



July 31, 2012

Governor John Kitzhaber
Capitol Building, 900 Court Street NE
Salem, Oregon 97301

From: Oregonians for Renewable Energy Policy (OREP) Judy@OregonRenewables.com
Subject: Comments on Draft Ten-Year Energy Action Plan
Submitted to: tenyearenergyplan.comments@odoe.state.or.us

Dear Governor Kitzhaber:

Oregonians for Renewable Energy Policy (OREP) appreciates the opportunity to comment on the Draft Ten-Year Energy Action Plan. OREP wholeheartedly agrees that energy is the issue of our time – both globally and locally here in Oregon. The decisions we make at this pivotal time will profoundly impact future generations. Capital investments made now can bind us to decades of sending our energy dollars out-of-state to import fossil-based energy at volatile prices. Or conversely, through intentional investment and development, we can achieve stable energy costs through widespread production of “Made-in-Oregon” clean energy that has no ongoing fuel cost, is locally owned and financed, and creates local family wage jobs.

As an organization, OREP’s Mission is to rapidly transition Oregon’s reliance on fossil fuels to decentralized renewable resources by advocating for policies like CLEAN Contracts that enable electricity customers to generate and sell clean energy to their utilities, thereby opening the energy market to many new participants, attracting capital, bringing down the cost of renewables, and creating good, local jobs.

OREP applauds your leadership in initiating the public process of developing a roadmap for Oregon’s energy future. We welcome the public debate as more Oregonians begin to focus on the issue around the state. A challenge as monumental as the shift from fossil fuels to a clean energy economy demands full public discussion that engages all Oregonians. This Plan begins that process.

We support the Plan’s emphasis on reducing energy demand through major energy efficiency efforts, the electrification of transportation, and landscape-level land use planning. However, OREP is concerned that the Plan does not contain proposals that go far enough to generate additional clean energy (especially with the increased demand from electrified vehicles), or move fast enough in addressing the twin crises of climate change and Oregon’s economic lethargy.

OREP therefore recommends that the Draft Plan be amended to:

- 1. Reflect a greater sense of urgency in addressing climate change.*
- 2. Position the Ten Year Energy Action Plan within a larger, longer-term goal to address climate change and simultaneously rebuild Oregon’s economy through rapid development of our renewable energy potential.*
- 3. Adopt renewable energy Feed-in Tariffs (or CLEAN Contracts) as the method to rapidly deploy renewable energy throughout the state. Improve and expand the Solar Pilot Program and extend it to other market-ready renewable technologies (wind, micro-hydro, and biogas).*
- 4. Call for energy pricing that reflects the indirect costs associated with continued use of fossil fuels.*
- 5. Commission an appropriate government agency to explore the need for a central purchasing authority to facilitate the statewide sale of renewable energy by a new cohort of small and medium scale producers.*

With a good Energy Action Plan, Oregon can:

- a) *Pay for clean energy development without the use of General Fund revenues.*
- b) *Re-circulate energy dollars in Oregon by producing energy at home.*
- c) *Achieve low, stable energy rates through strategic renewable energy investment.*
- d) *Forgo the use of natural gas as a bridge fuel and transition directly to renewable energy.*
- e) *Increase emphasis on distributed electricity generation to create local and community ownership opportunities in rural and urban Oregon.*
- f) *Create good, family wage jobs in communities throughout Oregon*
- g) *Transform transportation fleets to electrified vehicles.*
- h) *Increase public outreach and consumer education.*

Recommendations

The following paragraphs provide more detail and some background references on the specifics of these recommendations.

1. *Reflect a Greater Sense of Urgency:* Oregon must immediately move to address both costly climate change disruption and stimulate Oregon's economy by both massive energy efficiency measures and by replacing the imported fossil fuels and nuclear energy currently in our energy mix with "Made in Oregon" clean energy. Protecting our children's future cannot wait.
2. *Position the Ten Year Energy Plan within a Larger, Longer-Term Goal:* The urgent twin needs to address costly climate disruption by eliminating the burning of fossil fuels and to stimulate Oregon's depressed economy, require that we adopt clean energy goals beyond the current RPS requirement of 25% of load from renewables by 2025. Oregon should be planning now for the day when at least 80%, or as much as 100%, of our energy needs are met from clean "Made in Oregon", "no-fuel cost" energy sources.

