JOHN A. KITZHABER, M.D.

GOVERNOR

10-Year Energy Action Plan

254 State Capitol, Salem, Oregon 97301-4047 p: (503) 378-3111 f: (503) 378-4863
governor.oregon.gov

JOHN A. KITZHABER, M.D.
GOVERNOR

Dear Oregon,

Energy is THE issue of our time – both globally and here in Oregon – and no single issue will have a greater impact on our state's economy, environment and quality of life in the coming decade. The central question is whether we will shape our energy future through intentional investment and development, or whether it will shape us.

Oregon has a track record of successfully pursuing clean energy policy, programs and practices to reduce energy use and promote renewable alternatives to fossil fuels. These public and private initiatives have made Oregon a national leader, but we continue to face a fundamental challenge: to develop a comprehensive energy strategy that meets the state's carbon reduction, energy conservation and renewable energy goals and timetables, and that balances complex needs – including affordability and reliability – while enhancing our state's economic objectives.

This 10-Year Energy Action Plan takes a practical approach to that challenge, focusing on specific initiatives that move the dial in the short term and can be scaled up over time. It is also an economic action plan, emphasizing priorities that can get Oregonians back to work on energy-related projects in urban and rural communities across the state.

The 10-Year Energy Action Plan focuses on three core strategies:

1. **Maximize energy efficiency and conservation to meet 100 percent of new electricity load growth.**
   Oregon ranks fourth in the nation in energy efficiency.[1] Since 1980, Oregon households and businesses have realized energy efficiency and conservation savings equivalent to eight to ten power plants. The result has been lower energy bills, a cleaner environment, and a thriving local energy service industry that exports its technology and expertise to the world. To build on this success, to capture deeper, harder-to-reach efficiency and conservation opportunities, and to scale them community-wide, will require new data, new financing tools, rate design changes and trained workers. The Northwest Power and Planning Council's 6th Power Plan states that the region can meet 85 percent of new load growth through energy efficiency and conservation.[2] This plan calls for Oregon to meet all new electric load growth through energy efficiency and conservation. We will start at home. Every occupied state-owned building will establish baseline energy use, undergo an energy audit and identify cost-effective retrofits in the next ten years, improving the performance of up to four million square feet of identified office space and using the state as a market driver for greater energy efficiency and conservation projects.

2. **Enhance clean energy infrastructure development by removing finance and regulatory barriers.**[3]
   Since 2007, renewable energy development has resulted in more than $5 billion investment in Oregon.[4] However, the state's ability to attract new investment and pursue promising new technologies is hampered by three things: outdated and inadequate energy transmission and infrastructure; inefficient and disjointed local, state and federal regulatory processes; and limited public resources. The plan calls for the development of

1 American Council for an Energy Efficiency Economy (ACEEE) 2012 State Scorecard

2 Northwest Power and Conservation Council, Sixth Northwest Power and Conservation Power Plan, Feb. 2012.

3 Or. Rev. Stat. § 468A

4 Renewable Northwest Project, March 2011 release

a landscape level planning tool and streamlined permitting to give clean energy developers more certainty and predictability and to ensure the State's natural resources are protected. In addition, the plan calls for developing a new regional infrastructure bank to leverage public and private investment for infrastructure projects.

3. **Accelerate the market transition to a more efficient, cleaner transportation system.** Transportation is the single largest contributor to Oregon's carbon emissions and a significant source of air toxics. Oregonians consume 1.5 billion gallons of gasoline and drive 39 billion miles every year. According to an analysis conducted by the Oregon Department of Energy from U.S. Census Bureau data, fuel costs average Oregonians nearly seven percent of disposable income; nearly double the cost ten years ago. This plan calls for focusing on achieving a 20 percent conversion of large fleets to alternative fuel vehicles over the next ten years.

Each of these initiatives are discussed in detail in the chapters ahead and will involve bolstering existing programs, pursuing regulatory changes, and capitalizing on opportunities for the state to be a market driver through creative finance, purchasing, planning and governance.

This plan is a central component of my strategy to position Oregon to be more competitive in the global economy of the 21st century. It provides a framework to move away from a boom/bust economic cycle that depletes our natural capital and leaves us vulnerable to fluctuations in global markets. This plan provides strategies to meld workforce development initiatives, higher education opportunities, and local job creation with clean energy priorities; spur investment while developing home-grown renewable energy resources; and keep capital circulating in our region through local sourcing and supply chains while reducing our dependence on carbon-intensive fuels and foreign oil.

Many of the proposed goals and action items in this plan are ambitious. For example, the goal of meeting new electric load growth with conservation and energy efficiency will be particularly challenging, as will be the effort to secure a new, non-gas tax financing mechanism for multi-modal transportation infrastructure. I believe, however, that because the stakes are high for our state we must be bold in our vision and committed to a full and honest examination of these and other issues as we build the consensus necessary to secure our common future.

Finally, the 10-Year Energy Action Plan was created with input, advice and technical assistance from hundreds of Oregonians and organizations. A citizen task force met regularly for six months and made nearly 200 recommendations that have been synthesized and incorporated into the plan. I extend my sincere thanks to everyone who has participated in this process.

Sincerely,

John A. Kitzhaber, M.D.,
Governor

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Introduction

In recent years, Oregon energy innovation has contributed to a decline in statewide electricity and natural gas consumption. From 2000 to 2011, electricity and natural gas use dropped.[5] Since 2002, Oregon's commitment to investing in energy efficiency through the Energy Trust of Oregon ("ETO") has resulted in cumulative savings of 322 average megawatts of electricity and 23.2 million annual therms of natural gas, reducing the costs to serve Oregon ratepayers by an estimated $1.8 billion.[6] Since establishing the State's Renewable Portfolio, we are on track to meet approximately 25 percent of our energy needs through clean sources by 2025. This has resulted in local development of wind and other renewable resources, resulting in more than $5 billion of investment in Oregon since 2007.[7]

This leadership in energy did not happen by accident. It has been nearly 40 years since Governor Tom McCall established an emergency energy conservation program in the state and more than 30 years since incentives and loan programs were created for residents and businesses to invest in renewable energy and energy efficiency. Concurrently, an enormous amount of work has been accomplished in the public and private sectors, and many boards, commissions, agencies and other groups have furthered our understanding of clean energy opportunities. This body of analysis has informed several extensive efforts over the past two years to analyze and diagnose energy trends. In that short time, the Oregon Department of Energy ("ODOE") has produced the State's biennial energy plan; the Oregon Global Warming Commission ("OGWC") proffered its thorough "Roadmap to 2020"; and the Oregon Energy Planning Council ("OEPC") produced its "Oregon Energy Planning Report."

The last report charted a useful framework for a statewide plan in its findings, and it noted the following priorities that should be included in such a plan:

> Oregon's Department of Energy mission statement is to ensure that the state "…has an adequate supply of reliable and affordable energy and is safe from nuclear contamination, by helping Oregonians save energy, develop clean energy resources, promote renewable energy, and clean up nuclear waste." The Department is charged with developing and administering the state's energy programs and helping with strategic planning to develop the state's future energy portfolio.
>
> In addition to the Department's goals, the Council has agreed that the state's future energy strategy should include the following goals or principles:
>
> - Maintain affordable energy costs.
> - Assure a high level of regional and local system reliability.
> - Promote a clean energy economy and jobs through new business and workforce development.

5 According to 2011 Oregon Utility Statistics book, electricity sales by all Oregon utilities peaked in 2000. Oregonians used 2.4 million megawatt hours less in 2011 than in 2000. Similarly, natural gas usage (including customers who buy their own natural gas) dropped by about 150 million therms between 2000 and 2011.

6 Energy Trust of Oregon 2011 Annual Report: http://energytrust.org/About/PDF/AnnualReport_2011.pdf

7 Renewable Northwest Project Economic Development Study: http://rnp.org/sites/default/files/pdfs/OR_5_billion_2-page_11Mar23.pdf

- Meet state goals and commitments on greenhouse gas emission performance standards.
- Meet state goals and commitments on developing renewable resources.
- Ensure the health and welfare of Oregon's citizens.

This action plan adopts these elements, with emphasis on strategies for implementing them, which are discussed below. The OEPC report also contained a number of recommendations on creating a comprehensive planning document, many of which have been incorporated herein.[8] As a matter of process, the members of Governor Kitzhaber's Energy Task Force were advised to consider the recent work of the noted groups and other relevant reports in developing recommendations for the 10-Year Energy Action Plan.

The proximity in subject and time of so many different energy-related efforts in Oregon, while convenient for the purpose of cross-reference, also indicates that a review of the management of energy policy at the state level is well-timed, allowing for a more efficient use of resources for the purposes of planning, coordination and implementation.

In drafting this report and its recommendations, the following major considerations have played a primary role:

Jobs and the Economy

Oregon's innovative energy policy has made us a national leader in energy efficiency, renewable resource development, and clean energy job growth. Oregon ranks second in the nation in the clean-energy economy[9], fourth in the nation for energy efficiency[10], and fifth in the nation for green jobs per capita[11]. Oregon is widely recognized for our supportive policies, significant technology deployment, and track record of attracting capital.

Growing the number and availability of green jobs helps to competitively position Oregon to capitalize on the growing clean economy and to build resiliency into the State's economic development strategy. According to a recent study by the Economic Policy Institute ("EPI"), greener industries grow faster than the overall economy, states with more green intensive industries fare better during recessions, and green jobs are more accessible to workers without a college degree.[12] Green jobs also go beyond the renewable energy industry, permeating many industries including manufacturing. The findings from EPI provide further evidence that a sustainable economy and job creation can go hand in hand; indeed, green jobs can even be the backbone for an overall job creation strategy.

More than 22,900 Oregon businesses have invested nearly $2.4 billion in energy efficiency, including lighting, heating, industrial processes, and other measures. In Energy Trust of Oregon territory alone, energy efficiency programs have saved approximately $1 billion on program participant energy bills

8 Oregon Energy Planning Council, Oregon Energy Planning Report, Dec. 2010. The Council noted that future planning would require adequate resources, measurable benchmarks or criteria, public "buy-in", and significant leadership in managing competing interests.

9 State Clean Energy Leadership Index, Clean Edge Inc.

10 American Council for an Energy Efficiency Economy (ACEEE) 2012 State Scorecard.

11 Pollack, Ethan. Counting Up To Green, Economic Policy Institute, October 9, 2012.

12 Pollack, Ethan. Counting Up To Green, Economic Policy Institute, October 9, 2012.

while creating an estimated 2,500 jobs and spurring $90 million in wages and business income.[13] Nearly 425,000 people have installed energy efficient appliances in their homes, like refrigerators, dishwashers and washing machines.[14] Energy efficiency and conservation programs, such as the State's Residential Energy Tax Credit, have been instrumental in saving more than $1 billion in cumulative energy costs.[15] We have more to do to acquire additional electric and gas savings, which will add to these numbers and deliver still more benefits to the state.

Businesses have invested more than $5 billion in renewable energy in Oregon, including wind, solar and geothermal development.[16] Statewide, 2,600 megawatts of operating renewable energy have been installed to date, enough to power 650,000 homes.[17] This development has strengthened Oregon's economy. For example, from taxes, fees and assessments, wind farms have produced about $33.2 million annually for Sherman County alone.[18]

Vestas – the largest wind turbine manufacturer in the world – and Iberdrola Renewables – the second largest renewable power operator in the country – have both established their North American headquarters in Oregon. In addition, Oregon has become the U.S. solar manufacturing capital, employing 1,800 people in advanced manufacturing jobs at 12 manufacturing facilities.[19]

Ensuring a competitive advantage in Oregon for growing these industries includes offering a competitive regulatory environment (facility siting processes, as one example); targeted incentives (both financial and technical); a fertile research, development and commercialization effort; and a ready workforce.

