

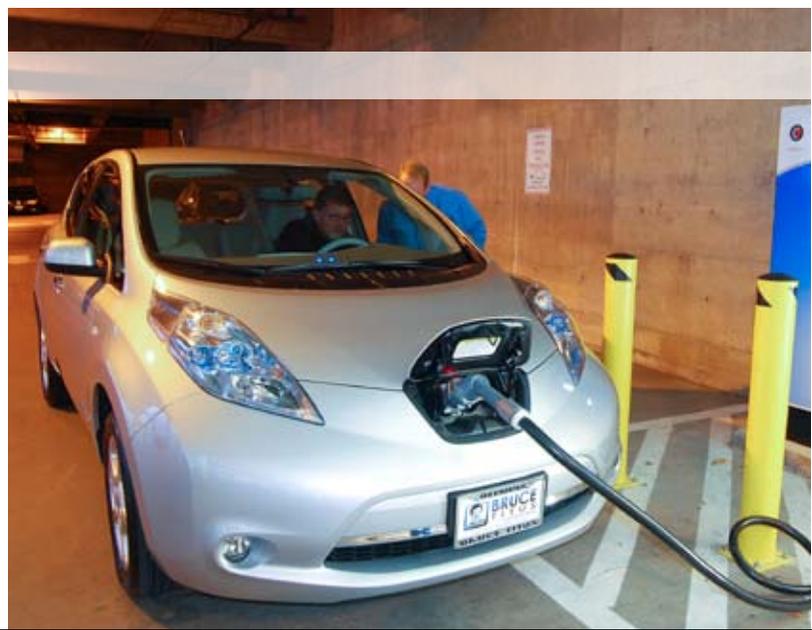
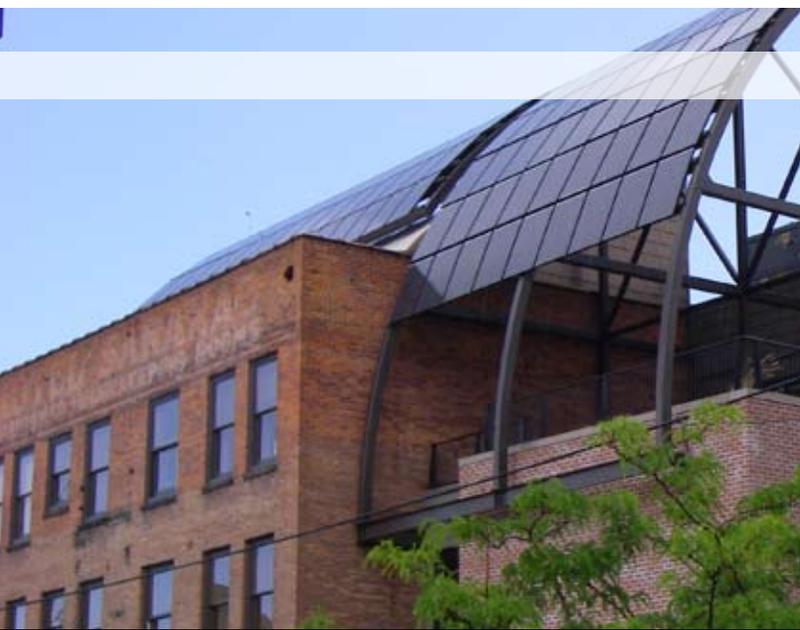


2012 WASHINGTON STATE ENERGY STRATEGY

Core Solutions For Economy, Jobs And Climate



Department of Commerce
Innovation is in our nature.





2012 WASHINGTON STATE ENERGY STRATEGY

Dear Reader,

It is my pleasure to deliver the 2012 Washington State Energy Strategy to Governor Gregoire and the Legislature. Nearly 20 years have gone by since Washington State last developed such a strategy based on a comprehensive look at our energy system. Over that period, our population increased 26 percent while our overall energy bill, adjusted for inflation, increased by 70 percent. Overall energy use did not increase dramatically over that period, but rising prices, especially for petroleum, mean citizens and businesses are spending billions more on energy. Our energy system has also become increasingly complex with climate change obligations and the emergence of new energy technologies.

