

Clean Fuels Advisory Committee Final Recommendations

February 2, 2015

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Committee Report

Oregon has a track record of successfully pursuing clean energy policy, programs, and practices to stabilize energy prices, create new economic development opportunities, increase energy security and reliability, and decrease harmful air pollutants. The Governor's 10-Year Energy Action Plan builds on this work, creating a clear, practical approach to meeting the state's energy needs while protecting consumers and enhancing economic and environmental objectives.

Goal Three of the Governor's 10-Year Energy Action Plan is to accelerate the market transition to a more efficient, cleaner transportation system, particularly focused on converting 20 percent of fleets to alternative fuels. Alternative fuels – including natural gas, propane, hydrogen, biofuels and electricity – often cost less than traditional gasoline and diesel. This creates an economic opportunity for businesses to save money on their fuel bills and provides consumers with more choices. In addition, cleaner burning fuels pollute less and improve air quality in Oregon.

Oregon citizens are already ahead of the U.S. market curve when it comes to early adoption of highly efficient alternative fuel vehicles. With the state's market readiness and consumer interest in transitioning to alternative fuels established, what is missing is a clear, predictable pathway for building out alternative fueling infrastructure. The Oregon Clean Fuels Program provides this path.

Benefits from this effort will be felt across the state, including and especially in Oregon's rural areas. An independent analysis by Jack Faucett Associates shows that the program could create up to 29,000 jobs for construction workers, electricians, biomass suppliers, plant operators, and support staff, and save as much as to \$1.6 billion in fuel costs.

We recommend that the December 31, 2015, sunset on the Oregon Clean Fuels Program be lifted to create market stability and regulatory certainty for fuel importers, alternative fuel providers, businesses, and consumers. In addition, we recommend the following programmatic changes to help the Oregon Clean Fuels Program strengthen Oregon's economy and mitigate risks to consumers:

- Include a cost containment mechanism to protect consumers;
- Ensure transparency in customer information, supply and pricing;
- Maintain the regional approach to the carbon intensity methodology of transportation fuels;
- Increase the state's energy resiliency during short and long-term fuel disruptions.

The Oregon Clean Fuels Program will help the state and businesses save money on operations and fuel, create jobs for Oregonians, develop an emerging market, and further energy security in the state. Oregon has long been a leader on this front. Continuing the program makes sense for consumers, for businesses, and for the overall state economy both now and well into the future.

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Introduction

Transportation is the single largest contributor to Oregon's greenhouse gas emissions, accounting for 36 percent of total emissions.¹ Oregon's roads accommodate four million registered vehicles for 2.7 million licensed drivers.² Oregonians consume approximately 1.5 billion gallons of gasoline to drive more than 33 billion miles every year.³ According to an Oregon Department of Energy analysis using U.S. Census Bureau data, fuel costs for Oregonians average nearly seven percent of disposable income, nearly double the cost 10 years ago. Moreover, despite the current dip in both oil and gasoline prices, gasoline is projected to increase, so this trend is expected to continue unless the transportation system evolves.

The state has developed the first phase of its transportation strategy with the Governor's 10-Year Energy Action Plan, the Statewide Transportation Strategy, the Clean Fuels Program, and the Global Warming Commission's Roadmap to 2020. Over the next 10 years, the state will reduce dependence on gasoline and diesel by assisting in the conversion of 20 percent of large fleets to alternative fuel vehicles, including, but not limited to, electric, propane, compressed natural gas, and liquefied natural gas. Converting 20 percent of large fleets over the next 10 years will accelerate the market for newer, cleaner-burning vehicles that are less expensive to operate over the life of the vehicle. The Clean Fuels Program provides the next step, reducing the carbon intensity of the state's transportation fuel by 10 percent over the next decade.

These policies will help the state and businesses save money on operations and fuel, create jobs for Oregonians, develop an emerging market, and further energy security in the state. In drafting this report and its recommendations, the following major considerations have played a primary role.