Affordable and Reliable Energy

Oregon's electric rates are among the lowest in the nation,[20] and natural gas and transport fuels are competitively priced and reliably delivered.

Maintaining affordable energy, especially in a predictable manner over the long-term, is essential to helping Oregon's businesses grow – particularly many of our manufacturing-based clusters – and keeping our citizens, especially our disadvantaged and low-income households, comfortable and safe.

Energy must remain accessible, in terms of the security of its supply and breadth of its delivery, for the state to thrive. And equity in the distribution of costs, benefits, and impacts must factor consistently, transparently, and justly into energy policy decisions.

Maintaining an up-to-date statewide energy action plan will further increase the reliability and predictability of energy services and costs for both businesses and consumers.

13 Energy Trust of Oregon, 2011 Annual Report, http://energytrust.org/About/PDF/AnnualReport_2011.pdf

14 Oregon Department of Energy

15 2011 Annual Report to the Oregon Public Utility Commission, Energy Trust of Oregon, April 16, 2012.

16 Renewable Northwest Project Economic Development Study, http://rnp.org/sites/default/files/pdfs/OR_5_billion_2-page_11Mar23.pdf

17 Oregon Department of Energy

18 Sherman County, Oregon

19 Business Oregon

20 Sixth Northwest Power and Conservation Power Plan, Northwest Power and Conservation Council, February 2012.

Environmental and Quality of Life Values

Oregon is a diverse state, but residents share a deep appreciation for a rich quality of life, livable communities – both urban and rural – and a strong connection to the natural environment. Our energy future must improve our quality of life, make our communities healthier, determine the best use of our natural resources, and protect farms, forests, water, and wildlife.

Carbon and Greenhouse Gas Reduction Goals

As we make investments necessary to provide energy for the next generation of Oregonians, our most difficult energy challenge involves reducing greenhouse gas emissions, particularly energy-related carbon dioxide. If we make the wrong choices, future carbon regulation could force us to prematurely abandon those investments, costing Oregon dearly. If we choose wisely, Oregon will be well-positioned to compete and thrive in an increasingly carbon-constrained world.

To this end, the Oregon State Legislature established greenhouse gas reduction goals for 2020 and 2050. Those goals are to reduce greenhouse gas emissions by 10 percent and at least 75 percent below 1990 levels, respectively.

Oregon has made significant progress toward reducing greenhouse gas emissions. For example, Portland General Electric has committed to end coal operations at its Boardman facility by 2020. Wind energy now contributes nearly six percent of Oregon's electricity, up from less than one percent in 2004.[21] Distributed energy generation facilities provide local, homegrown energy for ratepayers. Significant investments have been made in energy efficiency and conservation, the cheapest way to reduce greenhouse gas emissions. Oregon has successfully reduced greenhouse gas emissions while maintaining a competitively low cost of energy[22]:

Another critical opportunity to advance measurable outcomes in this area is to make sure that state and regional investments in infrastructure – estimated to be over $1 trillion along the West Coast in the next 30 years – account for climate risks in evaluating life cycle costs, siting and design. To advance this approach, Oregon is a founding partner of the West Coast Infrastructure Exchange[23], with a mission to advance this kind of innovative outcome and best practice.

As we look to the future, we need to continue to invest in demand management tools, smart grid infrastructure, energy efficiency, conservation, renewable energy and clean technology to significantly ratchet down greenhouse gas emissions, particularly from coal. The full range of impacts from such investments should be considered when weighed against cost; for example, considering socioeconomic effects in addition to greenhouse gas reductions. Recent analysis completed to inform the 10-Year Energy Action Plan is an example: the analysis used a sophisticated macroeconomic modeling tool to

21 Oregon Department of Energy, http://www.oregon.gov/ENERGY/Oregons_Electric_Power_Mix.shtml

22 U.S. Energy Information Administration, Form EIA-861, "Annual Electric Power Industry Report."

23 West Coast Infrastructure Exchange, http://www.westcoastx.com/home.php.

demonstrate the economic costs and benefits of achieving Oregon's greenhouse gas reduction goals under several hypothetical policy action scenarios.[24]

It is also important to determine the appropriate and responsible role of natural gas. Efficient, state of the art natural gas transmission and generation emit 50 percent less greenhouse gas than burning coal. Natural gas also has the potential to serve as a firming resource for renewable energy projects and as a cheaper alternative fuel for vehicles. For residential, commercial, and industrial customers currently using inefficient oil or other fossil fuel sources, converting electric heat to natural gas or bioenergy thermal heat technologies not only improves operating efficiency, it also results in a net greenhouse gas reduction. Natural gas can serve as a critically important tool in reducing our state's dependence on coal and in helping Oregon meet our 2020 greenhouse gas reduction goals.

This energy action plan will ensure that over the next decade we create an energy infrastructure that will enable us to thrive in a carbon-constrained future.

24 10-Year Energy Action Plan Modeling: Greenhouse Gas Marginal Abatement Cost Curve Development and Macroeconomic Foundational Modeling for Oregon, Center for Climate Strategies, July 30, 2012.

Process

In March 2010, then-gubernatorial candidate John Kitzhaber released an energy policy campaign paper that, among other things, called for "a strategic climate and energy roadmap that lays out the practical steps to meet and implement [our goals] … ."[25] In order to fulfill that direction, in October 2011, Governor Kitzhaber appointed the 10-Year Energy Action Plan Task Force, an advisory committee generally charged with making recommendations on coordinated actions and initiatives that the State of Oregon can take in the next ten years to:

- Reduce our dependence on carbon-intensive fuels and foreign oil,
- Develop home-grown renewable energy resources,
- Mitigate greenhouse gas emissions,
- Improve energy efficiency and create rewarding local jobs, and
- Boost Oregon's economy through investment and innovation.

These goals build upon ensuring a continued supply of affordable, reliable energy for our citizens and businesses.

Structure

The Task Force was led by a Chair and three Vice-Chairs and organized into the following design teams:

- Energy Efficiency and Demand Management
- Resource Mix
- Siting
- Transportation Design
- Governance Design

Each design team was given a specific charge for its particular issue area and made recommendations to the Governor based on its specific charge.[26] The final report is informed primarily by the recommendations from The Task Force and from subsequent public comments.

25 Kitzhaber 2010, Building a Clean Energy Future and Safeguarding Oregon's Natural Environment, Mar. 2010.

26 http://www.oregon.gov/energy/Pages/Ten_Year/Ten_Year_Energy_Plan.aspx

Timeline

Oct 2011 - Jan 2012	Design team work
Feb 2012	Integration team work
Mar 2012	Governor's office prepares document for stakeholder review
June 2012	Governor's office release Draft 10-Year Energy Action Plan
June - July 2012	Governor's office gathers public comments on Draft 10-Year Energy Action Plan
Fall 2012	Governor's office finalizes 10-Year Energy Action Plan

Task Force Leadership

Chair Michael Jung, Silver Spring Networks
Vice-Chairs Andrea Durbin, Oregon Environmental Council
Roy Hemmingway, Energy consultant
Kevin Lynch, Iberdrola Renewables
Governor's Coordinator Karen Joyce, Governor's Interim Energy Policy Advisor
Governor's Office Curtis Robinhold, Chief of Staff
Cylvia Hayes, First Lady of Oregon
Scott Nelson, Jobs and Economy Policy Advisor
Richard Whitman, Natural Resources Policy Advisor
Lynn Peterson, Sustainable Communities & Transportation Policy Advisor
Greg Wolf, Intergovernmental Relations & Regional Solutions Advisor
Dan Carol, Director of Multi-State Issues
***Staff:** Diana Enright, Oregon Department of Energy*
***Staff:** Matt Hale, Oregon Department of Energy*

Design Team Members

Governance

Andrea Durbin, Oregon Environmental Council
Roy Hemmingway, Energy consultant
Kevin Lynch, Iberdrola Renewables

Energy Efficiency and Demand Management (EEDM)

Chair: Susan Ackerman, Public Utility Commission
Roger Gray, Eugene Water and Electric Board
Jeff Harris, Northwest Energy Efficiency Alliance

Margie Harris, Energy Trust of Oregon
Marty Sedler, Intel Corporation
Derek Smith, Clean Energy Works Oregon
Phil Welker, Portland Energy Conservation Institute
***Staff:** Theresa Gibney, ODOE*
***Staff:** Vijay Satyal, ODOE*

Resource Mix

Chair: Rachel Shimshak, Renewable Northwest Project
Bill Edmonds, NW Natural
Bob Jenks, Citizens Utility Board
John Mohlis, OR State Bldg & Construction Trade Council
Dave Robertson, Portland General Electric
Whitney Rideout, Oregon Association of Nurseries
John Savage, Public Utility Commission
***Staff:** Rebecca Sherman O'Neil, ODOE*
***Staff:** Tom Stoops, ODOE*

Siting

Chair: David Stewart Smith, Pacific Energy Systems
Scott Bolton, PacifiCorp
Mark Brown, Bureau of Land Management
Dan Erickson, fmr Wasco County Commissioner
Karen Green, fmr Chair, Energy Facilities Siting Council
Margaret Kirkpatrick, NW Natural
Monty Knudsen, US Fish and Wildlife Service
Tamra Mabbott, Umatilla County
Bruce Taylor, Defenders of Wildlife
Chris Taylor, Element Power
***Staff:** Hillary Dobson, ODOE*
***Staff:** Todd Cornett, ODOE*

Transportation

Chair: Jon Ruiz, City of Eugene
Charlie Allcock, Portland General Electric
Angus Duncan, Bonneville Environmental Foundation
Neil McFarlane, Trimet
David Patterson, Mitsubishi Motors
Derek Rotz, Daimler Trucks North America
Barry Woods, Drive Oregon
Jeff Hammarland, Portland State University
***Staff:** Bob Cortright, DLCD*
***Staff:** Travis Brouwer, ODOT*
***Staff:** Bill Drumheller, ODOE*
***Staff:** Rick Wallace, ODOE*

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How to Stay Involved

Please visit the 10-Year Energy Plan web site to view the materials that helped inform this action plan, the Task Force Recommendations, and Draft 10-Year Energy Action Plan. Please sign up for email alerts so you can be involved in implementing Oregon's 10-Year Energy Action Plan.

Goals

State Energy Goal One:
Maximize energy efficiency and conservation to meet 100 percent of new electric load growth.

Over the next decade, energy efficiency and conservation will serve as the cornerstone of Oregon's energy policy. Since 1980, more than half of the increase in demand for electricity in the Northwest has been met with energy efficiency savings equivalent to eight to ten power plants.[27] Since 2002, Energy Trust of Oregon has reduced electric load 4.5 percent compared to what it would have been without their efficiency programs. These savings have been accomplished by installing improvements like building insulation, high-efficiency lighting, cooling and water heating systems, changes to industrial manufacturing and process improvements, energy management enhancements and improved irrigation. Likewise, Oregon's publicly-owned utilities have invested significantly in energy efficiency and conservation. From 2002 to 2011, public utility energy efficiency programs have saved their customers 135.3 average megawatts, resulting in an average of 239 kilowatt hours of savings per year per customer. Oregon's successes stem from longstanding public policies that recognize the myriad benefits of efficiency, including lower energy bills for consumers, a cleaner environment, and rewarding local jobs. As a result, Oregon ranks fourth in the nation in energy efficiency.