The primary focus of the strategy is energy use in the transportation sector- where we use the most energy, emit the most greenhouse gases and spend the majority of our energy dollars. Our transportation system is also our least efficient energy sector – presenting real opportunities to improve efficiency and keep more dollars and jobs in Washington. Beyond transportation, the strategy examines ways that we can expand our successes in the efficiency of buildings and diversify our energy supply.

While the department is very proud of this strategy, we know it will be out of date from the minute we publish it given the incredible amount of energy-related investment going on around the world. We also know there are important energy topics that are not addressed in this document given time and resource constraints. So please know we intend to continue investing in research, analysis and support for our policymakers and this document is the foundation on which we will continue evolving the state’s views on how our energy system should evolve.

Finally, I want to recognize the exceptional work that produced the 2012 Washington State Energy Strategy. We would not have been able to produce this strategy with out the thoughtful and dedicated efforts of our advisory and technical committee members, the general public, and the staff from this and other state agencies.

Sincerely,
Rogers Weed
Director, Department of Commerce

**The Legislature ...
declares that a successful state energy
strategy must balance three goals to:**

*Maintain competitive energy prices
that are fair and reasonable for
consumers and businesses and
support our state’s
continued economic success;*

*Increase competitiveness by
fostering a clean energy economy
and jobs through business and
workforce development;
and*

*Meet the state’s obligations to
reduce greenhouse gas emissions.*

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STATE ENERGY STRATEGY

Powerful Solutions for economy, jobs and climate

A MOMENT OF OPPORTUNITY

The 2012 Washington State Energy Strategy comes at a moment of opportunity, a time when our state's policy makers can look to the long-term priorities for energy, economic vitality and climate stability.

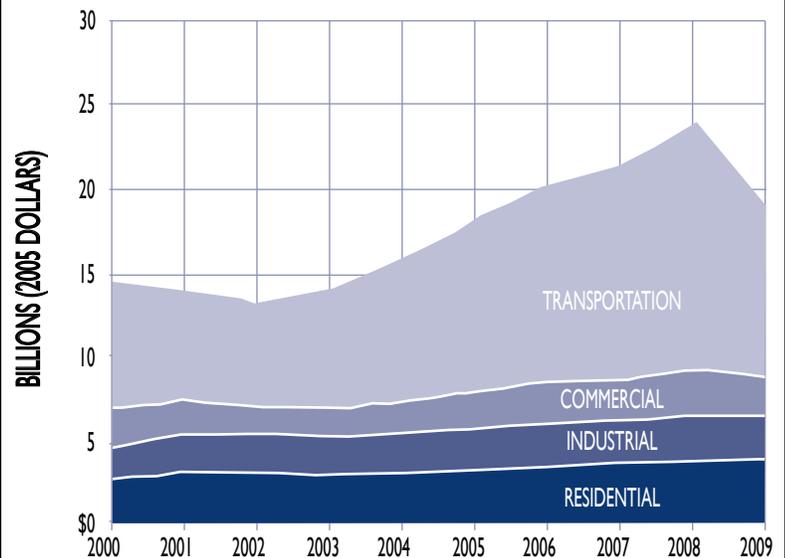
We have this opportunity because in the near term our state faces no great crisis in energy supply. There are exceptions, especially in volatile gasoline prices, but since 2008 the typical Washington family energy bill has been stable or even declining. Natural gas prices have fallen as new technologies have opened up substantial reserves in the U.S. and Canada. The public has embraced renewable energy and conservation, requiring that electric utilities include these resources in their portfolios. Even after decades of growth, we continue to lead the nation in low-cost industrial electricity rates, providing an enduring competitive advantage for industrial growth and employment.

Innovation and investment have expanded our range of options. Tens of billions of dollars in recent global investments in energy technologies are now paying dividends, to the point that wind and other renewable energy systems are challenging conventional power resources on cost. Consumers have greater choice among fuel-efficient vehicles, including hybrids and all-electric vehicles. Boeing delivered its first 787 airliner this fall, 20 percent more fuel-efficient than its predecessor, and Alaska Airlines is making 75 flights a week using a biofuel blend based on cooking oil. Consumers have options for high-efficiency lighting systems, heat pumps and water

heaters that were just engineering concepts a few years ago.