Jobs and the Economy

With policies like the low carbon fuel standard, the renewable fuel standard, and innovative technology development, clean transportation jobs in Oregon, Washington, California, and British Columbia are estimated to grow by more than 173,000 jobs by 2020.⁴ Oregon's innovative energy policy has already made the state a national leader in clean energy job growth. Oregon ranks second in the nation in the clean-energy economy,⁵ and fifth in the nation for

¹ Oregon Global Warming Commission, *Report to the Legislature*, 2013,

http://www.keeporegoncool.org/sites/default/files/ogwc-standard-documents/OGWC_2013_Rpt_Leg.pdf

² Oregon Department of Transportation, Department of Motor Vehicles Data, 2014.

³ U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2010.

⁴ Globe Advisors and Center for Climate Strategies, *The West Coast Clean Economy*, March 2012,

http://www.pacificcoastcollaborative.org/Documents/Reports%20and%20Action%20Items/WCCE_Report_WEB_FINAL.pdf

⁵ Clean Edge, *State Clean Energy Leadership Index*, May 2012, http://cleanedge.com/sites/default/files/SCEI2012execsum_0.pdf

green jobs per capita.⁶ A 2011 analysis estimated that the Clean Fuels Program could add up to 29,000 jobs.⁷ The Clean Fuels Program will support Oregon jobs that already exist in alternative fuel production, manufacturing, and sales at local companies like Pacific Ethanol, SeSequential Biodiesel, Brammo, Blue Star Gas, EV4OR, among others.

Ensuring Oregon can take further advantage of the economic and environmental benefits provided by alternative fuels will require a predictable, clear regulatory environment; targeted incentives (financial and technical); a fertile research, development, and commercialization effort; and a ready workforce.



LEKTRO ELECTRIC VEHICLES WARRENTON

Lektro has been developing electric vehicles since 1945 and built the first towbarless electric aircraft tractor in 1967.

With more than 60 full-time and part-time employees, Lektro produces a wide variety of electric vehicles for commercial, civilian and military uses, including aircraft, warehouses, and specialty apparatus.

Affordable and Reliable Energy

Oregon's natural gas and transportation 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 to keeping our citizens, especially disadvantaged and low-income households, comfortable, and safe.

For Oregon to thrive, energy must remain accessible, with secure and reliable supply and delivery. Energy policy decisions must weigh equity concerns, including costs and benefits, transparency and consistency, and policy impacts. Maintaining an up-to-date statewide energy action plan will increase the reliability and predictability of energy service and costs for businesses and consumers.

Environmental and Quality of Life Values

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

Carbon and Greenhouse Gas Reduction Goals

⁶ Pollack, Ethan. *Counting Up To Green*, Economic Policy Institute, October 9, 2012

⁷ Jack Faucett Associates, Inc., *Economic Impact of the Low-Carbon Fuel Standard Rule for the State of Oregon*, Jan. 2011, <http://www.deq.state.or.us/aq/committees/docs/lcfs/appendixDeconimpact.pdf>

As we make investments necessary to provide energy for the next generation of Oregonians, the 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.

Status of West Coast Low Carbon Fuel Standards

British Columbia

Passed in 2008, the British Columbia Low Carbon Fuel Standard (LCFS) program aims to reduce the carbon intensity of transportation fuels 10 percent by 2020. With its joint Renewable Fuel Standard, the program has reduced emissions equal to removing 190,499 cars from the road.⁸ British Columbia's economy has benefited from clean transportation programs through the creation of almost 11,000 jobs in the clean transportation sector and almost \$2.1 billion invested in the clean economy in 2010.⁴ The first compliance period in which fuel suppliers are required to comply with carbon intensity requirements will be from July 1, 2013, to December 31, 2014.¹⁴ Impacts to the price of gasoline will be quantified after the first compliance period.

California's LCFS program has had a nominal impact on the price of gasoline as of 2014. If all credit value is passed through to conventional gasoline, then a \$10 credit price has the anticipated impact of \$.0001 per gallon at the 2014 carbon intensity level.

California

California is in its fourth year of implementing its LCFS⁹. The goal of the California program is to reduce the carbon intensity of transportation fuels in California 10 percent by 2020. From 2011-2013, the LCFS has had the impact of annually removing the equivalent emissions from 900,000 cars off California roads.¹⁰ Between 2006 and 2013, more than \$5 billion was invested in California's clean transportation sector, while jobs in the sector doubled to 8,500 between 2002 and 2012.¹¹ Over the life of the program, more than 9,100 new jobs could be created in California and more than 31,500 in the

⁸ British Columbia Minister of Energy and Mines, Summary of 2012: Renewable and Low Carbon Fuel Requirements Regulation, July 2014, <http://www.empr.gov.bc.ca/RET/RLCFRR/Documents/RLCF-007-2012%20Summary.pdf>

⁹ The California LCFS has been frozen at a one percent reduction in carbon intensity since 2013 due to a ruling by the state's Fifth District Court of Appeals. The standard will resume in early 2015 when the California Air Resources Board (CARB) amends the rules and readopts the program. The lawsuits against the California LCFS will be resolved upon readoption by CARB.