A 2008 report by the US Dept of Energy's National Renewable Energy Laboratories (NREL) indicates that the US could meet 80% of its energy needs with clean energy by 2050.¹ Recent research by Stanford Professor Mark Jacobsen concludes that global energy needs could be met completely from solar, wind and water resources by 2030.² Oregon should at minimum, adopt NREL's "80% by 2050" goal, with "Made in Oregon" clean energy resources, and develop the necessary renewable energy in a manner that maximizes the in-state multiplier effect of each dollar invested. The 10 Year Energy Action Plan should meet milestones on that path to 2050.

3. *Adopt Renewable Energy Feed-in Tariffs (or CLEAN Contracts) to rapidly deploy "Made in Oregon" Energy:* Policies that make it easy for all Oregonians who can produce clean energy to contract with their local electric utility and sell 100% of their clean energy at a fair price will rapidly increase deployment of clean energy in Oregon.

The popular Solar Pilot Program that pays solar PV owners a fixed price for their energy is a good start. Oregon should build on this success and enable customer-generators to get paid for 100% of the energy they produce, unlimited by their onsite usage. The Program should also be extended to other renewable technologies and to all Oregonians, not just those in the IOU territories. The Pilot has been very popular and has proved the concept that producers are willing to wait longer for repayment than the typical four-year state energy tax credit.

¹ Renewable Electricity Futures Study / NREL 2008 / http://www.nrel.gov/analysis/re_futures/ Renewable electricity generation from technologies that are commercially available today, in combination with a more flexible electric system, is more than adequate to supply 80% of total U.S. electricity generation in 2050 while meeting electricity demand on an hourly basis"

² "Power the World With Wind, Water and Sunlight"; Google talk by Stanford Professor Mark Jacobson; June 2012; http://www.youtube.com/watch?v=N_sLt5gNAQs

OREP is pleased to see on Page 39 in the Next Steps Table that the Plan recommends legislation to extend Oregon's Solar Rate Pilot. Oregon will benefit most when Oregonians produce, own, sell, invest in and build out our clean energy infrastructure. CLEAN Energy Contracts will fully engage Oregonians in building our energy future.

Please refer to the OREP and Oregon Chapter of the Sierra Club joint letter on FIT Design Principles for details on how to develop an effective FIT legislation. Refer to the email sent on September 23, 2011; or find it at: http://www.oregonrenewables.com/Publications/FITPrinciplesLetter_0923Final.pdf

4. *Energy Prices Must Reflect Indirect Costs:* Give the Oregon Public Utilities Commission the flexibility to define "least cost" energy so that all of the costs and benefits associated with an energy source are included. These costs and benefits should include environmental and health costs associated with dirty fuels, as well as taking into account the benefits of clean energy to the energy system, the environment, and the state's economy. Recent changes in federal energy law make this possible. Oregon should be an early adopter of these new opportunities.
5. *Commission an appropriate government agency to explore the need for a central purchasing authority to facilitate the statewide sale of renewable energy by a new cohort of small and medium scale producers.* History has given Oregon many and diverse utilities that have met consumers' needs for reliable electricity. Modern renewable energy technologies give us a new paradigm – where a new group of customer/generators can take advantage of their natural resource to sell electricity to the grid. The Solar Pilot Program has facilitated this process for producers of solar electricity within the IOU territories. A similar opportunity for customers in COU territories presents a challenge that may need to be met with new statewide governance, perhaps, as in the state of Vermont, with a central purchasing agency. Investigation into the hurdles to statewide, small- and medium-scale, distributed generation and then creative solutions that allow all Oregonians to produce and sell electricity are needed to move Oregon to a robust and sustainable energy future that serves and benefits all Oregonians. In particular it is likely that a mechanism is needed whereby the high-demand IOU territories can easily tap into production by customer/producers in the high-resource COU territories.