The path ahead, however, is not obvious or simple. We still spend more than \$20 billion per year on energy – more than 6 percent of the state's economy. Most of that money leaves the state to cover fossil fuel costs. Moreover, global events add volatility to crude oil prices, creating energy cost risks. The energy supply system has grown more complex over time. Wind farms and photovoltaic systems require coordination with the legacy power system. Our energy industry must meet the voter-mandated standards for renewable and conservation resources. It must recharge new electric vehicles and reliably energize internet server farms. It must supply a multi-fuel transportation system. Carbon footprints must be measured and reduced.

END-USE ENERGY EXPENDITURES BY SECTOR



SOURCE: FIA SEPER

The economic recession heavily influences the priorities and strategies in the 2012 Energy Strategy. Washington's economy was thumped hard in 2008, and the experts say full recovery is still years away. Energy prices are a potential drag on that recovery. At the same time electric rates in Cowlitz County increased 18 percent this fall, and millions of other customers felt the effect of an 8 percent wholesale price increase by the Bonneville Power Administration. The downturn dampened projected growth in energy demand and greenhouse gas emissions, but that is not how we intend to save energy.

We aim to grow the economy by creating clean energy jobs through greater energy efficiency and renewable energy. This is the path of the 2010 Clean Energy Leadership Council. We have a growing regional expertise in integrating wind into the electric grid and turning our abundant biomass into energy, which can serve as a foundation for job growth.

Our approach to a comprehensive energy strategy is also motivated by concern about climate change. Policy makers and the public have recognized the effect of climate change on our lives, and Washington is committed to reducing its contribution to the global problem. In just the short time since the Legislature authorized the 2012 Energy Strategy in 2010, evidence has accumulated of damage to health, safety and economic well-being caused by climate change. Just as energy production and consumption drive climate effects, environmental concerns must drive energy policy.

As decision-makers set a direction for the state's energy future, the choices are complex and sometimes contradictory, but the desired outcomes are clear. We seek a set of energy policies that will supply the muscle behind our state's economy, maintain affordable energy prices for our families and businesses and protect our global environment from the adverse effects of fossil fuels. In short, we want an energy strategy that promotes clean job growth, competitive prices and lower greenhouse gas emissions.

The path ahead

Energy affects virtually every aspect of daily life; as the Legislature said in initiating this work, energy "drives the entire modern economy." From universities to espresso stands, wheat farms to ferries, everybody

has an energy bill and is affected by energy availability and cost. With energy so pervasive in our lives, there is practically no end to the range of possible policies to include in a strategy. From this wide array several common themes emerged, perhaps none more strongly than the emphasis on energy efficiency. We can reduce our consumption of energy, particularly fossil fuels, and still improve our economic well-being if we increase our efficiency. This is a long-standing public policy in Washington, beginning with the first, voluntary building energy efficiency code in 1977, and it runs throughout the 2012 Energy Strategy.

The Energy Strategy also reflects the state's commitment to remain a leader in energy efficiency, sustainability and innovation and to build a clean energy economy. Our expertise in seemingly unrelated sectors, such as information technology and material sciences, can advance our competitive advantage in electric vehicles, bioenergy and smart grid systems. The importance of well-informed consumer choice is another common theme within this energy strategy. We are, by economic necessity, in a time of smaller government. Tax revenues for new government programs are scarce, but much can be accomplished by ensuring that individual consumers of energy have information and tools to make wise energy choices. Market-based policies that rely on individual choice include setting prices to reflect environmental effects and promoting assessment and disclosure of building energy performance. The strategy also calls for standards that reflect desired outcomes. Efficiency standards have been very effective in improving the performance of our vehicles and our buildings, and consistent use of standards provides a sound base for competition.

For the 2012 Energy Strategy we considered many ideas but chose one major area of emphasis – transportation – and two significant other topics, buildings efficiency and distributed energy. These areas of emphasis represent our greatest potential to transform energy use in ways that promote jobs, fair prices, and climate stability:

- A more efficient and coordinated system of transportation.
- A broader approach to energy efficiency in buildings.
- A more diverse supply portfolio through distributed energy.