¹⁰ Yeh, Sonia and Witcover, Julie, Status Review of California's Low Carbon Fuel Standard, July 2014, UC Davis Institute of Transportation Studies, http://www.its.ucdavis.edu/research/publications/publication-detail/?pub_id=2253

¹¹ Next 10, California Green Innovation Index, 2014, next10.org/sites/next10.huang.radicaldesigns.org/files/2014%20Green%20Innovation%20Index.pdf

rest of the U.S.¹² The program has had a nominal impact on the price of gasoline as of 2014.¹³ If all credit value is passed through to conventional gasoline, then a \$10 credit price has the anticipated impact of \$.0001 per gallon at the 2014 carbon intensity level.¹⁴ At the 2020 carbon intensity requirement, the projected impact is \$.01 per gallon.¹⁵



Washington

In April 2014, Governor Inslee issued Executive Order 14-04 directing Washington's Office of Financial Management to evaluate the technical feasibility, costs and benefits, and job implications of a clean fuel standard. OFM hired Life Cycle Associates for the evaluation, which should be final in early December 2014.

CLEAN WATER SERVICES

BIOGAS PRODUCER
TIGARD AND HILLSBORO

In August, Clean Water Services won a Congestion Mitigation and Air Quality (CMAQ) Award from the Oregon Department of Transportation to develop a Renewable Natural Gas fueling station.

Expanding beyond renewable electricity production, CWS will use excess biogas from its wastewater treatment facility in Hillsboro Clean Water Services to fuel vehicles.

Selling the excess biogas will create a new financial stream for CWS while reducing emissions.

¹² ICF International, California's Low Carbon Fuel Standard: Compliance Outlook & Economic Impacts, April 2014, <http://www.caletc.com/wp-content/uploads/2014/04/ICF-Report-Final-2.pdf>

¹³ Oregon Department of Environmental Quality, *Commonly Asked Questions from Oregonians*, Oct. 2014, <http://www.deq.state.or.us/aq/cleanFuel/qa.htm#status>

¹⁴ For each \$10/ton credit there is a projected incentive value of \$.05-.10 a gallon of high carbon intensity fuel. This projected incentive value offsets the anticipated impact to the price of gasoline as seen in the table referenced in Figure 2. For more information see footnote ten.

¹⁵ Eggert, Anthony, UC Davis Policy Institute for Energy, Environment, and the Economy, *Clean Fuels Advisory Committee Presentation*, Aug. 27, 2014

Recommendations

Create Stable, Predictable, Reliable Market

The Clean Fuels Advisory Committee finds that the Governor and the Oregon State Legislature should lift the December 31, 2015, sunset for the Oregon Clean Fuels Program.

Of all spending on energy, Oregonians spend the most, nearly 60 percent, on transportation related expenses.¹⁶ Low carbon fuels are already competing in the marketplace and in many cases are a less expensive option for consumers.¹⁷

Additionally, in most cases, price differences resulting from basic market fluctuations exceed any differences between traditional and low carbon fuels, and far exceed the relatively small potential price increase effect of the Clean Fuels Program. In short, the alternatives to regular gasoline are already “in the money,” and any potential short-term price increase will be small and outweighed by the predictability and reliability clean fuels bring to consumers while providing them an opportunity to save on fuel costs in the long run.¹⁸

As designed, the standard does not require regulated parties to comply with a chosen technology type; instead, it lets the market decide which fuel is the most cost-effective option for compliance. As investors choose among technologies to invest in, they will have confidence that the alternative fuels market will continue to grow over the compliance period.¹⁹

The Advisory Committee finds that removal of the sunset will provide fuel importers and low carbon fuel providers and producers with regulatory certainty. Implementation of the Clean Fuels Program would allow market segments already emerging in Oregon to mature.