We also recommend related research be done to determine the:

- a. Sustainable production potential of various renewable resources in the state, including rooftop solar PV and solar thermal; rural, small wind; and low-impact, small- and micro-hydro, and farm, landfill, and waste water treatment plant biogas.
- b. Economic development, environmental, and cost-saving value of locally produced renewable energy
- c. Long term cost comparison (rate modeling) of two scenarios: developing renewable energy and continuing to produce electricity from fossil fuels (coal and natural gas)

Outcomes: Benefits of an Advanced Feed-in Tariff

Establishing a well-designed feed-in tariff (FIT) program will support the transition away from fossil fuels to a clean energy economy with the increased energy security that benefits all Oregonians, rural and urban. Below is a listing of the expected direct benefits of an advanced feed-in tariff program:

- a) *Pay For Clean Energy Without General Fund Revenues:* Energy tax credits are unstable and inequitable as a funding source to increase deployment of renewable energy: they put renewable energy in competition for scarce tax dollars with state-funded education, public safety and human services; they preclude production of clean energy by many would-be participants (such as non-profits like schools and houses of worship and by retired and low-income Oregonians); they waste money on unproductive systems; and because the appetite for tax credits varies from year to year with the strength of the economy, their availability is unpredictable, creating uncertainty for investors and instability for the RE

industry.³ In order to scale up clean energy, we must pay for clean energy the way we pay for existing fossil-based energy – in our electric rates, with infrastructure costs spread out over time and with rate impact protections for low-income ratepayers. Rate impact will soon be cushioned as we reap the benefit of more and more fuel-free energy flowing into the grid.⁴

The Draft 10 Year Energy Action Plan calls for creating a new regional infrastructure bank to make financing clean energy projects easier. OREP supports this effort, yet the Plan fails to address how these loans will be paid back. On its own the bank will not have the impact in renewable energy investment that it can have if Feed-In Tariffs (CLEAN Contracts) are implemented to provide the mechanism for repaying the loans. A cost-effective production-based system, such as a feed-in tariff, pays for clean energy generation over time, providing clean energy developers and investors certainty and predictability, while Oregon gradually phases out the use of tax credits for energy development.

- b) *Re-circulate Energy Dollars Longer In Oregon*: Oregon will reap the economic benefit of keeping in-state an ever increasing portion of the \$8B dollars Oregonians now send out of state to import fossil fuel energy. By paying Oregonians to produce clean “Made in Oregon” energy from local renewables, our energy dollars will be kept circulating in our state’s economy. Oregon has no fossil fuels to develop but has abundant clean energy resources.⁵ Thus, efforts to develop “Made in Oregon” energy will by definition increase the share of clean energy in Oregon’s energy mix.⁶
- c) *Achieve Low, Stable Energy Rates*: To ensure low, stable rates in the long run, Oregon’s goal should be to replace the price-volatile portion of our energy mix – the 55% currently generated from imported fossil fuels and nuclear energy – with clean energy resources that have no ongoing fuel cost and are produced in-state. Historically Oregon’s energy rates have been kept low by the large amount of homegrown “no-fuel cost” hydroelectric generation (42%) in our energy mix. We should plan now for the day when 80-100% of our energy comes from clean and sustainable, homegrown, “no-fuel cost” energy in order to retain Oregon’s competitive energy prices.

