: Integrated resource plan

kWh: kilowatt hour(s)

MW: Megawatt

MWh: Megawatt hour(s)

NEEA: Northwest Energy Efficiency Alliance

NERC: North American Electric Reliability Council

NOx: Nitrogen oxides

NPCC: Northwest Power and Conservation Council

NREL: National Renewable Energy Laboratory

NWEC: Northwest Energy Coalition

OER: Office of Energy Resources

PCA: Power Cost Adjustment

PPA: Power Purchase Agreement

PURPA: Public Utility Regulatory Policies Act

PV: Photovoltaic

QF: Qualifying facility

RPS: Renewable portfolio standard

SO_2: Sulfur dioxide

SRA: Snake River Alliance

WGA: Western Governors Association

Glossary of Energy Terms

Here's a look at some of the terms you're likely to encounter as you navigate the world of electric utility planning and regulation

BASE LOAD: The amount of energy a utility needs on average to serve its customers. A base load resource is one that operates nearly constantly, such as a hydropower or coal plant. It's measured in average megawatts (aMW). Idaho Power's average firm load is less than 2,000 aMW. See also **PEAK LOAD**.

BIOMASS: Organic materials that can be converted into energy by burning or other means. Examples include agriculture waste or timber. Some forms of biomass can also be used as biofuels such as ethanol for transportation uses.

CARBON OFFSET: A way to reduce carbon dioxide emissions by reducing emissions somewhere else, such as protecting forests or through a CO_2 trading exchange.

CARBON CAPTURE AND SEQUESTRATION: Especially with coal plants, the ability to capture CO_2 emissions rather than releasing them into the environment. Sequestration entails storing the captured CO_2, such as in underground formations or "fixing" the CO_2 in agricultural or forest lands..

CAPACITY: Measured in kilowatts (kW) or megawatts (MW), capacity refers to the amount of power that can be generated – or the total that is needed at a specific time. It is often used in reference to a utility's "peak demand" (see below) or a particular generation resource's ability to produce electricity. For instance, while many fossil fuel resources such as coal and gas have high capacity rates – above 90 percent – wind has a capacity rate in the 30-40 percent range because turbines do not produce electricity when the wind is not blowing. Sometimes referred to as the maximum or "nameplate" capacity of a given energy generator, such as a wind turbine.

COGENERATION (CO-GEN): Sometimes called "combined heat and power," co-gen plants can generate electricity by using excess heat or steam, while surplus heat can be used in building operations. Co-gen plants are often associated with excess heat from industrial facilities.

DECOUPLING: The concept of removing a utility's incentive to sell as much energy (and make as many profits) as possible. Utilities can lose revenues by encouraging energy efficiency and conservation because they sell less power. Decoupling disconnects power sales from revenues. Idaho Power is in the midst of a decoupling pilot project.

DEMAND- SIDE MANAGEMENT (DSM): DSM programs are aimed at managing the amount of energy used at given times, and the time it is used. DSM programs include energy conservation programs such as having lights turned off in unoccupied rooms; energy efficiency programs such as lighting improvements; or demand-response programs such as air-conditioner or irrigation pump "cycling" to reduce a utility's "peak power" needs in times of high energy use. In Idaho, these programs are typically funded through what are known as "DSM riders" that add a surcharge to utility bills. The programs are implemented by individual utilities in hopes of maximizing energy savings among various customers classes, such as residential, agriculture, commercial, and industrial.

DISTRIBUTED GENERATION: Small-scale electricity generation that helps reduce the burden on the larger power transmission grid by generating smaller amounts of electricity close to areas where it's needed. In Idaho's case, where much of the state's generation comes from out-of-state coal plants or in-state hydro facilities, distributed generation ("DG") plants such as smaller wind or co-gen facilities access the transmission network close to home, freeing space on the grid. Using these smaller distributed generation resources not only makes the grid more efficient, it also reduces the need for some expensive transmission upgrades.

ENERGY EFFICIENCY: Refers to reducing total energy use without affecting the services provided. Often achieved through technical improvements such as highly efficient light bulbs or more energy efficient appliances, efficient building design and improved heating and cooling. Sometimes different from "conservation," which is simply using an existing device less, like turning lights off when not needed.

FEDERAL ENERGY REGULATORY COMMISSION (FERC): The federal agency that regulates the interstate movement of energy resources across state lines. In Idaho, FERC is most visible in its role reviewing licenses for hydropower projects, such as Idaho Power's decade-old attempt to relicense its Hell's Canyon complex. It also reviews wholesale electric rates, given those sales are often interstate transactions.

FUEL MIX DISCLOSURE: A practice in which utilities disclose the source of their power, and in some states the cost of that power and the emissions associated with it. Idaho does not have a fuel mix disclosure requirement, although some utilities provide minimal information to consumers on where their energy comes from. Fuel mix information can be presented as a pie chart on customers' monthly bills.