According to the Northwest Power and Conservation Council, enough cost-effective conservation measures will be available to meet 85 percent of the region's load growth for the next 20 years.[28] In Oregon, it is likely that we will exceed this, reaching zero or negative load growth in the coming decades. In fact, Oregon Public Utility Commission data show the state's total electric and gas usage has declined in recent years.[29]

Meeting 100 percent of new load growth through energy efficiency and conservation is an aggressive statewide stretch goal. Every utility serving Oregon customers is different; each has its own energy efficiency and conservation program tailored to meet the specific needs of its customers. Some utilities are better situated to meet certain load targets, and it is unfair to expect each utility to meet 100 percent of load growth through energy efficiency and conservation, particularly in those territories where there is a large single load user, such as a data center. However, an analysis completed in support of the 10-Year Energy Action Plan demonstrates a scenario in which energy efficiency measures available to the state are able to meet new load growth through 2022 while providing net savings to consumers and significant greenhouse gas reductions.[30] It is critically important that we, as a state, push to meet this stretch goal because energy efficiency is the cheapest, least-cost way to meet new

27 Sixth Northwest Power and Conservation Power Plan, Northwest Power and Conservation Council, February 2012.

28 Sixth Northwest Power and Conservation Plan, Northwest Power and Conservation Council, February 2012. The region includes Idaho, Montana, Oregon and Washington.

29 According to 2010 Oregon Utility Statistics, electricity use in Oregon peaked in 2000. Oregonians used 3.6 million megawatt hours of electricity less in 2010 than in 2000. Similarly, natural gas usage dropped by more than 200 million therms from 2008 to 2010.

30 10-Year Energy Action Plan Modeling: Greenhouse Gas Marginal Abatement Cost Curve Development and Macroeconomic Foundational Modeling for Oregon, Center for Climate Strategies, July 30, 2012.

consumer demand for power. If executed correctly, maximizing energy efficiency and conservation will ensure that Oregon maintains our competitively low cost of energy, making us an attractive place for businesses to locate and protecting Oregon consumers.

One of the biggest hurdles to achieving these energy efficiency gains is in commercial buildings. While publicly-owned utilities and the Energy Trust of Oregon are working with customers to retrofit many thousands of buildings a year, there are opportunities to achieve deeper savings with integrated retrofits, especially in older buildings with outdated systems. Over the next decade, the state will coordinate, focus and maintain existing energy efficiency programs, while at the same time looking at new, innovative approaches to explore the direct use of utility and other private capital for investment in energy efficiency and conservation. These new voluntary efforts will allow us to accomplish deeper energy efficiency efforts and to grow programs to reach customers who are not now adequately served.

In addition, we will establish a State Building Innovation Lab designed to help understand how to pursue deep energy efficiency and conservation retrofits in the public sector. Over the next ten years, for every occupied state-owned building, the State Building Innovation Lab will establish baseline energy use and conduct energy audits to identify cost-effective retrofits. The buildings will be retrofitted, improving the performance of up to four million square feet of identified office space and creating the data and experience to help drive a larger market.

Over the next decade, the state will coordinate, focus and build on existing energy efficiency capabilities while at the same time looking at new, innovative approaches and policies to explore direct use of utility and potentially other private capital for investment in energy efficiency and conservation. These new voluntary efforts will allow us to accomplish deeper energy efficiency efforts and to grow programs to reach customers who are not now adequately served. This investment could save home- and business-owners money on their utility bills, create more jobs, further strengthen our economy, and protect our quality of life.

Both the creation of the State Building Innovation Lab and the larger effort to address regulatory issues will be led by a public-private team with members from the Governor's office, the Oregon Department of Energy, the Oregon Public Utility Commission, the Building Codes Division, utilities, and numerous entities, such as the Energy Trust of Oregon and Clean Energy Works Oregon ("CEWO"), with expertise in the delivery of energy efficiency measures.

State Energy Goal Two:
Enhance clean energy infrastructure development by removing finance and regulatory barriers.

Oregon's natural gas, electric, water, and waste infrastructure is aging and needs to be significantly upgraded and expanded. The state has a backlog of improvements that must be made to existing infrastructure to meet the demands of Oregonians and to make communities more resilient. In order to meet this need, the State will create the West Coast Infrastructure Exchange[31]. The Exchange will align the State's capital facilities and infrastructure planning efforts by developing new mechanisms for local technical assistance, bundling water and energy innovations across borders, and attracting investment

31 West Coast Infrastructure Exchange, http://www.westcoastx.com/home.php.

capital through new performance partnerships. This strategic approach will require improved coordination and integration between energy, transportation, land use and economic development planning.

In addition, Oregon will continue to assist in the build-out of a clean energy infrastructure by removing market barriers in the Energy Facility Siting Council process. The proposed changes to the Siting Council process will create more predictability and certainty for developers and create more flexibility to protect the State's natural resources. This effort will ensure that Oregon can continue to meet the State's energy goals through harvesting clean energy resources while protecting clean air, clean water, open spaces, high-value farmland and other critical natural resources.

State Energy Goal Three:
Accelerate the market transition to a more efficient, cleaner transportation system.

Oregon communities have been working over the last 39 years to understand the connection between land use and transportation, and to maximize the capacity of our transportation system. In addition, a more robust electric vehicle pool has the potential to assist electric utilities with new grid management opportunities. Oregon's per capita vehicle miles traveled ("VMT") rose 4 percent from 1990 to 2000, but Oregon was one of only two states to experience a decline (-8 percent) since 2008.[32] This reduction benefits Oregonians by improving air quality, boosting public health, and reducing congestion.

Transportation is the single largest contributor to Oregon's greenhouse gas emissions, accounting for 37 percent of total emissions.[33] Oregon's roads accommodate four million registered vehicles for 2.7 million licensed drivers.[34] Oregonians consume some 1.5 billion gallons of gasoline to drive more than 33 billion miles every year.[35] According to analysis done by the Oregon Department of Energy from U.S. Census Bureau data, fuel costs average Oregonians nearly seven percent of disposable income, nearly double the cost ten years ago. Moreover, gasoline prices are projected to rise, so this trend is expected to continue unless the transportation system and habits are reformed.

To reach Oregon's 2020 goals, the state will need an approximately 30 percent reduction from 2010 greenhouse gas levels, which roughly translates to a 30 percent reduction in fossil fuel use.[36]

Over the next ten years, the State will reduce dependence on fossil fuels by assisting in the conversion of 20 percent of large fleets to alternative fuel vehicles, including, but not limited to, electric, compressed natural gas ("CNG"), and liquefied natural gas ("LNG"). Converting 20 percent of large fleets over the next ten years will accelerate the market for newer, cleaner-burning vehicles that are less expensive to operate over the life of the vehicle, which will help the state and businesses save money on operations and fuel.

32 Oregon Department of Transportation, Status of Oregon GHG Emissions, October 2008.

33 Report to the Legislature: Oregon Global Warming Commission, 2011.

34 Oregon Department of Transportation.

35 Federal Highway Administration, Highway Statistics 2010.

36 Oregon Revised Statute 469A

Cross-Cutting Critical Paths

In order to meet our state energy goals over the next decade, we will focus on three cross-cutting areas.

Critical Path: Technology and Innovation

The development and application of new technologies and innovations are vital to strengthening Oregon's energy leadership over the coming decade. Levels of investment in this area have long been incommensurate with the magnitude of our energy challenges and opportunities. Addressing this gap requires closer coordination between organizations involved in such activities today, as well as focused efforts on areas generating the greatest net benefits for Oregon.

Toward these ends, the state will leverage its existing infrastructure, such as the Oregon Innovation Council, in collaboration with relevant organizations and stakeholders, both public and private, to develop a detailed proposal that:

> Addresses an overall statewide approach to coordinating and leveraging public and private investment in energy technology research, development, demonstration, and deployment (RD3);
>
> Bolsters energy efficiency and demand response research and development to meet all future load growth with next-generation technologies and approaches (State Energy Goal One);
>
> Minimizes the cost of integrating the large amounts of intermittent renewable energy resources that will be necessary to meet both statutory obligations and growing consumer demand (State Energy Goal Two); and
>
> Targets activities to accelerate the deployment of intelligent transportation systems and electric vehicles, including potential integration with grid modernizations initiatives (State Energy Goal Three).

Critical Path: Carbon and Climate

The most difficult energy challenge involves reducing greenhouse gas emissions across the energy and transportation sector. Failure to do so may result in investments that have to be prematurely abandoned as we move into a carbon-constrained future.

In order to identify and rank the best opportunities for cost-effective carbon reduction, the state commissioned an analysis that compares the costs and greenhouse gas reduction benefits of over 200 carbon reduction strategies.[37] This analysis demonstrates that there are significant opportunities

37 10-Year Energy Action Plan Modeling: Greenhouse Gas Marginal Abatement Cost Curve Development and Macroeconomic Foundational Modeling for Oregon, Center for Climate Strategies, July 30, 2012.

available to meet Oregon's energy and greenhouse gas reduction goals in every sector of the economy, and to do so cost-effectively. Moreover, the analysis demonstrated that even relatively less cost-effective measures can work together with cost-saving measures to provide important employment and economic activity benefits to Oregon.

The data from the cost-effectiveness study has informed this Action Plan and the set of actions proposed to meet the state's greenhouse gas reduction goals by 2020, and the State's ability to enforce those actions. The proposed measures will require participation from key state agencies, including, but not limited to, the Department of Environmental Quality, Department of Transportation, Public Utility Commission, Department of Agriculture, Department of Land Conservation and Development and Oregon Department of Energy. This action plan outlines the responsibilities and reporting mechanisms required from the State to meet the greenhouse gas reduction goals.

Critical Path: Cutting Edge Communities

Oregon is a national leader in energy efficiency, land use planning, multi-modal freight and passenger choices, renewable resource development and environmental stewardship. However, we have not yet asked our state or local entities or citizens to have a complete conversation about the integration of these elements.

The Cutting Edge Communities program will ensure that local governments statewide have access to state programs that will help fund their individual efforts to help meet the State's ten year energy goals. Implementation of locally adopted energy action plans will create more resilient communities that can meet their own long-term goals of energy independence, reliability, affordability and job creation.

Urban and rural communities interested in taking advantage of the goals of the 10-Year Energy Action Plan can work through the Regional Solutions network to access state programs that would help advance their goals.

Critical Path: Bioenergy Development

Oregon's natural resources and environment are at the center of the state's identity and economy. Agriculture and forestry represent two of Oregon's top three industries and employ more than a hundred thousand Oregonians while contributing billions of dollars to the state's economy. Natural resource management, utilization and protection form the core of rural economies and are the shared heritage of Oregon communities. Strengthening the health of our environment, these key industries and rural communities is a priority for the state and will be advanced by a strategic, integrated approach to bioenergy opportunities.

In order to ultimately develop a robust restoration economy for rural Oregon and increase energy production from biomass, the state will focus incentives on building the energy production market. While issues related to secure fuel supplies are important, the next Legislature could repurpose existing incentives to focus on capital investment in biomass energy and biofuels production facilities. The existing biomass collector tax credit has indeed been shown to increase economic

activity in the sector.[38] Supporting capital investment in biomass energy and biofuels facilities will drive market expansion. Thus, this plan proposes a shift of incentive investments from collection of fuel sources to investment in facilities such as institutional boilers, cogeneration facilities, and cellulosic biofuels production.

The state will develop a coordinated approach to bioenergy opportunities that support key outcomes for a healthy environment, thriving communities, and a strong economy. This approach will accomplish the following:

- Support key Oregon industries – such as food processing, forest products, dairy and production agriculture – and help them save energy, integrate local energy sources, and develop new energy products. Specific action plans will be developed to advance energy conservation and renewables within each of these industries.