TRANSPORTATION

Increase transportation efficiency while reducing carbon emissions

MOVING PEOPLE AND GOODS

The emphasis of this energy strategy on transportation issues reflects the dominant and growing burden that energy for transportation places on our economy, our household budgets and our environment. This is not meant to suggest that transportation problems are exclusively an energy issue. The gridlocked Puget Sound traffic map is a mobility problem for transportation planners and an emissions problem for environmental planners. It, and the rest of the transportation system, is also an energy problem, since more than half of the state's energy expenditures go to move people and goods within the state. Beginning with the first Washington State Energy Strategy in 1993, policy makers recognized the key role of transportation in energy planning, and we continue this emphasis here.

Transportation is not just the state's largest energy use sector but also its least efficient sector. Buses, cars, trucks and aircraft are more efficient than they used to be, yet they still turn more of their fuel into heat and fumes than into useful movement. Motor fuels also have a bigger carbon footprint than natural gas, emitting 30 percent more carbon per unit of useful energy. Finally, petroleum is also the most economically and politically volatile of all energy resources; we reduce risk to our economy and families when we reduce our reliance on petroleum.

To make progress in the transportation sector, the energy strategy recommends a policy package based on multiple approaches to improve our use of energy to move people and goods. The strategy would encourage more efficient vehicles, improve the fuels used in transportation and reduce the number of trips and

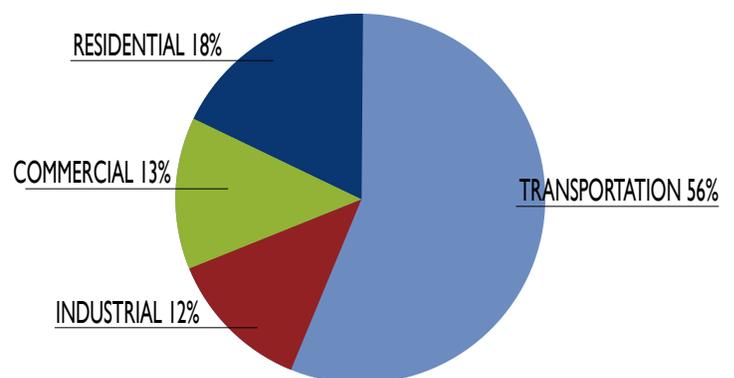
driving miles required by families and businesses.

Improved vehicles and fuels

Electric vehicles are a reality and our state's policy approach can make a meaningful difference in how quickly they are adopted by consumers and businesses. Encouraging public charging stations, for example, is key to consumer support of electric vehicles. These policy recommendations build on the Legislature's 2009 decision to create an alternative fuel corridor pilot project and to exempt charging stations from public utility regulation. The state Plug-in Electric Vehicle Task Force is helping develop this corridor. More work lies ahead in deploying a robust charging network, and success will bring the need to integrate a significant new electricity demand into our power grid.

Other recommended policies support increasing the efficiency of diesel fuel use by improving truck

WASTED ENERGY BY END USE SECTOR



SOURCE: Primary Sources of Energy and Energy Demand Sectors in Washington State, page 11.

aerodynamics and using low-friction engine lubricants. These approaches apply existing technologies and can improve public health along with our economy and climate.

In addition, policy changes can champion new technologies that improve the fuel itself by making it burn cleaner and more efficiently or by manufacturing it from renewable resources. For example, the strategy recommends a near-term policy to require using more biodiesel in motor fuels mixes. In the longer term the state should examine ways to reduce carbon in the fuel cycle. This latter effort would look at the entire process of acquiring and using fuels, rather than just focusing on the content of fuels at the pump.

More efficient travel

A comprehensive understanding of energy efficiency in transportation requires that we look not just at the efficiency of the vehicles and fuels but also at the efficiency of travel itself. An unnecessary trip in a high-efficiency car is still a waste of energy and money. Potential policies range from immediate actions such as encouraging carpooling to long-term decisions about how best to plan and organize cities for travel and energy efficiency.

Public programs to manage and reduce commute trips should be expanded. Washington already has a successful commute trip reduction program that works through employers to encourage car pools and public transportation use, as well as telecommuting and compressed work schedules. Commute trip reduction programs are a proven strategy in our state to reduce work trip vehicle miles traveled. To increase savings, programs must expand to include smaller employers and non-commute trips. The state Department of Transportation has already demonstrated the value of this approach through its Growth and Transportation Efficiency Center (GTEC) program.