Recommendation: Lift the December 31, 2015, sunset on the Clean Fuels Program which will provide market and regulatory certainty.

Provide Transparency and Customer Information in Supply and Pricing

The Advisory Committee finds that transparency is the key to implementing a successful Clean Fuels Program in Oregon. As currently designed, the Clean Fuels Program is a performance-based standard that uses flexible market-based mechanisms to allow regulated parties to choose

¹⁶ U.S. Energy Information Administration, Oregon State Profile and Energy Estimates, 2012, <http://www.eia.gov/state/search/#?1=78&2=218>

¹⁷ Columbia-Willamette Clean Cities Coalition, Oregon Fuel Price Report, Oct. 13-14, 2014

¹⁸ [5] U.S. Department of Energy, Alternative Fuel Data Center, U.S. Retail Fuel Averages 2000-2014, Accessed Oct. 13, 2014.

¹⁹ Union of Concerned Scientists, *Benefits of a Low Carbon Fuel Standard: Performance Based, Technology-Neutral Policy to Reduce Emissions from Transportation Fuels*, Jan. 2009, http://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_vehicles/Federal-Low-Carbon-Fuel-Standard.pdf

the most cost-effective model to meet their compliance obligation. It is a technology-neutral program, meaning it only requires use of more low carbon transportation fuels. However, it is important that the impact on fuel prices and projected compliance costs be transparent to consumers.

There are concerns that a low carbon fuel standard will increase the price of gasoline for consumers. However, a 2011 study noted that overall costs for consumers will be reduced and could increase economic activity by up to \$1.25 billion, in part because of in-state fuel production.⁷

Under the Clean Fuels Program, lower carbon fuels will generate credits. Oregon DEQ is weighing ways to structure clean fuel standards and credits; the scenarios under consideration would allow credits to be sold to compliance entities by producers and importers who exceed the average fuel intensity performance requirement. Based on the potential price of credits,²⁰ DEQ has estimated that if the credit price is \$35 per ton, the average incremental cost increase would be about one cent per gallon over the compliance period from 2015-2025.²¹ The California program is estimated to cost consumers less than one cent per gallon.

In response to the potential impacts, DEQ has developed a deferral mechanism which would trigger when fuel costs in Oregon exceed approximately five percent of the retail price of fuel in PADD-5 states or if fuel supply disruptions occur.²²

Other jurisdictions are considering cost containment mechanisms for their low carbon fuel standards. Possible cost containment mechanisms could include a predetermined credit price that functions as a cap to the cost of compliance.²³ This mechanism would provide regulated parties with annual certainty on the cost of LCFS compliance. Another cost containment mechanism being developed includes the ability for regulated parties to carry compliance deficits over to the next compliance period. In order to qualify for this, the regulated party must purchase its share of credits during a credit sales period designated by the regulator.



RED ROCK BIOFUELS BIOFUEL PRODUCER LAKEVIEW

Red Rock Biofuels will create 80 jobs that pay more than the Lake County average wage. These direct and indirect jobs will be in plant operations, transportation, and material gathering to create refined jet fuel for the military.

Construction of the facility will add more than 200 construction jobs. This refinery will utilize 140,000 dry tons of wood biomass feedstock to produce 14 million gallons per year of finished product. The plant will use wood biomass, a by-product of forest thinning, which will contribute to the forest restoration of the Fremont-Winema National Forest. Forest thinning will help meet wildfire hazard reduction goals. In 2013, wildfire suppression in Oregon cost \$122 million.

²⁰ An LCFS credit is equal to one metric ton of carbon dioxide emitted. Exceeding the performance requirement (or carbon intensity) generates tradable credits.

²¹ Department of Environmental Quality, *Notice of Proposed Rulemaking: Clean Fuels Phase 2 Rulemaking*, Oct. 1, 2014, <http://www.oregon.gov/deq/RulesandRegulations/Documents/cf2pubnotice.pdf>

²² PADD-5 is the fifth Petroleum Administration Defense District which includes Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington.

²³ California Air Resources Board, *Low Carbon Fuel Standard Re-Adoption Concept*, March 2014, http://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/030714lcfsconceptpaper.pdf



BEND-LA PINE SCHOOL DISTRICT BEND

As of 2014, the Bend-La Pine School District has converted 40 percent of its school bus fleet to propane autogas which reduces the school district's fuel costs by **57 percent**.