- Integrate local energy sources into residential, commercial and industrial buildings. This will encourage energy dollars to stay within the local economy and help to drive down spending on energy by governments, school districts and others. The Governor's Cool Schools Initiative and the State Building Innovation Lab will be the catalysts to move these efforts forward.

- Develop new and expanded markets for advanced biofuels and engineered solid fuel products, such as the Clean Fuels Program. Markets will include local, domestic and export-focused opportunities. Supporting a clean fuel industry will help develop new biofuel manufacturing capabilities in Oregon, such as the new ZeaChem facility in Boardman, and help commercialize new technologies that create advanced fuel from woody biomass, agricultural residuals and energy crops, algae, and materials from the waste stream.

- Prioritize and coordinate state agency actions that will efficiently deploy tools and resources that support bioenergy development and ensure a consistent regulatory approval process. State research, development, commercialization, regulation, incentives, and technical support programs will be aligned to bring bioenergy technologies and projects to fruition. This includes coordination with existing state strategies such as the Integrated Water Resources Strategy, the Oregon Strategy for Greenhouse Gas Reductions, Oregon's Forest Biomass Strategy, and the State Transportation Strategy.

- Encourage integration of anaerobic digestion projects into composting and food waste collection programs to support increased energy generation and co-product development, including nutrient recovery and soil amendments.

- Bioenergy projects will be coordinated to help support environmental health and protection objectives and develop beneficial co-products. Anaerobic digestion projects will help reduce waste going into the landfill, support nutrient recovery and management, and help achieve water protection goals. Woody biomass projects will help leverage forest health restoration projects and utilize forest residuals that would otherwise be released as smoke into the environment.

38 Nielson-Pincus, M., Krumenauer, M., MacFarland, K. Mosely, C. . Impacts of the Biomass Producer or Collector Tax Credit on Oregon's Wood Fuel Market and Economy. Ecosystem Workforce Program Working Paper Number 32. http://ewp.uoregon.edu/

Taking Action: The Plan for our Energy Future

Goal One:
Maximize Energy Efficiency and Conservation

Unlock Energy Efficiency as a Resource

In Oregon and elsewhere, stakeholders have long discussed how to more effectively integrate energy efficiency and conservation into both investor- and consumer-owned utility models that currently deliver energy services. Oregon has made significant strides in this area, including the creation of the ETO, collection and allocation of the public purpose charge, and "decoupling" our utilities. This regulatory framework has propelled Oregon to the forefront as an energy efficiency leader. However, with projections showing that access to currently-defined, cost-effective modes of efficiency is diminishing, and with our understanding that efficiency is still the cleanest, cheapest form of energy and absolutely essential to resilience and success in a resource-constrained environment, it is time to pioneer a new regulatory regime and business model that allows investor-owned utilities to invest in deeper efficiency savings while still meeting customer and shareholder needs.

The public benefits are many, including the fact that extensive energy efficiency retrofit work in the public, commercial and industrial sectors can create thousands of good jobs that cannot be outsourced. With an impressive track record of innovation and excellent working relationships between the state and the utilities that serve us, building a new model is a difficult but achievable goal.

Action Item: *The state will analyze market barriers and work with stakeholders and the legislature to develop a new regulatory framework and financial mechanisms that allow for new consumer demand for energy to be met through energy efficiency and conservation.*

Create the State Building Innovation Lab

Building efficient new buildings is the most cost-effective way of reducing the State's utility bill. However, given the State's aging building infrastructure, the State Building Innovation Lab will ensure that Oregon reduces energy consumption in all state-owned buildings by 20 percent over the next ten years. Managed by the Oregon Department of Energy, and in close coordination with the Department of Administrative Services, the Lab will conduct energy audits and identify cost-effective retrofits for every occupied state-owned building, improving the performance of up to four million feet of identified state office space.

The U.S. DOE Better Building Initiative sets a national target of improving energy efficiency in commercial and industrial buildings by 20 percent by the year 2020. The Initiative includes a challenge to states and local governments to lead by example. The State Building Innovation Lab would work to achieve this transition, focusing on technologies like more energy-efficient water and space heating and cooling technology, such as ductless heat pumps and heat pump water heaters, or other energy efficient natural gas solutions, consistent with organizations like the Northwest Energy Efficiency Alliance.

It has been estimated by ODOE that a 20 percent reduction in the electric utility costs for state-owned buildings in Oregon would result in annual savings of at least $100 million. That money could be leveraged to obtain at least $1.4 billion in borrowing capacity to finance the upgrades. Initially, much of the savings would be used to finance the underlying debt, but as time progresses, the actual savings will begin to accrue to the state.

In addition, the State Building Innovation Lab provides an opportunity to pilot and test commercial building asset ratings and public disclosure mechanisms that can create competition for energy efficiency and conservation in the private sector.

Undertaking this initiative would have a direct and immediate impact on Oregon's economy, resulting in savings for the state and creating jobs. Through this work, benefits can be created by testing and scaling different tools to help drive deeper, harder-to-reach savings in the commercial sector. For example, through the Lab, ODOE can establish a baseline for building performance and demonstrate which energy efficiency and sustainability measures can be taken to decrease the cost of energy for the State of Oregon. This tool would help demonstrate the value of energy efficiency and conservation to the private sector.

Through this effort, ODOE will explore public-private partnerships and other funding mechanisms, such as an energy efficiency power purchase agreement, on-bill finance or repayment, and energy services company models to finance the work. Understanding how these financial mechanisms work for state-owned buildings will help provide an understanding of how a similar model could function in the commercial market to capture harder, deeper-to-reach efficiencies and savings in commercial and industrial building stock.

Through this effort, ODOE will gather and analyze data, including the number of jobs created, the amount of money state entities save on utility bills, and overall carbon reduction. The data will serve as the foundation for understanding how to create innovative market opportunities and streamline the regulatory environment.

The State Building Innovation Lab will serve as a replicable model for both the commercial sector and one that could be adopted by local and regional governments to help them save money, reduce their energy consumption, create local jobs, and strengthen the local community.

Action Item: *Create the State Building Innovation Lab to conduct energy audits, identify cost-effective retrofits and complete the retrofits for every occupied state-owned building over the next ten years.*

Oregon Innovation Council ("Oregon InC")

The Oregon Innovation Council works to ensure the global competitiveness of Oregon industries by helping innovators create high-paying jobs, entrepreneurs create companies, and university researchers bring federal and private research dollars to Oregon in a partnership between the state's private sector leaders and its research universities. Oregon InC's labs and researchers can provide companies with access to cutting-edge research and development capacity. And Oregon InC commercialization grants help turn innovative ideas into commercial products, helping startup companies develop products that attract additional financial backing to grow ideas into revenue. In only three biennia of funding, Oregon InC initiatives have created 30 new companies marketing innovative products, captured $350 million in federal and private grants, and raised more than $115 million in private capital for emerging companies.

Many of the Oregon InC-funded efforts relate directly or indirectly to advanced energy applications for energy efficiency, transportation, and generation. Further investment in Oregon InC can help pave the way for significant breakthroughs and commercialization of these critical technologies and help grow Oregon's innovation economy. Over the next decade, implementation of this plan should be carefully coordinated with Oregon InC, helping to maximize development of homegrown applications that can accelerate energy applications.

Action Item: *Increase funding for the Oregon Innovation Council.*

Unparalleled Public-Private Work

The ETO, Bonneville Power Administration ("BPA") and publicly-owned utilities serve as the foundation for energy efficiency, conservation, and small-scale renewable investment in Oregon.

Over the past 30 years, BPA programs have made the Northwest a leader in treating energy efficiency and conservation as a power resource. The Northwest Power Act of 1980 called on the Northwest to give energy conservation top priority in meeting its power needs, and the region quickly learned that a megawatt saved is the equivalent of a megawatt produced.

As of 2009, energy efficiency accounted for only one percent of all electricity production in the United States. But in the Northwest, it accounted for 12 percent, thanks to collaboration among a number of entities: the Bonneville Power Administration, Northwest Power and Conservation Council, regional utilities, state agencies and environmental interests.

In fiscal year 2009 alone, BPA secured approximately 70 average megawatts of energy efficiency for the Northwest – enough energy to power 60,000 homes[39]. Through BPA programs, Oregon's municipal, cooperative and public utilities have saved their customers an average of 239 kilowatt hours per year.

The ETO, funded through a public purpose charge, has achieved further efficiency, conservation and renewable deployment gains for its customers while transforming markets. The ETO charter must be expanded to allow the Trust to leverage existing infrastructure to deliver broader benefits, like carbon reduction and economic gains, from energy efficiency and renewable energy investments to the state. This will allow the ETO to begin to provide new clean generation opportunities and savings for their customers, and to focus on sustainability to allow community-level scalable investment.

Market transformation programs – such as the Northwest Energy Efficiency Alliance ("NEEA"), ETO, BPA and the state's Residential Energy Tax Credit ("RETC") – can help scale energy efficient technologies. This not only helps grow Oregon businesses and strengthen our economy, it also provides homeowners and business owners with less expensive, cleaner alternatives to existing technologies.

EnergyTrust of Oregon

Timber Products builds a foundation of energy efficiency

Timber Products Company, which manufactures a wide range of environmentally certified hardwood, plywood and decorative panels, incorporated energy efficiency into it business model in the late 1990s. "Energy conservation plays a key role in our company's economics and community stewardship," said Brad Beavers, process control manager. "If we can do it cheaper and with less environmental impact, we do it."

PROJECT-AT-A-GLANCE

- Oregon manufacturing facilities in Medford, Grants Pass and White City
- 650 Oregon employees

Project benefits

- Lower operating and energy costs
- Reduction in material processing
- Less waste of raw materials
- Opportunity to extend equipment life
- Decreased noise
- Improved lighting levels
- Reduced environmental impacts

Financial analysis

- $94,409 estimated annual energy cost savings
- $385,095 total of project costs
- $175,325 in cash incentives from Energy Trust

Estimated annual savings

- 1,787,221 kilowatt hours
- 679 tons of carbon dioxide
- 679 tons of carbon dioxide

39 Bonneville Power Administration, http://www.bpa.gov/Energy/N/

Another example of the kind of public-private partnership at which Oregon excels, and which is necessary for technology deployment, is Clean Energy Works Oregon ("CEWO"). Since 2010, CEWO has remodeled more than 1,500 homes throughout Oregon to make them more efficient, comfortable, and safe for residents. This program has created or sustained more than 150 direct construction jobs and leveraged nearly $20 million in private capital investment. CEWO is a national leader in delivering residential and other energy efficiency related services; as such, the state will continue to support CEWO to deliver such services, make energy efficiency gains in the residential sector, and save Oregonians money on their utility bills.

The Governor's Cool Schools program illustrates how the public-private relationships in energy efficiency can work quickly and well to deploy projects. Just a few months after being sworn into office, the Governor and his staff were working with groups like ETO and CEWO, at no additional fiscal impact to the State, on Phase 1 of the Cool Schools effort. During the course of Phase 1, the state's Small Energy Loan Program ("SELP") was tracking potential projects at 51 schools in 19 school districts, with project costs of around $17 million. To date, the program has leveraged a $175,000 investment from the State to generate over $21 million in energy efficiency upgrades for schools. The program directly catalyzed projects in 13 school districts, improving 39 school buildings in 10 counties across the state. SELP financed $4.8 million of $5.3 million in project costs, which enabled improvements at 28 schools in eight school districts statewide.

To date, ODOE has received loan applications from eight school districts requesting $2.8M in loans. ODOE is actively working with 15 school districts at various points in the process of project design and planning. ODOE anticipates another $2.3 million in loan applications between now and the close of the application period.