The strategy identifies smart growth as the long-term key to more efficient travel. Communities that are compact and transit-oriented will need less transportation and consume fewer energy resources. The energy strategy recommends smart growth approaches that would:

- Promote housing and employment density in urban areas.
- Provide parking incentives and management.
- Encourage bicycle and pedestrian accessibility.
- Increase urban brownfield redevelopment.
- Develop integrated multimodal transportation systems.

Better pricing of trips

Each time a consumer or worker makes a decision about when, how or whether to make a trip, that decision has the potential to impose congestion and pollution costs on fellow citizens. The strategy recommends a close look at how travel pricing can be used to influence those millions of individual travel decisions. A near-term possibility is to pilot the conversion of fixed transportation charges to expenses that vary with the number of trips taken or miles driven. Potential examples include an electric vehicle mileage charge or mileage-based auto insurance. Longer-term approaches to consider include implementing direct charges on road use and carbon emissions, possibly including a revenue-neutral tax on carbon, offset by reductions in other state taxes.



BUILDINGS

Create a strong foundation of energy efficiency

ENERGY SAVINGS AND JOBS

The buildings component of the energy strategy is, like a building itself, built upon a strong foundation – three decades of effort to get more efficiency from the energy used to heat, cool, illuminate and power our homes and businesses. This effort began with the state’s electric utilities, guided by the analysis and direction of the Northwest Power and Conservation Council, and includes the state’s natural gas distribution utilities. The strategy seeks to extend those gains to additional energy sectors and customers.

The energy savings that result from more efficient houses and offices are just one reason for pursuing this strategy. Another important reason is the effect on jobs in the construction industry. Employment in this sector fell by one-third with the collapse of the housing bubble in 2008, and new construction activity is not likely to return to 2008 levels anytime soon. Energy retrofit work now could restore some of those jobs while putting more disposable income in the pockets of families, businesses and government agencies. The policy recommendations for buildings seek to

- make it easier for property owners to identify the most effective energy improvements,
- enable financing of those improvements using the energy costs savings from the improvement itself and
- build consumer confidence in the quality and value of energy efficiency projects.

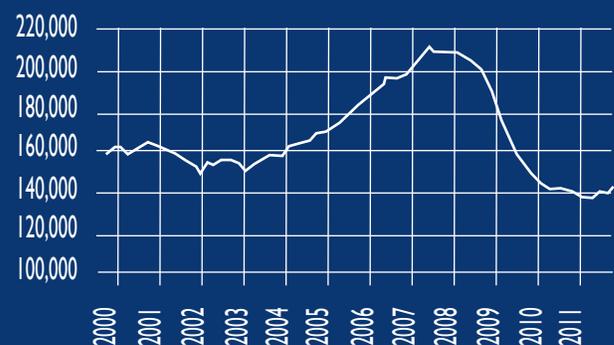
The strategy also recognizes the need to sustain the state’s successful low-income weatherization efforts.

The poor pay a higher share of their income in energy costs, and the state receives federal funds to help low-income households pay their utility bills and upgrade the energy performance of their homes. Washington expects to see a significant drop in federal support in 2012, and the energy strategy calls on policy makers to find new ways to fill that gap.

Valuing energy performance

Property owners will be more willing to improve their buildings if they can be confident that prospective tenants and buyers will recognize the value of those improvements. We recommend mechanisms to increase disclosure and valuation of energy performance. Even a simple annual energy statement could help customers monitor performance, focus attention and encourage action. Another policy would improve coordination among utility, government and private-sector participants

WA CONSTRUCTION INDUSTRY EMPLOYMENT



SOURCE: ESD LMEA, seasonally adjusted

in the energy efficiency building retrofit industry, with a focus on marketing and quality assurance for building energy efficiency contractors.

The disclosure strategy would build on a requirement adopted by the Legislature in 2009. The legislation now applies to non-residential buildings larger than 10,000 square feet. Owners must disclose the building's energy performance to prospective tenants, buyers and lenders. An expanded approach would make energy performance information more broadly available, making it easier to compare buildings and find the most efficient locations. Research shows that businesses are willing to pay higher rents for energy efficient space.

We recommend a more modest start to disclosure of residential energy performance. Utilities would provide residential customers with an annual statement of their energy consumption and costs, along with information on the benefits of retrofits.