Increasing the percentage of our energy coming from sources with no ongoing fuel cost will benefit ratepayers and Oregon’s economy alike by creating downward pressure on fossil fuel prices. This can happen surprisingly quickly. After only a few short years and with only a 4% market penetration of solar, Germany has seen the mid-day cost of electricity drop by 40% (2008-2012) and an average price drop of 10%.⁷

- d) *Forgo the Use of Natural Gas and Go Directly to Renewable Energy*: Oregon should not spend general fund or ratepayer dollars to build natural gas infrastructure as a bridge to clean energy merely because it is temporarily cheaper. Instead, we should invest directly in clean energy infrastructure to bring the

³ Paying for Oregon's Transition to Renewable Energy, OREP Commentary, July 2011, http://www.oregonrenewables.com/Resources/OregonsFIT/PayingOR_RE_Transition0711.html
See Appendix A for comparison table.

⁴ “German solar juggernaut rolls on despite tariff cuts”; Solar power boom may have eliminated peak-use price volatility <http://arstechnica.com/science/2012/04/german-solar-juggernaut-continues-despite-tariff-cuts/>; Study shows that in 2011, overall savings on the European Power Exchange (EPEX) due to photovoltaics were as high as 840 million euros / at midday, solar power reduced prices by as much as 40 percent / Industrial power prices sink by around 0.15 cent per kilowatt-hour due to price reduction effect http://www.solarwirtschaft.de/en/media/single-view/?tx_ttnews%5Btt_news%5D=14492

⁵ Summary of Generating Resources and Energy Storage Technologies, Sixth Northwest Conservation and Electric Power Plan, Table 6-1; p 6-5. http://www.nwcouncil.org/energy/powerplan/6/final/SixthPowerPlan_Ch6.pdf

⁶ Where does Oregon’s energy come from? Oregon Department of Energy, http://cms.oregon.gov/energy/pages/oregons_electric_power_mix.aspx

⁷ “German solar juggernaut rolls on despite tariff cuts”; Solar power boom may have eliminated peak-use price volatility <http://arstechnica.com/science/2012/04/german-solar-juggernaut-continues-despite-tariff-cuts/>; Study shows that in 2011, overall savings on the European Power Exchange (EPEX) due to photovoltaics were as high as 840 million euros / at midday, solar power reduced prices by as much as 40 percent / Industrial power prices sink by around 0.15 cent per kilowatt-hour due to price reduction effect http://www.solarwirtschaft.de/en/media/single-view/?tx_ttnews%5Btt_news%5D=14492

benefit of free fuel to ratepayers ASAP, to reduce our use of fossil fuels, and to avoid the likelihood of burdening the public with stranded assets as natural gas infrastructure becomes obsolete. Increasingly, investors are looking towards renewable energy as a more stable investment. Investors worry about the unstable prices of fossil fuels and find much benefit in the development of renewable energy for keeping prices stable and low.⁸

Of deep concern is the recent evidence that obtaining natural gas, especially from hydraulic fracturing (fracking), can cause greenhouse gas pollution that is as bad as that from coal. Previous studies by Pamela L. Spath and co-authors found that mining, transport and use of natural gas causes 12% of the warming over a 100-year time frame and found that 1.4% of natural gas leaks due to normal mining⁹. Short lived impact of the methane over the 20-year timeframe is 80 to 100 times more significant in terms of unit mass than CO₂. Most recently, studies from Columbia University in Ithaca by Robert W. Howarth estimate that 3.6 to 7.9 percent of all natural gas mined from shale formations leaks to the atmosphere and is as damaging as burning coal.¹⁰ In the Howarth study it states that “Compared to coal, the footprint of shale gas is at least 20% greater and perhaps more than twice as great on the 20-year horizon and is comparable when compared over 100 years.”

Likewise of great concern is the well-documented direct pollution to ground and water from hydrofracking.¹¹

- e) *Increase Emphasis on Distributed Generation:* We commend the Plan’s emphasis on DG. Distributed generation of intermittent renewables can hugely diminish variability of electricity production, easing grid integration of the energy produced. This is particularly true for solar energy, where production from multiple small systems spread out over a large area experience very little variability from passing clouds relative to the variation experienced by a large, utility scale installation.¹²

Distributed generation on many scales facilitates local and community ownership of projects with local financing. In this manner, the financial benefits from renewable resources are kept in the local area rather than being sent away to large, out-of-state investors. Policies that increase opportunities for community ownership of renewable energy generation systems have also proven to be effective in reducing community opposition to siting. We recommend the adoption of such policies.