Lastly, more needs to be done to provide low-income Oregonians access to energy efficiency and conservation programs. Using $3.6 million from the American Recovery and Reinvestment Act, the Oregon Department of Energy and Housing teamed up to offer the State Energy Efficient Appliance Rebate Program to low-income homeowners. This program has provided 3,212 rebates to 2,555 homeowners in every county, including 1,102 for heat pumps and 597 for furnaces, covering 70 percent of the system cost. Savings from this program include one-million kWh of electricity, 33,000 therms of natural gas, and 1.6 million gallons of water.

The Oregon Department of Energy, in conjunction with the Oregon Public Utility Commission and other stakeholders, will analyze current funding for weatherization programs, identify gaps in resources and develop innovative new strategies to increase the amount of energy efficiency and conservation delivered to low-income Oregonians.

Today, energy efficiency is more important than ever. It is clean and emission free. It is also low cost relative to new energy generating resources. It serves our national goals of reducing our carbon footprint and enhancing our energy independence. In short, it is the world's most environmentally and economically friendly energy resource.

Public Performance Disclosure Mechanisms

Public building performance disclosure mechanisms are a critical tool in driving demand for energy efficiency and conservation. Currently, the ETO is providing homeowners with an energy performance

score, a new tool that is similar to a miles-per-gallon rating for their home. The score provides homeowners with information about how much it costs to operate their home and a list of potential upgrades that will make their homes more comfortable and affordable.

Action Item: *The state will build on this pilot program to provide a tool that would be available to all homeowners. This tool can help accelerate the market for energy efficiency and, when provided to potential buyers at the point of listing, would allow homeowners to retrofit their new homes and amortize the costs of upgrades over the life of the mortgage.*

Financing Energy Efficiency and Conservation

Innovative finance mechanisms are not the only tool needed to help scale energy efficiency over the long term. However, developing private sector finance mechanisms, such as an energy efficiency mortgage, that lead to the creation of a secondary market for this product will prove essential. In order for the private sector to develop a finance mechanism of this nature, it is critical that the state, in coordination with other jurisdictions, the federal government, and utility energy efficiency programs, continues to demonstrate the value of energy efficiency and conservation.

As stated above, the 2011 Legislature and the Governor created the Cool Schools program. Although this program is helping to decrease the cost of operations and maintenance for school districts statewide, it is also an important step in establishing the foundation for energy efficiency financing. Using the state's unique SELP program as a base, other incentives and authorization for additional capital to SELP-related reserve funds can be added to drive down the cost of lending for energy projects. As additional projects are undertaken, the state will be able to gather and aggregate energy performance data, ultimately leading to a private-sector driven financing tool.

This new financing tool will continue to allow greater access to low-interest financing, for example leveraging the low-interest financing provided by consumer-owned utilities, for schools across the state and providing one-stop-shopping for technical assistance.

In addition, the state has a number of programs that help drive energy efficiency projects in the commercial, industrial, and residential sector. These financial tools help local governments, businesses, and manufacturers retrofit their buildings and purchase highly efficient appliances so they can save money on energy bills. The state has incentive programs designed to help homeowners purchase more efficient appliances. To help reduce Oregonians' utility bills, the state should update current programs to include new appliances, including televisions, set-top boxes, battery charges, and shower heads. State investments have, over the years, helped scale new technologies and transform markets to make efficient technologies more affordable.

Despite the success of these programs, the state can always work to better direct investment in meeting our energy goals. Lack of capital is often cited as a barrier to energy efficiency upgrades; however, there is a barrier in the current incentive structure for building owners and tenants. This split incentive happens when one person owns a building and another uses it and pays the utility bill. The owner and tenant fundamentally do not have the same incentive to retrofit the building to be more energy efficient. The state, in partnership with the Legislature, should identify this and other market barriers to help drive investment in programs that meet the state's energy goals.

Lastly, since its inception in 1980, SELP has provided over $550 million through nearly 850 loans spread throughout the state. The program has achieved this significant level of financing in a self-sufficient manner without any initial capitalization. To continue this capability, SELP will need to be capitalized over the next several biennia.

Action Item: *The state will develop a new financial tool in concert with new financing infrastructure to help utilities, consumers, and commercial and industrial property owners leverage existing investor-owned and publicly-owned utility programs to unlock the benefits of energy efficiency. The state will align existing incentive programs to support the state's goals to maximize energy efficiency, create the State Building Innovation Lab, Cool Schools and other programs that benefit the consumer. The state will develop a plan to capitalize the SELP program over the next several biennia.*

Updating Energy Codes and Standards

Codes and standards are a useful way to drive investment toward a common energy goal. Strong building codes ensure that newly constructed buildings operate in an efficient manner. In addition, standards, in conjunction with Northwest Energy Efficiency Alliance and other utility-funded programs, help to transform markets and make energy and water efficient technologies available to all Oregonians, regardless of their income status.

Action Item: *The state will work with market transformation programs to update Oregon's codes and standards.*

Goal Two:
Enhance Clean Energy Infrastructure

The Backbone of Oregon's Energy Supply

Investments in Oregon's clean energy infrastructure will be built on the existing foundation of hydroelectric power, a resource that for decades has made the state one of the nation's leaders in clean, renewable energy. The existing federal hydropower system operated by the Bonneville Power Administration ("BPA") has created substantial value for Oregon through low-cost, reliable, and emission-free power that provides an economic advantage not found outside the Pacific Northwest. This important resource currently accounts for 43 percent of Oregon's electricity mix and acts as the principle source of balancing reserves for managing fluctuations in wind generation and other renewable energy resources. Preserving and enhancing the assets and value of the hydroelectric generation and transmission system are critical, especially given an aging infrastructure, high operational demand from variable generation, and a future with increasing carbon constraints.

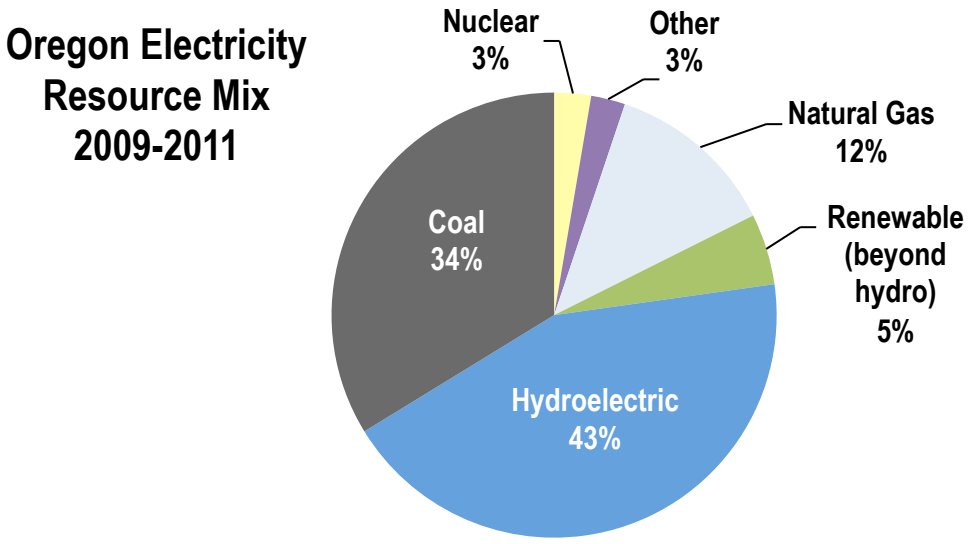
Current Resource Mix

Oregon is rich in energy resources, including, but not limited to wind, solar, geothermal, wave, and biomass. Oregon will, to the extent possible, capitalize on harvesting these energy resources to meet Oregon's demand for power.

The state has invested a great deal of capital in growing the energy industry in Oregon. This focused investment has made Oregon a leader in reducing our dependence on fossil fuels, attracting a cluster of renewable energy companies – including, just to name a few, Vestas, Iberdrola Renewables, EDP Renewables, and SolarWorld – creating jobs and stimulating our economy. Our investment, coupled with the state's Renewable Portfolio Standard (RPS), has resulted in a $5.4 billion investment in the state's economy.[40]

40 Renewable Northwest Project, http://rnp.org/sites/default/files/pdfs/OR_5_billion_2-page_11Mar23.pdf

Oregon's recent electricity mix (3-year average, 2009-2011[41]) breaks down as follows:



The Oregon RPS directs Oregon utilities to meet a percentage of their customers' energy needs through renewable resources. Oregon's three largest utilities – Portland General Electric, PacifiCorp and the Eugene Water and Electric Board – will supply 25 percent of their customers' retail electricity needs through renewable resources by 2025. Likewise, other electric utilities in the state, depending on size, have standards of 5 or 10 percent in 2025. Eligible renewable resources include biomass, geothermal, hydropower, ocean thermal, solar, tidal, wave, wind, waste to energy and hydrogen (if produced from any of these sources). Twenty-five percent of the projected load for PGE and PacifiCorp alone in 2025 is 1,218 average megawatts of energy, or enough to serve just over one million residential customers.[42]

The RPS includes rate-payer protections to ensure that while transitioning to a fossil fuel-free future, we maintain low energy rates for customers and that Oregon remains a competitive and attractive place for manufacturers and businesses. The RPS limits rate impacts to no more than 4 percent of a utility's total revenue requirement. As of 2012, Portland General Electric reported an estimated cost of compliance with the RPS of 0.04 percent, and PacifiCorp reported negative compliance costs, meaning the utility actually saved money by complying with the RPS. The state's RPS clean energy goal serves as the floor, not the ceiling, for new, renewable energy development, and does so at no significant incremental cost to utilities or rate-payers.

Future Resource Mix Potential

Smart Grid

To more efficiently, effectively, and reliably deliver energy across the state, we need to improve and invest in infrastructure. More efficiently operating the grid in the future will require expanding our

41 Oregon Department of Energy, http://www.oregon.gov/ENERGY/Oregons_Electric_Power_Mix.shtml.

42 Oregon Department of Energy, http://www.oregon.gov/ENERGY/RENEW/RPS_home.shtml

Smart Grid capacity. Installation of Smart Grid meters and the associated automated metering infrastructure would allow for utility companies to more intelligently deploy energy to consumers to incentivize and increase demand management capabilities, and help transmission operators to balance intermittent resources. Smart Grid technology can also provide consumers information that allows them to actively participate in the energy system, enabling smart appliances and automated building management systems that can optimize both their owner's preferences and grid operations. These technologies can also greatly increase the integration of building energy systems with the requirements of grid operations through automated communications of grid needs in the forms of dynamic pricing and distributed decisions reflecting the preferences of the building owners and occupiers.

Exemplifying the future of a smarter grid are participants in the Pacific Northwest Smart Grid Demonstration Project, the largest of its kind in the nation. This five year project involving 112 megawatts of capacity and more than 60,000 metered customers in five states will gather data to provide utilities with two-way communications between distributed generation, storage, demand assets, and existing infrastructure. The $178 million project is half funded by the U.S. DOE through the American Recovery and Reinvestment Act; the other half comes from project participants. Managed by Battelle and involving the Bonneville Power Administration and 11 utilities, the project will help to quantify the costs and benefits of a Smart Grid while bringing the electric transmission system into the information age. More than $100 million in physical assets, including smart meters and demand response control units, will remain in the region when the pilot is complete. Oregon has much to gain by participating in this groundbreaking project, both in the added electric infrastructure and the information that will transition our electric system to the modern era, giving consumers new choices and lowering costs.

Storage

Numerous storage options – including battery-based or pumped energy storage – can also increase the ability to balance out intermittent resources, such as wind or solar, and provide an alternative to building new infrastructure, such as transmission line expansion. As battery technology continues to become more efficient and the need to integrate more diverse generation resources increases, battery-based energy storage has the potential to offer a cost-competitive option.