As of the latest conversion, in Bend diesel cost \$3.11 per gallon, while propane autogas cost \$1.31 per gallon equivalent. Combined with the fuel cost savings, the school district took advantage of the Oregon Department of Energy's Energy Incentive Program (EIP), which provides a tax credit for up to 35 percent of eligible project costs.

Converting the school buses will also eliminate more than 169,000 pounds of carbon dioxide over the lifetime of the buses by displacing 145,000 gallons of diesel.

fuel standard.²⁵

The Advisory Committee finds that designing a cost containment option similar to those proposed in other jurisdictions would benefit the Oregon Clean Fuels Program. Development of a cost containment model in Oregon would increase market certainty on the potential maximum cost of compliance for regulated parties while still producing reductions in the carbon intensity of transportation fuels. Inclusion of a cost containment provision also increases the compliance options for regulated parties allowing them to select the best method by which to comply with the Clean Fuels Program while minimizing unintended, market consequences.

Recommendation: *The Department of Environmental Quality, in conjunction with stakeholders, should develop a cost containment mechanism through rulemaking to cap possible average fuel price increase and provide transparency of the total cost of the program.*

Design Simple, Efficient Governance

California and British Columbia have already implemented carbon intensity reduction programs in their transportation fuel sector. Washington is considering adoption of a low carbon fuel standard. With the creation of a West Coast low carbon fuel market, Oregon stands to benefit from the already designed systems of California and British Columbia and the partnership it has developed with Washington's implementation team.

Since most of Oregon's petroleum fuels come from Washington, DEQ has collaborated with Washington by sharing technical information on its lifecycle analysis of fuels and contractor work products. DEQ has made alterations to the lifecycle analysis of fuels based on Oregon-specific fuel conditions without duplication of existing work. The program also utilizes information from the lifecycle analysis completed under the California program.²⁴ Oregon also has signed a memorandum of understanding (MOU) with California to utilize information technology tools developed by the California Air Resources Board in the implementation of its low carbon

²⁴ Department of Environmental Quality, *Oregon Low Carbon Fuel Standards: Advisory Committee Process and Program Design*, Jan. 2011, <http://www.deq.state.or.us/aq/committees/docs/lcfs/reportFinal.pdf>

²⁵ Washington state and British Columbia have also entered into an agreement with California and use the same information technology reporting tools.



Figure 4: Status of Low Carbon Fuel Standards in West Coast states

While the Oregon program should leverage the work performed in the region to lower costs, the state must continue to tailor this work to state-specific conditions where appropriate. For example, Oregon's low carbon hydroelectric system should be fully accounted for in the state's carbon analysis. Similarly Oregon's natural gas infrastructure has a lower leak rate than the infrastructure in most of the nation and this should be reflected in any carbon assessment of compressed (CNG) and (LNG) liquefied natural gas use.

The Advisory Committee finds that building a West Coast market for lower carbon transportation fuels will reduce implementation costs for regulated parties, the program's administration, and consumers. Information sharing ensures common methodologies across borders and gives fuel providers more consistency in the marketplace. These strategic partnerships also reduce program implementation costs for Oregon while creating a cohesive market for regulated parties supplying fuels on the West Coast.

Recommendation: Oregon should continue to leverage its partnerships with the West Coast jurisdictions to develop a regional market with consistent carbon lifecycle methodologies while adjusting for regional differences and a common reporting tool.

Provide Economic Development Opportunities

Together, Washington, Oregon, California, British Columbia, and Alaska have the fifth largest economy in the world with a combined regional gross domestic product of \$2.8 trillion.²⁶ By 2020, member jurisdictions of the Pacific Coast Collaborative are projected to create more than 236,000 jobs in the Clean Transportation sector if policies promoted by the PCC are enacted.⁴ Further, it is estimated that Oregon's Clean Fuels Program could create up to an additional 29,000 jobs in the construction, fuel production, and electrical sectors.⁶

Oregonians already are choosing lower carbon fuels based on economics, price stability, and greenhouse gas reductions. With the Renewable Fuel Standard (RFS) and the lower cost of alternative fuels, Oregon has seen the share of alternative fuels in its transportation fuel mix increase 13 percent between 2005 to 2013 (Figures five and six). On average, propane, natural