GREEN TAGS: Also called renewable energy certificates or RECs, green tags are created when a renewable energy facility generates electricity. Each tag represents the environmental attributes or benefits of renewable generation, such as for a megawatt. Utilities needing to meet clean energy requirements can acquire the tags when buying green energy, or they can buy them on the market.

For more information, see the Bonneville Environmental Foundation's green tags site at www.greentagsusa.org

INTEGRATED RESOURCE PLAN (IRP): Plans by utilities on how they will meet their future load requirements. A typical IRP identifies a utility's current and projected demand and resource options to meet that demand over the next 20 years. Idaho utilities are required to prepare IRPs every two years. The Public Utilities Commission does not "approve" the IRP, but acknowledges it as the utility's long-term strategic plan for how it will meet its future energy needs.

INVESTOR-OWNED UTILITY (IOU): A for-profit utility owned by stockholders that provides utility services. Idaho has four large IOUs, which are regulated by the Public Utilities Commission: Idaho Power, Rocky Mountain Power, Avista, and Intermountain Gas. Idaho also has more than 20 electric cooperatives and municipal-owned utilities, such as Idaho Falls Power. The Idaho Public Utility has maps of utility service areas at http://www.puc.idaho.gov/fileroom/maps/maps.htm

LOAD: The amount of electric power required by devices or customers at a given time. In Idaho, a utility's load often rises in the summer, when air-conditioners and irrigation pumps place a heavy demand on the utility's system. All utilities must have adequate resources to meet their load – and then some, for reserves. When a utility cannot meet its load because its generation resources are maxed out and it cannot acquire more power from the markets, it must "shed load" to maintain a stable system. That can mean rolling blackouts.

MEGAWATT (MW): One million watts or 1,000 kilowatts. 1MW is roughly enough electricity to power between 700 and 9,000 homes, depending on the season. During summer "peak" periods of high demand, 1MW may only be enough power for 300 homes.

MEGAWATT HOUR (MWh): One MWh is 1,000 kilowatt hours (kWh) and is the equivalent of 1,000 kilowatts used continuously for one hour.

MERCHANT PLANT: A power plant that is not owned by a utility but rather a third party that then sells its power to utilities under contract. Merchant plant owners are not regulated by the Idaho PUC unless they are providing power to an Idaho regulated utility.

NET METERING: Allows customers who invest in wind, solar or small hydro systems for their own properties to hook into the utility's power grid. Net-metered customers can receive credit from the utility for power generation that exceeds their own needs. Idaho and its utilities have some limited net metering programs, although these programs hold potential to reduce the need for large new generation resources. In effect, a successful net metering installation allows a customer to "spin the meter backwards" in times when a power source such as a wind turbine or solar system is generating more power than that customer needs.

NORTHWEST ENERGY EFFICIENCY ALLIANCE (NEEA): A non-profit corporation supported by electric utilities, public benefits administrators, state governments, public interest groups and energy efficiency industry representatives. These entities work together to make affordable, energy-efficient products and services available in the marketplace. Financial contributions to the Alliance are pooled and used to fund energy-saving projects for residential, commercial, industrial and agricultural sectors. From 1996 through 2004, $165 million was committed to the Alliance by its funders. Starting in 2005, an additional $20 million a year has been pledged for five years through 2009.

NEEA uses a tool called "market transformation" that accelerates the adoption of energy-saving products and services in the existing marketplace. The Alliance and its partners work to create long-term, lasting acceptance of energy efficiency by encouraging manufacturers and retailers to make energy-saving products and sell them in the stores where consumers typically shop for such items; working with home builders and commercial building design teams to adopt high performance building practices; promoting new and innovative energy-saving technologies and helps bring them to market; and supporting energy efficiency training and information programs for Northwest businesses and industry.

See http://www.nwalliance.org/

PEAK LOAD (PEAK DEMAND): Maximum load at a specific time, sometimes referred to as "capacity." In the case of Idaho Power, for instance, the company's base load is well below 2,000MW, but its peak load – the amount of power needed when demand is greatest in the summer, when air conditioners and irrigators are going full blast - is just more than 3,000MW.

PEAKING PLANTS: Because utilities so seldom reach their peak loads – but must be prepared to serve them – one tool to provide additional short-term power is through peaking plants, or "peakers." In Idaho those plants are generally natural gas fired. Most of Idaho Power's peaking capacity is from gas plants near Mountain Home.

PHANTOM LOAD: Also called "vampire load," refers to electricity consumed even though an appliance or other device is turned "off."