The strategy also proposes a greater effort to build consumer confidence in residential energy retrofit services. This voluntary approach would include consistent marketing of energy efficiency services and stronger quality assurance of contractors' services.

Financing improvements

The energy strategy also calls for alternatives to conventional bank financing of residential and commercial energy efficiency projects. Cost-effective efficiency improvements pay for themselves over time through savings on heating and cooling costs, but many property owners lack the capital to make the initial investment. Conventional financing also suffered with the loss of home equity caused by the downturn in real estate prices. Even when owners have the capital, they may not see a positive return before they would move to another house.

The strategy recommends an approach that ties efficiency financing to the utility service rather than to the individual borrower. This meter-based financing recovers the investment through a utility service charge applied to current and future customers, enabling everyone who benefits from a property improvement to share in the repayment of that investment.

The meter-based approach would rely on utilities to collect payments for efficiency upgrades, but it does not require their investment capital. One possibility is to create an investment fund through the state Housing Finance Commission as part of its sustainable energy program. Meter-based financing could even reduce the cost of energy efficiency for utility customers, since it would allow the direct program participants to pay more of their own retrofit costs.

A second approach to financing energy efficiency upgrades would focus on the inventory of distressed properties in the state. The policy would provide a small tax credit to developers who purchase a property, make energy efficiency upgrades and resell it.

Low-income and rental properties

The energy strategy recognizes that low-income and rental properties are not likely to get energy efficiency upgrades simply by providing information and access to investment capital. Government and utility funding drives low-income weatherization. Commerce's program has helped weatherize 125,000 low-income homes since 1987, reducing energy costs for families that typically pay 25 percent of their income for heat and light. Federal funds increased weatherization activity in recent years but are likely to shrink dramatically in 2012.

The state has almost 1 million rental housing units, many of which house families of moderate income. More than half of these homes were built in the 1970s or earlier, and neither landlords nor tenants have a strong incentive to invest in energy efficiency. The strategy recommends elevating the priority of low-income weatherization programs for utility incentives and tax credit financing. To achieve greater energy efficiency in rental properties, we offer a new requirement to include basic insulation and weather-stripping measures when rental property is sold.



DISTRIBUTED ENERGY

Increase use of alternative and renewable energy resources

ENERGY SUPPLY

The third emphasis area for the 2012 Energy Strategy focuses on energy supply, specifically the growing interest in energy production using smaller, alternative energy resources instead of large utility-owned plants. These distributed energy resources come in many forms, including solar, wind, manure and waste industrial heat. Manufacturing plants can increase efficiency by installing combined heat and power (cogeneration) projects. Cities and neighborhoods could heat and cool their buildings with district energy systems. Agricultural and forest products can fuel small power plants. Thousands of small scale solar projects are being installed on homes, businesses and government buildings. Many owners of distributed energy systems value the independence provided by the system as well as the energy that is produced.

Distributed energy resources can align with the goals to increase jobs in new clean energy industries and to reduce negative climate impacts by displacing fossil fuels. Realizing this potential will require that we improve our ability to integrate alternative resources into the state's overall energy supply system and address concerns about any adverse effects of these systems.

Permits and standards

Distributed energy projects raise interconnection and land-use concerns for utilities and neighbors. Integrating production and distribution of power from facilities whose output varies with seasons and weather – such as hydroelectric, solar or wind projects – can present challenges for the region's power managers. Consistent and straightforward permitting processes

and standards can protect legitimate land-use interests while ensuring that good projects move quickly to development. Planning and standards for integrating alternative resources into the energy distribution system will be necessary to prevent conflicts, waste and system overloads. The Washington Utilities and Transportation Commission will be a key partner in the streamlining effort.

Effective incentives

State policy encourages distributed energy projects through various mechanisms, including several tax incentives and extra weighting under the state's Energy Independence Act (Initiative 937), which created a renewable portfolio standard for most electric utilities.

The state tax incentives are based on good intentions but tend to be complex and not well-coordinated with each other. The strategy recommends examining the state's distributed energy incentives to assess their effectiveness and their financial impacts on the state's tax revenues

The renewable portfolio standard

The Energy Independence Act can provide a powerful mechanism encouraging cogeneration and non-utility generation from renewable resources. Stakeholders have raised several issues since voters enacted the law in 2006. Since these are being addressed separately by the Legislature, the energy strategy makes no recommendations on any changes to the statute. However, the strategy process has identified several areas of uncertainty about how the law should apply to distributed energy projects. Clarification of these issues could encourage development of distributed energy systems.