²⁶ Pacific Coast Collaborative, *Climate Action Plan Preamble*, 2013, <http://www.pacificcoastcollaborative.org/Documents/Pacific%20Coast%20Climate%20Action%20Plan.pdf>

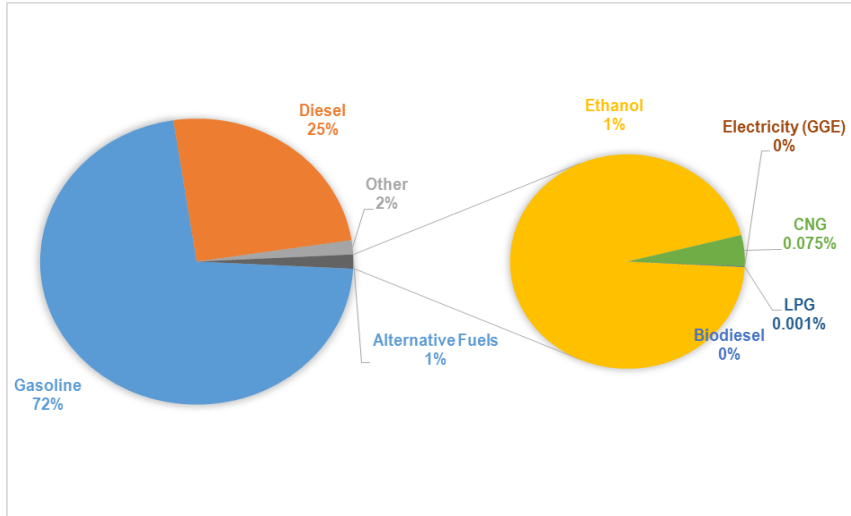


Figure 5: 2005 Oregon Transportation Fuel Mix

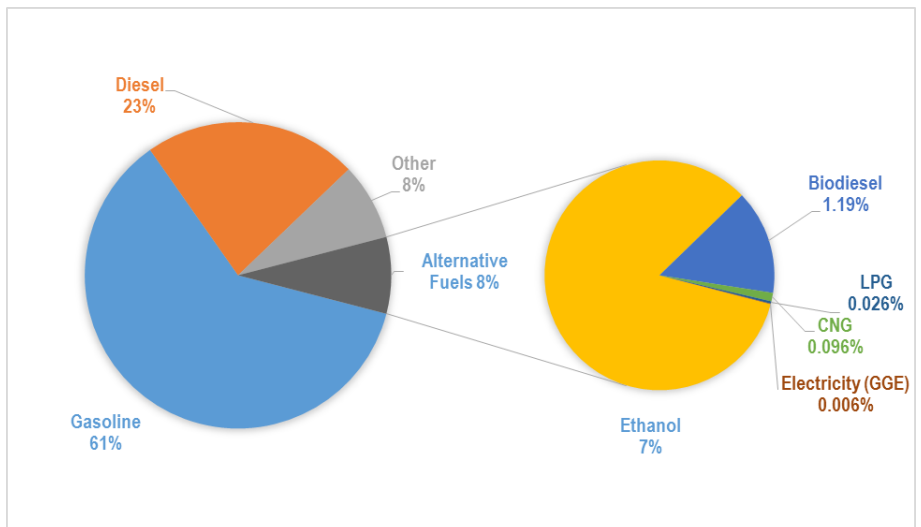
gas, and electricity are less expensive than gasoline and diesel²⁷, and as of 2011, there are an estimated 16,219 alternative fuel vehicles operating in Oregon.²⁸

Further, Oregonians spend more than \$6 billion each year to import gas and diesel into the state.²⁹ Implementation of the program has the potential to save up to \$1.6 billion in

fuel costs.^{7:30} Even with Americans spending more than

\$1 billion a day on gasoline, investment in oil and gas production is less than one percent of gross domestic product³¹ signifying our dependence on imported oil. Promotion of lower carbon fuels will benefit alternative fuel producers by creating greater market demand. The program's effects could also benefit the state's utility infrastructure. The electrification of the transportation sector has been identified as a significant long-term opportunity for load growth in the electric sector³², including the potential for additional revenues to support transmission and distribution infrastructure. The Edison Electric Institute has labeled the electrification of the transportation sector a "quadruple win" for electric utilities by enabling companies to support environmental goals,