PUBLIC UTILITY REGULATORY POLICIES ACT of 1978 (PURPA): Federal legislation that requires utilities to purchase electricity from qualified independent power producers at an "avoided cost" price that reflects what the utilities would have to pay for the power on the open market or by building new generating resources. PURPA was designed to encourage the development of small-scale co-generation and renewable resources and bring competition to the utility industry. The federal PURPA law requires

states to implement utility conservation programs and create special markets for co-generators and small producers who meet certain standards, including the requirement that States set the prices and quantities of power the utilities must buy from such "qualifying facilities."

PURPA has become very controversial in Idaho due to the unexpectedly high number of proposed small-scale wind projects seeking PURPA contracts with Idaho Power, which succeeded in 2005 in obtaining a moratorium on new PURPA contracts. The moratorium case led to a series of workshops that included wind developers, Idaho Power, and other parties, but no agreement was reached and the case remains unsettled at the PUC.

QUALIFLYING FACILITY (QF): A cogeneration or small power production facility (in Idaho's case it's typically wind but can include other generation such as the use of Ada County's landfill gas) that meets certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC) pursuant to the PURPA (see above).

REGIONAL MARKET TRANSFORMATION: Movement upstream from consumers to get manufacturers to sell more efficient appliances and systems by default.

These are policies designed to change the types of choices available to consumers and producers in a market. Typically, these policies are enacted by governments, and consist of two main features: incentives and regulations to change consumer and producer behavior; and education to explain to consumers and producers why the new behaviors are a good thing. An example is the Northwest Energy Efficiency Alliance's WashWise program, where, for example, manufacturers were required to produce washing machines meeting certain energy standards; retailers were trained in how to sell the energy-efficient machines; and consumers were offered incentives to buy them.

REGIONAL TRANSMISSION ORGANIZATION (RTO): A regional transmission organization designed to operate the grid and its wholesale power market over a broad region and with independence from commercial interests. An RTO would also have a role in planning and investing in the grid, though how it would conduct these activities remains unresolved. An RTO would also coordinate with other RTOs. In the Pacific Northwest, where the Bonneville Power Administration owns and operates 70 percent of the region's transmission grid, design of an RTO has been somewhat controversial and complicated by varying approaches by the region's utilities, among other things. To review NWEC position and policy papers on RTOs visit http://www.nwenergy.org/policy/index.html

RENEWABLE PORTFOLIO STANDARDS (RPS): When adopted by states, RPSs establish the portions of total load that comes from renewables. They require utilities to include a growing percentage of renewable energy in the mix of resources from which they obtain electricity. More than half of all states use an RPS. Idaho does not, while all neighbors except Wyoming do.

TIERED RATES: A system in which customers pay less for their electricity in a first "block" of energy use, and pay more in subsequent blocks as their use increases. The idea is to encourage energy efficiency and conservation by letting customers know their power gets more expensive the more they consume. The Idaho Public Utilities Commission has approved a tiered rate structure for Idaho Power as part of Idaho Power's most recent rate case, but similar tiered rate structures are not yet in place for Idaho's other major regulated electric utilities, Rocky Mountain Power and PacifiCorp.

TIME OF USE RATES: A system in which utilities charge differing rates depending on the time of day. Used to encourage customers to reduce electricity use during peak times when energy is most expensive, time of use rates can be a way to reduce the need for additional "peaking" resources because customers will shift their energy use to off-peak periods by such measures as running clothes washers and driers in the evening or mid-morning rather than late afternoon and early evening. No Idaho utilities currently offer time-of-use rates on a system-wide basis, although the advent of "smart meters" may provide that option in the near future.

Activist Resources

Here's a collection of government agencies, utilities, advocacy organizations and other entities involved in Idaho and Pacific Northwest energy issues and how to access them

GOVERNMENT

Idaho Public Utilities Commission

www.puc.idaho.gov

P.O. Box 83720
Boise, ID 83720-0074

Street Address: 472 W Washington Boise, ID 83720

(208) 334-0300

Idaho Office of Energy Resources

www.energy.idaho.gov

P.O. Box 83720
Boise, ID 83720-0199

Street Address: 304 N. 8th Street, Suite 250 Boise, ID 83720

(208) 287-6713

Idaho Legislature

www.legislature.idaho.gov

P.O. Box 83720-0038 (House)
P.O. Box 83720-0081 (Senate)