Distributed Generation

Distributed generation and combined heat and power (CHP) has huge potential to help the state meet its energy goals. As distinct from large, central station power plants that send electric power over many miles of transmission, distributed generation is energy that is used near the location where it is generated. The benefits of distributed generation are many, including increased efficiency, typically reduced environmental impact, reduced grid cost, increased reliability and quality, and business certainty.

A 2005 report by the Public Utility Commission found that with favorable conditions, Oregon could increase our distributed generation systems from about 500 megawatts to over 1800 megawatts by 2025.[43] As a general matter, the state exhibited these favorable conditions for several years through the BETC, the Renewable Energy Tax Credit ("RETC"), the Solar Photovoltaic Volumetric Incentive Rate

43 Oregon Public Utility Commission, Distributed Generation in Oregon: Overview, Regulatory Barriers and Recommendations, Feb. 2005.

Pilot Program ("Solar Rate Pilot"), and net-metering, mostly or exclusively focused on distributed solar technologies. However, communities like Klamath Falls have successfully installed distributed generation geothermal systems to heat municipal buildings, and many school districts throughout Oregon are swapping out old oil boilers for highly efficient biomass boilers. The Oregon Public Utility Commission will issue a report on the solar feed-in tariff pilot program and this data, combined with data collected from other distributed generation programs, can be used to determine which policies will best support expansion of distributed generation while protecting Oregon consumers. With more efficient solar systems and an increased focus on geothermal, biomass, and waste-to-energy technologies, Oregon now has the opportunity to significantly increase distributed generation resources.

Thermal Energy

In early 2011, co-chairs of Governor Kitzhaber's Forest Health & Biomass Energy Transition Team produced recommendations to the Governor. Recommendations included working with the Environmental Protection Agency to avoid discrimination against biomass heat and power generation, including a preference for biomass boilers with strong particulate controls in retrofit programs; ensuring that energy incentives maintained support of community-scale biomass projects; excluding woody biomass from regulation of solid waste; and reauthorizing the biomass producer and collector tax credit. In addition, the state's Forest Biomass Working Group released a more detailed set of recommendations[44].

The first step to support this resource diversification is to complete a full assessment of thermal energy use in the state, including its current applications, the potential for its further development, and the economic and environmental benefits of its use, provided funding for the assessment can be identified. In addition to this thermal assessment, the analysis would analyze the potential for renewable natural gas from sources such as waste water treatment plants, food waste and other sources. With this assessment completed, the state can then tailor a program to incent investment in thermal energy where appropriate.

Wave Energy

Following the successful path of more mature renewable technologies, such as wind and solar, Oregon has become a national leader in the development of wave energy through a combination of public investment and groundbreaking public-private partnerships. Oregon's leadership is the result of focused implementation of a strategic vision to recruit and support a wave power industry. The Oregon Wave Energy Trust ("OWET") was created by the Oregon Innovation Council in 2007. OWET funds a variety of projects that are accelerating the development of wave power in Oregon. Working with partners, Oregon has developed significant potential for an ocean energy industry. Oregon State University, for example, was awarded a multi-million dollar federal grant to establish the first National Marine Renewable Energy Center in the United States and is building the premier testing facility in North America. Responsibly sited wave energy has significant potential not only to provide additional resources to power Oregon, but to create a business cluster and models that can be exported to other states and countries around the world. The state is committed to developing a regulatory structure

44 Oregon Department of Energy, http://www.oregon.gov/energy/RENEW/Biomass/Pages/forest_biomass_working_group.aspx

that is useful and provides clear guidelines for developing wave energy facilities off of the Oregon coast.

Action Item: *Align the state's incentive programs to support meeting the state's energy generation goals. Through targeted investment not only will the state meet its energy goals, it will transform markets for existing and new technologies to help Oregon establish and fully realize a new resource mix that provides stable, reliable, and clean energy for Oregonians. In addition, the state will create a regulatory structure that removes market barriers and allows for investment in diversifying the state's future resource mix.*

Establish Landscape-Level Plan

To meet the state's clean energy requirement, there is a need to align the state's energy and land use goals. Too often, individual siting decisions lack context for evaluating tradeoffs among conflicting public policy priorities, and decision-makers struggle to understand cumulative impacts on wildlife, working farm and forest landscapes, and other natural resources. On the other side, developers often embark on projects without a clear understanding of the nature and magnitude of potential conflicts and how decision-makers will weigh tradeoffs. In the absence of any overarching conservation framework, requirements for mitigation of wildlife impacts for development are cumbersome and ad hoc, with high transaction costs to developers and few assurances that mitigation actions will adequately offset impacts with quantifiable environmental benefits. Although many parties recognize the potential value of offering an alternative approach with ecosystem market-based options that could be applied to a landscape scale, the state does not, at present, have the clear priorities needed to target mitigation actions for the greatest conservation benefit or a policy framework to support this approach.

Landscape-level planning will provide a tool to balance the need to site new energy development and transmission facilities with environmental constraints and other conservation values, helping to create a shared vision for long-term interaction of development and conservation. The product of these planning efforts, conducted on a regional scale, should be a decision support tool that provides geographic priorities to guide and inform siting decisions at the state, federal and local levels. Landscape planning is not intended to be a regulatory tool or replace project-level impact studies that are required as part of the siting process, but it may allow a more streamlined approach by directing development to areas with fewer conflicts and focusing attention on the most significant issues. Adoption of a landscape approach to mitigation based on regional conservation priorities should provide more efficient and effective options to offset impacts of permitted development. The result should be net conservation benefits for wildlife and habitats, and a process that is more efficient, transparent, and cost-effective. Landscape planning efforts should focus initially on eastern Oregon and expand to other regions in the future. In addition, relevant agencies will set up a mitigation bank to provide agencies tasked with mitigation efforts the ability to make strategic investments to protect habitat regardless of the location in which the project they are mitigating is located. The goal is to achieve greater predictability and certainty for all parties involved in the siting process.

Action Item: *The state will create a landscape level plan decision-making tool and a mitigation bank.*

Create Strong Project Officer Model

Multiple governmental entities, including state and federal agencies, tribes, and local governments, are involved in the siting and permitting of energy facilities, particularly linear projects. Their approvals are governed by separate laws, with different objectives, standards, and processes. We will work to improve agency coordination and seek greater uniformity of standards and thresholds, where appropriate.

The Project Officer will be the point person to ensure appropriate state coordination and participation at all levels of government. This includes coordinating with tribal and federal agency efforts, and entering into programmatic and project-specific Memorandums of Understanding ("MOUs") as needed. Coordination mechanisms for projects under federal and state review must be formalized, as well as processes for state participation in Federal Energy Regulatory Commission ("FERC") proceedings.

Action Item: *The state will create and adopt the "Strong Project Officer" model by establishing an interdisciplinary team ("IDT") of agencies, led by the Project Officer, to review proposed Energy Facility Siting Council ("EFSC") projects. Agencies will make participation in the IDT a priority and raise issues in a timely manner in the IDT setting. Any conflicts within the IDT will be resolved by the Project Officer to the extent possible, with elevation to agency directors and then to the Governor's office to assure timely progress.*

Adjust Jurisdictional Thresholds for Renewable Facilities

Renewable energy facilities are often approved through local county land use review rather than through EFSC's siting process. This is due in part to EFSC's jurisdictional thresholds for such facilities and in part to the perception by applicants that county approval can be obtained more quickly and easily, and at less cost. However, county staff and resources often are too limited to provide meaningful review of proposed energy facilities, and state agency staff may not always respond in a timely manner to counties' requests for assistance in their review. In addition, county approval standards may not be consistent with EFSC standards and as such may not be effective in implementing state energy and natural resource conservation policies.

In order to achieve more consistent standards and reduce forum shopping, the State will create a tiered threshold structure to encourage local governments to adopt standards for renewable facilities consistent with state standards. Local jurisdictions with standards that differ significantly from state standards would be subject to a lower jurisdictional threshold. Conversely, local governments with standards that are consistent with state standards would be authorized to review larger projects. The purpose of this new regulatory structure would be to preserve local governments' ability to make siting decisions that affect their communities while ensuring they have the resources necessary to implement state energy and natural resource conservation policies.

Action Item: *The state will amend the Energy Facility Siting Council statute to adjust the jurisdictional threshold for renewable generation facilities.*

Clarify Definition of Single Energy Facility

To avoid more stringent state siting requirements, wind power developers in some areas have, on occasion, split large projects into separate projects of less than 105 megawatts, allowing permitting by local land use authorities rather than the state. The result has been piecemeal permitting of large-scale development without a full evaluation of impacts and no assurance for needed mitigation. To prevent segmentation of large energy development proposals into separate smaller projects to avoid state siting requirements, the Legislature should amend statute to give EFSC the authority to develop a rule on what constitutes a "single energy facility" for purposes of state permitting jurisdiction.

Action Item: *The Energy Facility Siting Council will by statute amend the definition of a single energy facility.*

Amend EFSC "Balancing Rule"

To address concerns regarding local control, speed of review, and state interests involved in facility siting, the state will amend the EFSC "balancing" rules to include triggers for invoking the balancing process, notice to affected agencies, and timelines for response. This includes eliminating the requirement that an applicant must concede that it cannot meet the applicable standard in order to invoke the balancing process.

Action Item: *The state will amend by rule to adjust the Energy Facility Siting Council "balancing" rule.*

Allow Right-Sizing of Transmission Facilities

When Oregon's regulated utilities are developing major linear facilities, such as electric transmission lines or natural gas pipelines, current Oregon Public Utility Commission ("OPUC") requirements discourage overbuilding that would minimize future impacts of multiple facilities. Currently, OPUC regulatory practice allows utility cost recovery only for those facilities that will be deemed "used and useful" to customers. Allowing utilities to right-size linear projects would have the effect of saving rate-payers from bearing the cost of making multiple transmission investments over a longer period of time. The state should consider allowing utilities to make investments in transmission infrastructure to meet projected future demand and to allow for additional capacity if the additional capacity would save rate-payers from bearing the cost of multiple capital construction investments over time.

Action Item: *Through a statutory or administrative rule change the state will create a regulatory structure to allow right-sizing of transmission facilities while protecting rate-payers from bearing unnecessary financial burden.*

Bonneville Power Administration

The Bonneville Power Administration ("BPA") is a critical link to the future of renewable resource development in the Northwest. The federal agency owns and operates over 70 percent of the transmission capacity in the region. As BPA implements its statutory responsibility to "encourage the development of new, renewable resources," it will be important to operate the transmission system to deliver low-cost energy to the region while continuing to integrate variable renewable resources.

Working with the region's stakeholders to identify a more cooperative and efficient method of managing within-hour variability and seasonal generation issues is a key challenge for BPA. Progressing toward more modern grid operation should be done in a way as to encourage new renewable resources to develop in the region. Market-oriented solutions, such as the creation of an energy imbalance market, have the potential to stimulate renewable energy development and green power sales throughout the West, bringing with them critical jobs and tax dollars for rural Oregon. Building out proposed transmission lines, such as Boardman to Hemingway and Cross-Cascades, would ease the burden on the Bonneville system, create more diverse access to Oregon's renewable energy potential, and help Oregon utilities meet the state's greenhouse emissions reductions goals.