Looking toward the future, onsite generation of clean energy to meet onsite needs moves us in the right direction and lays the groundwork for the day when new smart grid technologies will permit homeowners and building managers to seamlessly coordinate the use of clean energy stored onsite to meet fluctuations in onsite demand and permit the grid to more efficiently meet base load needs.

- f) *Create good, family wage jobs in communities throughout Oregon*

The clean energy sector is a prime example of an area where we can make a strategic investment in Oregon’s economy and support good jobs.¹³ Distributing renewable energy production throughout the state likewise distributes employment opportunities in manufacturing, installation, and maintenance of

⁸ Talks at Google http://www.youtube.com/watch?v=N_sLt5gNAQs

⁹ Jacobson, Mark Z., *Air Pollution and Global Warming: History Science and Solutions*, 2nd Addition, (New York, N.Y., Cambridge University Press, 2012) pp. 313

¹⁰ Robert W. Howarth, Ph.D.; Renee Santoro, Ph.D.; Anthony Ingraffea, Ph.D Methane and the Greenhouse-Gas Footprint of Natural Gas from Shale Formations, *Climatic Change Letters*, Springer Publishing, Volume 106, Number 1, April 14, 2011

¹¹ Jacobson, Mark Z., *Air Pollution and Global Warming: History Science and Solutions*, 2nd Addition, (New York, N.Y., Cambridge University Press, 2012) pp. 313

¹² Photovoltaic Capacity Valuation Methods, SEPA report # 02-08; May 2008; Figures 23 and 24; p 37-38;
<http://www.solarelectricpower.org/media/84207/sepa%20pv%20capacity.pdf>

¹³ From Healthy Climate Partnership 10 Year Energy Plan Comments, July 31, 2012.

generation systems. All jobs created in the sector should meet Bureau of Labor and Industries' standards.

We support the call for economic sustainability to be linked to environmental sustainability. Programs such as Clean Energy Works Oregon are demonstrating the potential for energy efficiency work to be conducted with “high road standards” – family wages, health care benefits, and affirmative action goals. By raising standards in a low-wage industry while spreading the benefits of energy conservation, CEWO provides a model for other programs. In addition, as the Jobs 21 plan of the BlueGreen Alliance has pointed out, we can create significant numbers of high-wage jobs by taking advantage of opportunities to incentivize in-state manufacturing. Finally, we should target limited workforce development dollars to training for high-wage, high-demand occupations in energy efficiency and renewables, building on existing high-quality skills training in the private sector, specifically union apprenticeship programs. The final Plan should dedicate significant attention to this economic and workforce development potential of a clean energy future for Oregon.¹⁴

- g) *Transform Transportation Fleet to Electrified Vehicles:* Oregon should be emphasizing the use of battery electrics and hydrogen fuel cells to power vehicular transportation, rather than bio-fuels. There is no obvious benefit to CO2 emissions from switching from gasoline to ethanol.¹⁵ Cradle-to-grave analysis of production and burning of ethanol reveals equal or greater CO2 emissions than with gasoline. More effective is the use of wind, solar, or water power to fuel vehicles with battery electrics.¹⁶ Hydrogen fuel cells are less efficient than batteries, but more efficient than gasoline fuels. Hydrogen can be made from extra electricity made at low-use times (i.e., at night when the wind is blowing)¹⁷ and is particularly appropriate for trucking of goods.
- h) *Increase public outreach and consumer education:* Oregonians lacked a reliable source of information when it came to understanding the advantages and disadvantages of various incentive programs in the state during the last renewable energy surge of 2009-2010. While some organizations have done good work to educate communities and leaders, a greater concerted effort will be needed to successfully and intelligently implement the next phase in renewable energy adoption. CLEAN contracts can be rapidly deployed, but OREP would like to see fair and equal opportunities for all. That begins with simple and accessible education.