Figure 6: 2013 Oregon Transportation Fuel Mix



²⁷ U.S. Department of Energy, *Clean Cities Alternative Fuel Price Report*, July 2014, http://www.afdc.energy.gov/uploads/publication/alternative_fuel_price_report_july_2014.pdf

²⁸ U.S. Energy Information Administration, *Oregon: State Energy Profile Data*, 2011, <http://www.eia.gov/state/data.cfm?sid=OR#ConsumptionExpenditures>

²⁹ Oregon Department of Energy Analysis, 2010 Census Data, 2012

³⁰ Savings are calculated based on fuel-use versus business as usual and do not incorporate the upfront capital costs associated with installing fueling infrastructure or the cost of converting vehicles. Once the payback period for the capital costs has been achieved, consumers will recoup the total fuel savings.

³¹ Schwartz, Clifford, Clifford Krauss, and Dionne Searcey, "Sliding Oil and Gas Prices Give Americans More Money to Spend," *New York Times*, Nov. 13, 2014

³² Edison Electric Institute, *Transportation Electrification: Utility Fleets Leading the Charge*, June 2014, http://www.eei.org/issuesandpolicy/electrictransportation/FleetVehicles/Documents/EEI_UtilityFleetsLeadingTheCharge.pdf

build customer satisfaction, reduce operating costs, and assure the future value of existing assets.¹⁷ The same benefits also exist for natural gas local distribution companies.

Conversion of vehicles to natural gas expands the use of existing infrastructure, spreading fixed costs across more energy uses, thus reducing the fixed costs paid by existing natural gas customers. Conversion of CNG and LNG should not be limited to areas currently served by natural gas infrastructure. Benefits associated with conversion from diesel also may warrant service of isolated communities with either remote CNG or LNG (delivered by truck). Building out natural gas infrastructure to serve larger fleets in rural areas, first with LNG and potentially later with a pipeline, has the auxiliary benefit of bringing low cost natural gas to communities that are not now served. The ability to expand gas service helps the state meet its broader goals of industrial development in rural areas.

The Advisory Committee finds that economic benefits of the Clean Fuels program have the potential to create jobs, develop Oregon as a leader in alternative fuel production facilities, and save Oregonians more than a billion dollars in fuel costs while increasing economic opportunities for all businesses.^{7, 31} Utility ratepayers may also benefit from the increased revenue to their local distribution gas company and electric utility which could improve the state's energy infrastructure. Electric and natural gas utilities could work with third party providers to generate and aggregate Clean Fuel credits.

Recommendation: The Public Utility Commission (PUC) should consider how credits under the LCFS Program can be used to further incent the adoption of alternative fueled vehicles within the utility's market through such mechanisms as supplementing infrastructure costs, home charging/refueling systems, vehicle incentives, and others. In an effort to make charging and refueling systems ubiquitous, the PUC should review the role of utilities in deploying infrastructure for electric, CNG, and LNG vehicles.



PACIFIC AG

FEEDSTOCK SUPPLIERS

HERMISTON

Taking advantage of agricultural waste, Hermiston-based Pacific Ag will supply the Kansas Abengoa Cellulosic Ethanol Plant with 350,000 dry tons of crop residue.

This operation creates an opportunity for Kansas farmers who will receive about **\$5.2 million** per year for access to their fields to harvest residue.

"This plant, and our harvest operation, are creating tremendous new value by unlocking a huge new resource in the form of crop residue for biofuels production."

-Harrison Pettit, Vice President Pacific Ag

Reduce Greenhouse Gas Emissions

The Advisory Committee finds that Oregon's transportation sector is changing, with the implementation of the Renewable Fuel Standard, more efficient vehicles entering the market, and more alternative fuel vehicles entering the market. Over the next 10 years, the market will create new alternative fuel vehicles, more efficient gasoline and diesel vehicles, and alternative fuel infrastructure will be further developed in Oregon. These developments will help reduce