Financing Clean Energy Infrastructure

Perhaps the single most important short-term issue affecting continued investment in clean energy production is the federal renewable production tax credit. The credit, which is set to expire at the end of 2012 for wind production and shortly thereafter for other renewable technologies, yields private investment of well over 10 times the investment that taxpayers make on the capital investment alone. While the credit has averaged a cost of a little over $1 billion per year, the American Wind Energy Association estimates that it drives more than $15 billion in private investment each year.[45] The effectiveness of the tax credit has, in the past, been hamstrung by short-term extensions and uncertainty around whether or not it would be renewed. In those instances when it has not been renewed, renewable production has been nearly completely wiped out. In a competitive world where these technologies need to be deployed at an even faster rate, the United States Congress should extend the tax credit for the long-term. Due to the importance of federal incentives for renewable energy generation, a critical component of Oregon's energy future, and the economic impact the wind industry has had on the state, Governor Kitzhaber serves as Vice-Chairman of the Governors Wind Energy Coalition and will continue to work in close collaboration with Oregon's federal delegation to drive clean energy policy on a national level.

At the state level, there are several tools available for investing in clean energy infrastructure. The state supports several tax incentives and has a unique tool in the SELP program.

Action Item: *The state will assess how each incentive program functions in the market and will, while protecting tax-payer investment, remove market barriers to ensure the money is accessible to clean energy generation projects.*

45 American Wind Energy Association, Federal Production Tax Credit for Wind Energy, http://www.awea.org/issues/federal_policy/upload/PTC-Fact-Sheet.pdf

Goal Three:
Accelerate the market transformation to a more efficient, cleaner transportation system

Oregon has made huge strides in increasing efficiencies in the transportation sector and reducing emissions and fuel use over the last four decades. The majority of the gains in reductions are the result of community based initiatives that integrate land use and multi-modal transportation planning. Due to the cumulative investments by cities, counties and businesses, among other factors, our state has seen a leveling off, and slight decline, statewide, in the amount of vehicle miles traveled on state highways.[46] While other states have also seen a leveling off,[47] the VMT in Oregon has dropped dramatically in comparison to other states,[48] whose urban areas allow development that puts people farther away from their jobs and services and who do not maximize the use of other modal capacity. Oregon's gains in transportation efficiency equate to real savings for citizens of Oregon; less fuel consumed, less time spent in the vehicle and easier access for businesses to reach consumers.

All of the strides and cumulative investments made in the state have put Oregon on a path to reduce greenhouse gas emissions from the movement of people on the ground by 34 percent below 1990 levels by the year 2050.[49] Additional community investments and integration of transportation with our land use decisions, enhanced operations, and technological gains are needed to reach Oregon's 2050 reduction goal (ORS468.205). The Statewide Transportation Strategy, developed by the Oregon Department of Transportation, shows that a mix of technology, transportation and land use actions are needed to achieve this goal. For emissions resulting from the movement of both people and goods on all modes of transportation, the STS shows a future with 60 percent fewer GHG emissions than 1990. To reach this level, aggressive programs and strategies must be employed that address transportation systems, vehicle and fuel technology, and urban land use. Demand management and technology are key components.

There are four major strategies identified in this ten year timeframe that balance demand management with technological advances to bend the emissions curve and put us on a trajectory toward our 2050 goals:

- Continued Investment in Compact, Multimodal, and Mixed-use communities,
- Accelerated Fleet Turnover (residential and commercial) to Alternative Fuels,
- Implementation of Intelligent Transportation Systems, and

46 Oregon Department of Transportation. State of the System: 2012 Report on Oregon Transportation System. To be published December 2012.

47 Victoria Transport Policy Institute. The Future Isn't What It Used To Be: Changing Trends And Their Implications For Transport Planning. 7 October 2012.

48 Bureau of Transportation Statistics. State Transportation Statistics. Accessed electronically at: http://www.bts.gov/publications/state_transportation_statistics/ November 2012.

49 Oregon Department of Transportation. Ground Passenger Summary Sheet. Meeting Materials for the Statewide Transportation Strategy Policy Committee, October 24, 2011.

- Innovation in Financing a Clean Transportation System.

Compact, Multi-modal and Mixed-use Communities

As stated in the Oregon *Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Reduction*, "Oregon has been a leader in planning communities and transportation infrastructure to support expanded transportation options that not only create livable communities, but have also gone a long way in reducing greenhouse gas emissions." Additionally, technological innovations and operational efficiencies have further reduced emissions in the state. In total, Oregon is well situated to reduce emissions as implemented and planned work has created a strong foundation on which to build.

The importance of the linkage between transportation and land use planning has been acknowledged for many years and has helped to manage transportation travel demand. Oregon was a leader 40 years ago, when the Legislature put in place management techniques to help reduce transportation-related emission by controlling sprawl. To date, all Oregon cities have adopted Urban Growth Boundaries ("UGBs"). Oregon is one of the few states with such management measures.

Planning efforts such as the development of Regional Transportation Plans have included multi-modal elements, providing transportation options to the single- occupancy driver, and managing the system for optimized travel.

As a result of past efforts to plan for compact growth and build in transportation options, metropolitan Oregonians already drive less, and emit fewer GHG emissions, than residents of comparably sized metropolitan areas around the country. Beyond the metropolitan areas, other local governments around the state have accomplished much through their planning efforts.

Community leaders across Oregon are concerned about the increasing price of fuel and impacts to household budgets and costs of doing business. Communities across Oregon are attempting to invest limited resources in programs and projects that will give citizens the greatest rate of return on investments and create livable places to live and work.

There are two important programs that will further the discussion of how to get the biggest bang for the limited transportation buck for the public and private sectors: Metropolitan Scenario Planning and Least Cost Planning.

Metropolitan Area Scenario Planning

In order to weigh the options and their relative impacts, many regions across the country have begun to use scenario planning. Scenario planning is an opportunity for policy makers, stakeholders and the public to think outside the box and consider a wider range of opportunities, challenges, and possible futures than may be considered in other planning efforts.

The Oregon Sustainable Transportation Initiative ("OSTI") is an integrated statewide effort to reduce GHG emissions from the transportation sector while creating healthier, more livable communities and greater economic opportunity. Land use and transportation system optimization strategies have been

shown to be among the most cost-effective strategies to reduce greenhouse gas emissions in Oregon.[50] Land use planning can proactively decrease emissions while making communities more accessible and user friendly. The efforts of OSTI and Statewide Transportation Strategy are the result of several policies designed to help the state meet our 2050 goal of reducing GHG emissions by 75 percent below 1990 levels (ORS468.205).

***Action Item**: The state, including DEQ, ODOT, DLCD, Housing, ODOE and Business Oregon, will continue to work with communities to move from research to policy development and actionable items that combine land uses and increase modal choice for freight and passenger travel.*

State agencies will adopt appropriate policies and program implementation, including project prioritization criteria, that reflect energy efficiency and demand management to meet the 2050 goal.

The state, including DLCD, DEQ, and ODOT will continue to partner with MPOs to use scenario planning to quantify and forecast potential economic, environmental and equity impacts from different approaches as we look to reduce greenhouse gas emissions from the transportation sector.

Least Cost Planning Tool

ODOT's least cost planning tool ("LCP") is an attempt to improve the ability to measure the true costs and benefits of transportation plans, strategies, and action for development and project identification. This tool has been used extensively in the energy utility world to manage demand through planning for capacity additions and demand management. This methodology has reduced the cost to consumers, both business and residential, over the past five decades.

LCP seeks to incorporate utility-based efficiency and conservation tools to better address issues such as public health, economic, and environmental impacts. In doing so, it will increase diversity of information considered in transportation decision-making in Oregon. It also can provide a more accurate assessment of potential benefits relative to costs and impacts.

ODOT is in the process of working with stakeholders to develop a Least Cost Planning tool that can be applied at different stages of project definition and development.

***Action Item**: The Department of Transportation will use the least cost planning tool in scenarios for corridor planning as well as prioritization in investments including demand management. DLCD may also use this tool to inform the development of regional and local plans. Agencies with investment portfolios will consider the use of LCP in their decision-making processes as applicable to energy use and energy conservation.*

The Oregon Transportation Commission ("OTC"), in coordination with the LCDC, state agencies, stakeholders, and the public, will update the State's long-term Modal Plans for Rail, Public Transportation and Bike and Pedestrian to reflect the need for multi-modal, mixed use development at both the state and local level. In addition, OTC will focus on the following important additional

50 10-Year Energy Action Plan Modeling: Greenhouse Gas Marginal Abatement Cost Curve Development and Macroeconomic Foundational Modeling for Oregon, Center for Climate Strategies, July 30, 2012.

elements in an updated OTP: energy efficiency and demand management, public health, complete streets design, practical design, least cost planning and inter-modal connectivity.

ODOT staff will propose a process for Project Design that would require Traffic Engineers to evaluate the mobility of walking, biking, and transit users in communities when assessing the capacity and mobility of the needs of vehicles. They will then test the evaluation process in demonstration projects. In addition, ODOT, DLCD, DEQ, Public Health, Housing and ODOE staff will work together to develop a multi-modal Level of Service for projects in communities where the existing modal split is 10 percent or higher for combined bike, pedestrian and transit.

Fleet Conversion

Oregon citizens are already ahead of the pack when it comes to early adoption of highly efficient and alternative fuel vehicles. Oregon consistently ranks in the top states for purchases per 1,000 households of hybrid Toyota Prius cars.[51] The state's market readiness and customer interest earned it a spot among the initial five states for the deployment of the first affordable, mass-produced, all-electric car, the Nissan Leaf.

The anticipated increased use of alternative fuel vehicles is creating a new role for Oregon's utilities as they become fuel providers for the transportation sector. Further down the road, emerging smart grid technologies promise to leverage electric cars into mobile energy resources for the grid. Such trends pave the way for innovation, technology, and a rise in public-private partnerships. Both investor-owned and consumer-owned utilities, along with their oversight boards, councils, commissions, and the state, can help accelerate the early deployment of alternative fuel vehicle infrastructure, as can third-party efforts.

***Action Item**: Based on successful programs elsewhere, Oregon should develop a comprehensive alternative fuel program that allows utility-ownership of refueling infrastructure and provides incentives, where appropriate, for vehicle conversions. Replacement vehicles include, but are not limited to, biodiesel, electric, CNG, propane and LNG vehicles for all vehicle types including heavy trucks and school buses. In promoting such conversions, the state will consider how smart grid technologies and practices could increase the value of the converted fleets to the overall energy infrastructure and grid operations. This process will inform the kind of regulatory framework and incentive structure that would be required to further accelerate the market for alternative fuel vehicles.*

The state will continue to work with the transportation manufacturing cluster on advancing innovation in alternative fuels through research and development of technology and deployment to grow these innovations.

The state will implement the recommendations of the Energizing Oregon Plan that identifies regulatory streamlining and infrastructure needs.

51 Hybrid Market Dashboard, www.hybridcars.com

The State will support fleet financing projects like Clean Fleets Work that are currently supported through USDOE grants.

Supporting the Alternative Fuels Economy

The state will continue to build out an alternative fuel infrastructure in Oregon, including, but not limited to, biofuels, propane, electric and natural gas. In 2007, Oregon passed the Renewable Fuel Standard ("RFS") legislation that requires 10 percent ethanol to be mixed into gasoline and 5 percent biodiesel in diesel. The Clean Fuels Program ("CFS") was passed in 2009 and is scheduled to sunset in 2015. The CFS does not mandate the use of specific fuels, but instead allows fuel importers and distributors to use a mix of traditional fuels and lower carbon alternatives. Extending the CFS beyond the current 2015 sunset will reduce demand for carbon intensive fuel sources, create demand for alternative fuels, such as electricity, natural gas and second-generation biofuels, and provide the market predictability essential to supporting investment in and development of refueling infrastructure. Doing so has been shown to provide important economic benefits to Oregon's economy under a number of different potential compliance pathways.[52]

***Action Item**: Amend statute to remove the sunset for the clean fuels program and continue efforts to grow the alternative fuel industry in Oregon through market analysis and regulatory streamlining.*

Clean Cities Plan and Implementation

The Energizing Oregon project, funded by the U.S. Department of Energy ("USDOE") planning grant, has three main objectives: to integrate and optimize existing Oregon Plug-in Electric Vehicle ("PEV") readiness and efforts, develop a statewide PEV market and community plan, and create momentum for reaching the national PEV deployment goal. The Clean Cities Plan is slated to be approved by the USDOE within the next year. The State must adopt policies and programs to make our state more competitive, and use existing state infrastructure to leverage federal investment in our transportation system.