Oregon has a well earned reputation for innovation and environmental leadership. Our history and our spirit calls for a 10 Year Energy Action Plan that moves us towards bold targets. Aggressive conservation and efficiency coupled with the most effective policies for developing renewable energy (FITs or CLEAN

¹⁴ From Healthy Climate Partnership 10 Year Energy Plan Comments, July 31, 2012.

¹⁵ Jacobson, M.Z., 2009. Review of solutions to global warming, air pollution, and energy security. *Energy and Environmental Science* 2, 148–173. doi:10.1039/b809990c. An analysis and ranking of nine electric power sources and two liquid fuel options based on their global warming, air pollution mortality, and energy security while considering their impacts on water supply, land use, wildlife, resource availability, thermal pollution, water chemical pollution, nuclear proliferation, and undernutrition. Jacobson found that biofuels including corn or cellulosic sugarcane ethanol & soy or algae biodiesel, are not clean and are equal or worse to running on the current oil based gasoline fuel. The study found that it is most clean and efficient to run our transportation fleet completely on energy produced from electricity with battery electric vehicles and in some cases hydrogen fuel cells. In addition, for optimal reduction of CO2 and other air pollution and for the minimal use of our land and water resources he finds our transportation fleet should be run completely on wind, water and solar sources.

¹⁶ Jacobson, Mark Z., *Air Pollution and Global Warming: History Science and Solutions*, 2nd Addition, (New York, N.Y., Cambridge University Press, 2012) pp. 317. Also mentioned at Google talk: http://www.youtube.com/watch?v=N_sLt5gNAQs. Running our transportation fleet entirely on electricity from wind, water, and sun energy sources we will actually decrease total energy demand because electric batteries are 4 to 5 times more efficient than car internal combustion engines. For every gallon of gasoline, only 17-20% of that energy goes into moving the vehicle and the rest is waste heat. Of every unit of electricity, 80 to 86% goes into moving the vehicle. The best way to reduce our state's overall energy consumption is to use electric vehicles.

¹⁷ Jacobson, Mark Z., *Air Pollution and Global Warming: History Science and Solutions*, 2nd Addition, (New York, N.Y., Cambridge University Press, 2012) pp. 317. Also mentioned at Google talk: http://www.youtube.com/watch?v=N_sLt5gNAQs

Contracts) can transition Oregon to 80-100% renewable energy by 2050. Our actions in the next 10 years must set us firmly along that path.

How to Fund Renewable Energy? Tax Credits or CLEAN Energy Contracts?

	Tax Credits	CLEAN Contracts <i>(aka Feed-in Tariffs)</i>
Provide financial assistance to energy projects of all technologies, including wind, solar, wave, biogas, etc.	X	X
Spur clean energy development that utilizes the free fuel resources that we have in our local regions	X	X
Attract private investment in renewable energy sector	X	X
Do not compete for scarce tax dollars that support education, human services and public safety		X
Available to tax-exempt organizations, such as schools, churches, community groups and retirees		X
Pay only for the energy that is produced		X
Provides incentives that maximize onsite energy production and minimize onsite consumption		X
Funded in the same way as fossil fuel energy, by those who actually use the energy		X
Create certainty for investors and stability for the RE industry, even during economic slumps		X
Easy and efficient to administer – promotes small, locally owned clean energy		X
Responsible for 75% of world's solar and 45% of global wind power		X

- Because **FIT contracts** have a longer payback than Oregon's energy tax credits (typically 20 years vs. 4-5 years), they **make renewable energy more affordable and yield more rapid deployment**. In general, the longer the payback period, the more kWh can be produced per year for the same money. Just like the introduction of the 30-year fixed home mortgage spurred rapid growth in home construction in the U.S. in the last century, countries offering 20-year fixed price contracts for renewable energy (aka FITs) have seen rapid growth in clean energy generation and in their RE industries.