Boise Phone: (208) 332-1000

Toll Free Phone: (800) 626-0471

Hearing Impaired: (800) 626-0471

NW Power and Conservation Council

www.nwcouncil.org

851 S.W. Sixth Avenue, Suite 1100
Portland, OR 97204

(503) 222-5161

(800) 452-5161

info@nwcouncil.org

Bonneville Power Administration

www.bpa.gov

P.O. Box 3621
Portland, OR 97208-3621

Street Address: 905 NE 11th Ave Portland, OR 97232

(800) 282-3713

(503) 230-3000

U.S. Department of Energy Idaho National Laboratory (INL)

www.inl.gov

Communications and Public Affairs
2525 N. Fremont Avenue
Idaho Falls, ID 83415

Toll-Free (866) 495-7440

Boise Regional Office
702 W. Idaho, Suite 310
Boise, ID 83702

(208) 334-9574

U.S. Department of Energy National Renewable Energy Laboratory (NREL)

www.nrel.gov

1617 Cole Blvd
Golden, CO 80401-3305

(303) 275-3000

U.S. Department of Energy – Energy Information Association

www.eia.gov

U.S. Energy Information Administration
1000 Independence Ave., SW
Washington, DC 20585

(202) 586-8800 (Live experts from 9 a.m. to 5 p.m. ET)

U.S. Department of Health and Human Services - Low Income Home Energy Assistance Program (LIHEAP)

www.liheap.ncat.org/profiles/Idaho.htm

370 L'Enfant Promenade, S.W.
Washington, D.C. 20447

(202) 401-9351

U.S. Federal Energy Regulatory Commission

www.ferc.gov

888 First Street, NE
Washington, DC 20426

1-866-208-3372

customer@ferc.gov

U.S. Nuclear Regulatory Commission

www.nrc.gov

Washington, DC 20555-0001

(800) 368-5642

U.S. Environmental Protection Agency

www.epa.gov

USEPA Ariel Rios Building
1200 Pennsylvania Ave. NW
Washington, DC 20004

USEPA Ronald Reagan Building (RRB)
1300 Pennsylvania Avenue N.W.
Washington, DC 20004

(202) 272-0167

UTILITIES

Idaho Power Company

www.idahopower.com

P.O. Box 70
Boise, ID 83707

Street Address: 1221 W. Idaho St. Boise, ID 83702

(208) 388-2200

Pacificorp (Rocky Mountain Power)

www.rockymountainpower.net

201 South Main St., Suite 2300
Salt Lake City, UT 84111

(888) 221-7070

Avista Utilities

www.avistautilities.com

Customer Service, MSC-34
P.O. Box 3727
Spokane, WA 99220-3727

(800) 227-9187

AskAvista@AvistaUtilities.com

Intermountain Gas Company

www.intgas.com

PO Box 7608
Boise, ID 83707

(208) 377-2200

Idaho Consumer-Owned Utilities Association (ICUA)

www.icua.coop

P.O. Box 1898
Boise, ID 83701

(208) 344-3873

ADVOCACY GROUPS

Snake River Alliance

www.snakeriveralliance.org

P.O. Box 1731
Boise, ID 83701

Street Address: 350 N 9th St Suite B10 Boise, ID 83702

(208) 344-9161

Idaho Conservation League

www.idahoconservation.org

P.O. Box 844
Boise, Idaho 83701

(208) 345.6933

icl@idahoconservation.org

Community Action Partnerships Association of Idaho

www.idahocommunityaction.org

5400 W. Franklin Rd. Suite G
Boise, Idaho 83705

(208) 375-7382

Toll Free (877) 375-7382

NW Energy Coalition

www.nwenergy.org

811 1st Avenue, Suite 305
Seattle, WA, 98104

(206) 621-0094

Renewable Northwest Project

www.rnp.org

917 SW Oak, Suite 303
Portland, OR, 97205

(503) 223-4544

renewables@rnp.org

Climate Solutions

www.climatesolutions.org

Seattle

1402 Third Avenue, Suite 1305
Seattle, WA 98101

(206) 443-9570

Olympia

219 Legion Way SW, Suite 201
Olympia, WA 98501

(360) 352-1763

Portland

721 NW Ninth Avenue, Suite 236
Portland, OR 97209

(503) 227-8928

Rocky Mountain Institute

www.rmi.org

1820 Folsom Street
Boulder, Colorado 80302

(970) 927-3851

American Council For An Energy-Efficient Economy

www.aceee.org

529 14th Street NW, Suite 600
Washington, D.C. 20045

(202) 507-4000

Institute for Energy and Environmental Research

www.ieer.org

"Carbon-Free and Nuclear-Free – A Roadmap for U.S. Energy Policy"

6935 Laurel Ave., Suite 201
Takoma Park, MD 20912

(301) 270-3029

Sierra Club Idaho Chapter

www.idaho.sierraclub.org

PO Box 552
Boise, Idaho 83701

Street Address: 503 W Franklin Boise, ID 83702

(208) 384-1023

Snake River Alliance
PO Box 1731
Boise, ID 83701

(208) 344-9161

This booklet is available for free download on our website:
www.snakeriveralliance.org

Share the link and spread the word!