***Action Item**: The State will implement the recommendations in the Energizing Oregon Plan that identifies regulatory streamlining and infrastructure needs.*

The State will work with Business Oregon, the Department of Consumer and Business Services ("DCBS"), Building Codes Division, DEQ, ODOT and ODOE to apply for infrastructure grants from USDOE and the US Department of Transportation ("USDOT"), as they become available, to help strengthen our communities.

Intelligent Transportation Systems

A significant part of the demand management equation for conservation of fuel will depend on our ability to manage the assets we have today for both freight and passenger travel. The effectiveness of

52 Economic Impact Analysis of the Low-Carbon Fuel Standard Rule for the State of Oregon, Jack Faucett Associates, Inc., January 2011.

that system can be increased by how we provide information to the traveling public about travel time and costs by mode as well as increasing safety which decreases delay in the system.

Intelligent Transportation Systems over time have grown in application from highway capacity management through on-ramp metering to arterial signal progression to transit arrival time information access through phone apps.

There is projected growth in vehicle-to-vehicle communication, vehicle automation, and communication between transportation hard infrastructure such as signals and vehicles. Oregon's high tech and gaming industries have the potential for growth in this field.

The ability to provide real-time information to users of the system to make decision on travel time and cost will depend on the ability of public agencies to coordinate together as well as with private industry. Data sharing will be at the core of this new integrated system.

Action Item: *The Governor's office will act as convener for a statewide conversation with industry and public sector agencies that will acknowledge the state of the system, where we want to be in ten years and what needs to be accomplished to fill the gap. A prioritized list of programs and or projects will be recommended to the Governor for action.*

The Department of Transportation and our University System will partner with the Metropolitan Planning Organizations and other jurisdictions on unique opportunities to maximize the capacity of the entire transportation system using LCP principles and include transit and freight.

Financing the Transition to a Cleaner Transportation System

The state will advance an investment package that includes increased funding for local roads and bridges that incorporate multi-model design elements, bicycle and pedestrian infrastructure, transit operations and capital, freight and passenger rail improvements, as well as marine and air. This package should support development of all our modes to manage demand for travel. The estimated annual need for capital investment in these elements of our transport system exceeds $500 million.

In addition, as federal fuel efficiency standards increase, low- and zero-emission vehicles hit the road and fuel use decreases. This trend challenges a transportation system funded by gas taxes that are restricted to road and automobile-based investments. To address this revenue challenge, the state will develop alternative transportation funding strategies that will provide stable and flexible funding to help the state achieve our energy and emission reduction goals.

Action Item: *The legislature should consider the use of a Road User Fee for highly efficient vehicles (55 mpg or greater) in lieu of a gas tax.*

ODOT's Innovate Partnership Section should work with stakeholders to consider a demonstration of an alternative revenue model based on road user fee in an area of Oregon. The Road User Fee should include a vehicle impact fee based on vehicle class, including weight and emissions.

The state will support continued conversations about sustainable funding multi-modal transportation infrastructure in order to meet its greenhouse gas reduction goals for the transportation sector including freight and passenger travel by air, marine, rail, transit, bicycle and pedestrian.

Workforce Development

According to the Oregon Employment Department's second statewide green jobs survey, Oregon had an estimated 43,148 green jobs spread across 4,339 employers during 2010[53]. While the survey is titled a "green jobs" survey, the vast majority of the job titles included in the survey correlate directly or indirectly to the areas discussed in this plan.

The construction industry reported the largest number and highest share of green jobs. About one-fourth of all green jobs statewide were found in construction. Natural resources and mining, state and local government, manufacturing, and professional and technical services accounted for more than three-fourths of all green jobs.

According to employer responses to the survey, 44 percent of all green jobs either had no educational requirements or required no degree, while 39 percent of green jobs require some form of postsecondary education. The Employment Department estimates indicate that the average hourly wage for all green jobs in Oregon ($23.07) was somewhat higher than that of all non-federal jobs in Oregon ($19.83). Generally, those green jobs with higher educational requirements also provided higher wages.

Labor market analysis of these jobs can be challenging. Most green jobs do not have their own occupational codes. Companies in many emerging green industries cross over into other sectors. In many cases, training for green jobs is based on traditional training programs, with additional "green" coursework or certifications. In some cases, new green jobs will evolve from the need for new and different mechanisms for planning and coordinating to increase efficiency or mitigate damage, like in the case of landscape level planning. In other situations, additional jobs will emerge from newly commercialized and implemented technologies, as in the case of Intelligent Transportation Design.

Clean Energy Works Oregon: Making the Program Work for Contractors

From day one, the leadership at Clean Energy Works Oregon (CEWO) knew that their program wouldn't work if it didn't work for contractors – but figuring out how to make that a reality has been an active learning process. As a program charged with saving energy, CEWO had to balance the priorities of multiple stakeholders – in particular, contractors' interests in upgrading as many homes as possible, with the program's need to enforce quality installation standards, track impacts, and ensure a good customer experience.

It was only with ongoing feedback from contractors, participants, and program data analysis that they were able to identify problems quickly, and find solutions acceptable to both the contractors and the program. CEWO leadership came to understand the importance of a coordinated "voice of the contractors." They observed that, despite having training standards in place, their contractors had varying levels of technical experience and business savvy – which inspired the creation of a set of business development classes and mentoring opportunities for new contractors.

Program Stats:
Home energy upgrades from summer 2010 through March 2012: 1,300

Average cost of residential upgrade: $14,300

Contractors in CEWO's network: 50

[53] "The Greening of Oregon's Workforce: Jobs, Wages, and Training", Oregon Employment Department,
January 2012: QualityInfo.org/Green

In June 2012, Oregon released a new ten year Strategic Workforce Development Plan. The plan identifies three strategies for developing a workforce that can support the growth and innovation of Oregon companies. Certified Work Ready Communities will assure that workers have the foundational and problem solving skills necessary for new and emerging industries including "green" jobs. Sector strategies are industry-led efforts to better meet the specific workforce needs of industry sectors. Oregon's State Workforce Investment Board has developed a Green Jobs Council to focus specifically on the needs of the industries defined in this plan. In order for Oregon to increase family wage jobs via this plan, we must work with the OWIB Green Jobs Council as it works to align workforce development and education systems to pay close attention to the needs of these emerging and evolving industries, identify career pathways that lead to higher wage jobs, invest in the type of skill development that leads to good jobs, and coordinate responses to industry needs. To assist with this effort, the state will conduct a gap analysis in each of the sectors listed in this plan to understand whether or not we have the workforce we will need to meet our state's ten year energy goals. By working with this committee, the state will bolster existing labor, community college and university system workforce develop and education programs to build the local labor force needed to meet our 10-Year Energy Plan goals.

Oregon's workforce system is evolving to provide more opportunities for on-line training and certification for industry recognized credentials. Many of the occupations related to the strategies in this plan will benefit from the state's ability to provide the skills training and certification in a more cost effective and efficient manner. The system is partnering with industries to support more cost effective ways for companies to train their own through on-the-job training programs. This is another opportunity for the industries related to energy to find skilled workers who can quickly transfer existing skills to new jobs. By helping the workforce system better understand the opportunities and trends that emerge within the energy sector as a result of this plan, industry and policy leaders will be able to influence the development of a skilled and innovative workforce to meet industry needs.

Oregon National Guard Fort Oregon Project

Oregon is a geographically and climatically diverse state which offers numerous possibilities for renewable energy that other installations do not possess. Due to these unique features, the Oregon Military Department ("OMD") is exploring industrial scale solar, wind turbines, geothermal, and wave energy opportunities to offset the annual energy consumption of the OMD.

Energy Security projects have now become a central part of the mission statement of all Department of Defense agencies, which coincides with the Oregon Legislature's mandate to invest 1.5 percent of all construction projects into Solar Energy development. OMD, with Legislative approval, has sought to maximize these investments by moving solar requirements from construction projects in northwest Oregon to Ontario, which increased our energy output and will reduce current and future state operational costs.

The high desert of Oregon is ideal for solar energy development and more efficient than other desert climates because of the large number of sunny days along with cooler ambient temperatures. It is abundantly clear that by developing an Energy Security project at Christmas Valley through use of the abandoned infrastructure, the OMD would save significant taxpayer dollars in the future. While Christmas Valley offers some of the best conditions for a solar project in the country, other renewable opportunities such as wind and geothermal should also be studied. The land, climate, and existing electrical infrastructure provides an opportunity to develop an industrial scale renewable energy project that can produce more than enough energy to offset the energy consumption of the OMD.

Next Steps

Item	Legislation	Exec/Admin Action	Recommendation Team
Unlocking Energy Efficiency	Yes	Yes	
State Building Innovation Lab		Yes	
Conservation Tax Incentive ("RETC" and "Connie")	Yes	Yes	EEDM Design Team
Oregon Innovation Council Funding	Yes (Budget)		
Clean Energy Works Oregon	Yes (Budget)		
Energy Efficiency Research & Development/Commercialization		Yes	EEDM Design Team
Small Scale Energy Loan Program (SELP) Capitalization	Yes (Budget)		
Energy Performance Score	Yes		EEDM Design Team
Landscape Level Planning	Yes	Yes	Siting Design Team OEPC Report
Strong Project Officer Model		Yes	Siting Design Team OEPC Report
Jurisdictional Threshold Adjustment	Yes		Siting Design Team OEPC Report
Balancing Rule	Yes		Siting Design Team OEPC Report
Ocean Energy Siting Statute	Yes		
Generation Tax Incentive	Yes		
Biomass Collector Incentive Redesign	Yes		Oregon Biomass Working Group

Infrastructure Financing Mechanism (Transportation, Grid Improvements; Transmission; Energy Efficiency)		Yes	
Fleet Conversion	Yes	Yes	Transportation/Demand Mgmt. Design Team
Clean Fuels Program	Yes		Transportation Design Team
Least Cost Planning Tool Use By ODOT		Yes	Transportation Design Team
Clean Cities Plan Management		Yes	Transportation Design Team
Non-Gas Tax Transportation Financing	Yes	Yes	Transportation Design Team
New Governance Model	Anticipated	Anticipated	Governance Task Force
Workforce Development Programs		Anticipated (Budget)	Task Force

Appendices

- Oregon Energy Task Force Report and Recommendations to the Governor (PDF)
- Task Force Addendum Including Design Team Reports (PDF)
- Building a Clean Energy Future and Safeguarding Oregon's Natural Environment
- Sixth Northwest Conservation and Electric Power Plan (PDF)
- 2011-2013 State of Oregon Energy Plan (PDF)
- Oregon Public Utility Commission Report on Distributed Generation (PDF)
- Oregon Energy Planning Commission, 2010 Report (PDF)
- Oregon Global Warming Report to Legislature, 2010 (PDF)
- Financial and Economic Impact of the Business Energy Tax Credit, Final Report, May 2011 (PDF)
- 10-Year Energy Action Plan Modeling: Greenhouse Gas Marginal Abatement Cost Curve Development and Macroeconomic Foundational Modeling for Oregon, July 2012.