ENERGY PLANNING FOR THE FUTURE

Build a balanced energy strategy with rigorous analysis and extensive stakeholder work

PLANNING PROCESS

The 2012 Energy Strategy is based on legislative guidance, rigorous analysis and extensive stakeholder involvement. In authorizing the energy strategy process, the 2010 Legislature called for a balanced approach to the three goals of clean energy jobs, fair energy prices and a stable climate. It identified nine guiding principles, including a concern for low-income families, the state’s commitment to meet both state and federal greenhouse gas reduction standards and recognition that the state needs a strong energy infrastructure.

Commerce developed the 2012 Energy Strategy with the dedicated support of a 26-member advisory committee. Leaders from Washington state business, labor,

environmental groups, developers and government contributed their time, expertise and perspectives. A panel of technical experts guided the quantitative work. In 2010 Commerce and the advisory

The roots of the 2012 Energy Strategy extend well before the current process authorized in 2010. Its base is the state’s history of careful, public-oriented energy planning and analysis. Washington has more than three decades of experience in this area, much of it in the electricity sector. Our priorities likewise have a history. The state’s last comparable state energy strategy in 1993, foreshadows the current strategy’s emphasis on transportation, energy efficiency, and environmental values. The analytical and policy elements of both the 1993 and 2012 strategies reflect complementary policy efforts at the state departments of Transportation and Ecology, demonstrating the close and enduring links among energy, climate policy and transportation issues.

The depth of prior work enabled Commerce and its advisory committee to focus attention on major policy themes: transportation, building efficiency and distributed energy. We developed a long list of potential initiatives that could influence the future performance of Washington’s energy system. In organizing and setting priorities, we looked for these characteristics:

- Does the policy provide a significant opportunity to address the legislative goals of fair energy prices, clean energy jobs and greenhouse gas reductions?
- Does the policy appear to be ripe for action, addressing an issue with active stakeholder and policy-maker interest?
- Does the policy cover an area needing more attention? Has it been overlooked by past studies?

The team also chose a mix of both near- and long-term strategies. The near-term strategies represent policies

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groups produced the 2011 Energy Strategy Update, which outlined the analytical and stakeholder processes and identified 17 near-term initiatives. We have made progress on many of those recommended initiatives, and several received additional analysis and guidance in this 2012 Energy Strategy.

that are already well developed or at least ready for beta testing. Nevertheless, it is equally important that policy makers and stakeholders begin work soon on the initiatives identified as long-term options. We set our policy objectives looking at the far horizon, because the toughest issues of how to supply needed energy and preserve the environment are fundamental, long-term questions that cannot be asked and answered once.

Implementation

The 2012 Washington State Energy Strategy outlines a set of policies that can move the state significantly closer to its goals of clean job growth, fair energy prices and reduced greenhouse gas emissions. Implementation of the strategy will require the support of many stakeholders, including local governments, utilities, the state departments of Agriculture, Commerce, Ecology, Revenue and Transportation, the State Auditor, Insurance Commissioner, and Utilities and Transportation Commission.

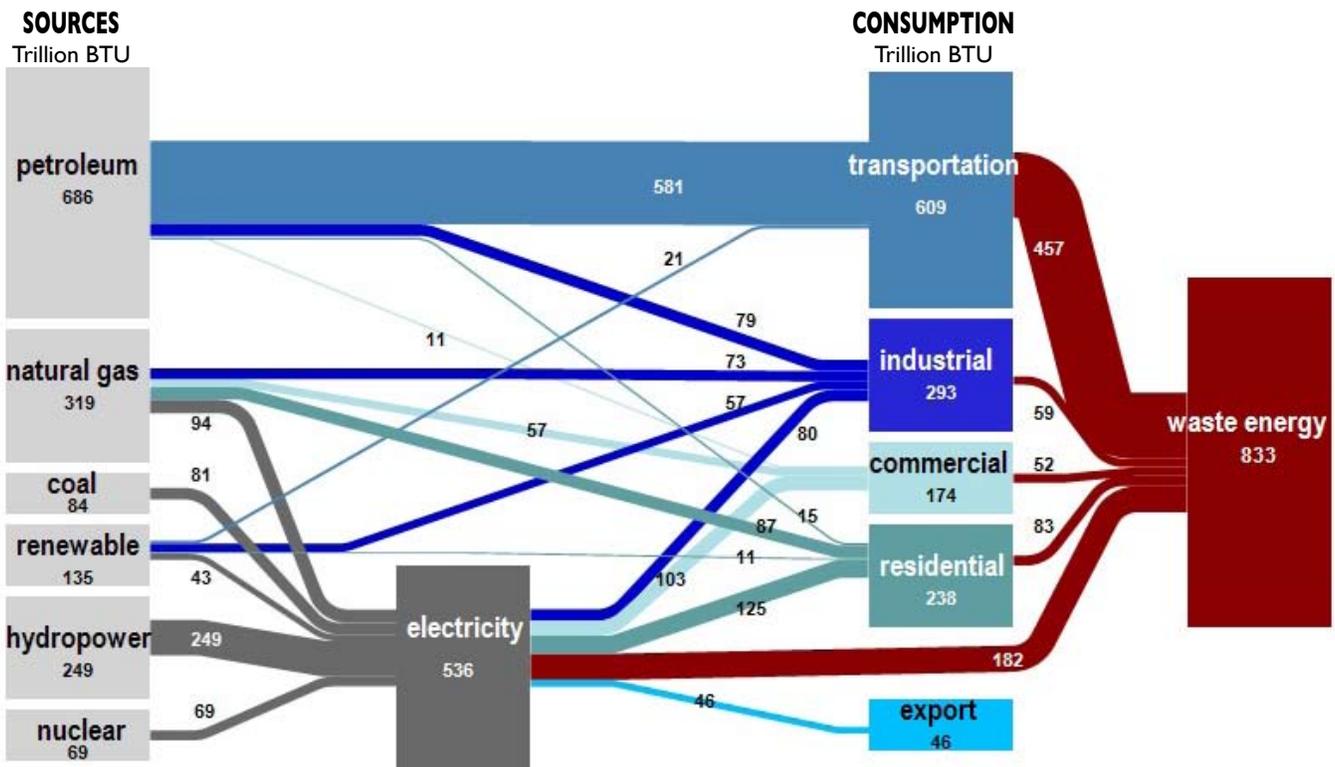
Many of the strategy’s initiatives do not require legislative action. Indeed, the strategy does not make

specific legislative recommendations. However, because of the complexity of the issues involved, most of the initiatives will require more detailed stakeholder work prior to implementation or legislative action. The 2012 State Energy Strategy compares the long-term options and outlines the next steps for action.

We would emphasize again the continuing nature of good energy policy development. This strategy is informed by many past efforts, and it should not be viewed as the last word. The strategy represents a way of thinking about our energy problems as well as a set of recommendations for change. The problems will evolve, but the modeling framework used in this project will help us adapt. This strategy represents one punctuation mark in an ongoing conversation about our state’s energy, economic and environmental future.

Ultimately we recognize that it is impossible to predict or forecast perfectly Washington’s energy future, but we can do our best to anticipate, analyze and drive change in directions that benefit our state’s long-term prosperity.

PRIMARY SOURCES OF ENERGY AND ENERGY DEMAND IN WASHINGTON STATE



SOURCE: U.S. DOE State Energy Data System; Calendar year 2009 data. (most recent available)

2012 WASHINGTON STATE ENERGY STRATEGY

Core Solutions For Economy, Jobs And Climate



Department of Commerce
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Page 3: Wind turbines at the Wild Horse Wind Farm in Kittitas County. *Photo courtesy of Puget Sound Energy.*

Page 5: Electric car at charging station in Olympia. *Photo courtesy of Washington State Department of Transportation.*

Page 7: Saranac Building in Spokane, a LEED Platinum renovation project. *Photo courtesy of Washington State Department of Ecology.*

Page 9: The Van Der Haak dairy manure digester under construction in Lynden, Whatcom County.

Page 10: The new Boeing 787 Dreamliner in flight. *Photo courtesy of Boeing.*