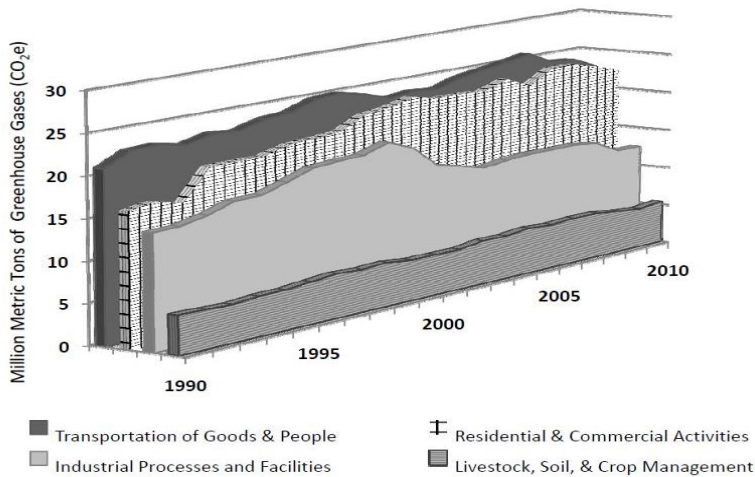


Figure 7: Oregon in-boundary greenhouse gas emissions by sector 1990-2010

emissions, but developing new technology and infrastructure won't happen immediately. The 10-year phase-in period for the Clean Fuels Program is vital to reducing emissions while allowing the market to develop and mature.

Oregon is implementing and developing policies to meet its greenhouse gas goals to reduce emissions from 1990 levels 10 percent by 2020 and 75 percent by 2050. With the transportation sector accounting for more than a third of Oregon's greenhouse gas emissions¹, the 10 percent reduction in carbon emissions that will result

from the Clean Fuels Program is a vital component to meeting the state's greenhouse gas goals.

Projected impacts of climate change in Oregon include a significant decline in snowpack combined with reduced precipitation, both of which will reduce the generation capabilities of the Northwest's carbon-free hydropower system.³³ Reduction in carbon-free energy generation resources will result in socioeconomic consequences³⁴ for the region and affect the region's ability to maintain existing infrastructure. The most recent federal analysis of the social cost of carbon³⁵ estimates that in 2015, the social cost of carbon will be \$11-109 per metric ton of CO₂.³⁶ If Oregon promotes further action on carbon reduction, it is possible the state will avoid damages associated with the incremental increases in carbon emissions.

Moreover, the use of alternative fuels in transportation lowers greenhouse gas emissions immediately and provides the potential to dramatically reduce emissions over time. These greenhouse gas reductions occur as the total number of alternative vehicles increases and as the state's alternative fuels decrease in carbon intensity over time.

³³ Oregon Climate Change Research Institute, *Oregon Climate Assessment Report*, December 2010, http://occri.net/wp-content/uploads/2011/01/OCAR2010_v1.2.pdf

³⁴ The White House Office of the Press Secretary, Fact Sheet: *What Climate Changes Means for Oregon and the Northwest*, May 2014, http://www.whitehouse.gov/sites/default/files/docs/state-reports/OREGON_NCA_2014.pdf

³⁵ The social cost of carbon is intended to include changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change, but is not limited to these topics identified.

³⁶ Interagency Working Group on the Social Cost of Carbon, U.S. Government, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis—Under Executive Order 12866*, May 2013, <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf>

The Advisory Committee finds climate change poses a serious threat to Oregon's economy, environment, and public health; reduction of carbon in the transportation sector is integral to Oregon's economic and environmental future. The Clean Fuels Program will help to guard Oregon from future costs associated with increases in carbon emissions and the impacts of climate change.

The Advisory Committee finds that the design of the Clean Fuels Program promotes carbon benefits beyond the transportation sector; it increases renewable generation in the electricity resource mix, renewable natural gas or biogas in the natural gas mix, and the use of cellulosic ethanol mixed in petroleum fuels.

Recommendation: Ensure that the Clean Fuels Program has a 10-year phase-in period from 2015-2025 which will allow the program to accrue the emissions benefits while allowing the market time to develop.

Increase Energy Resiliency and Security

The Advisory Committee finds that diversification of the state's fuels supply will improve Oregon's ability to respond to fuel price spikes and minimize fuel supply disruptions. Additionally, localizing the production of transportation fuels will allow Oregon to more readily respond to short-term fuel supply disruptions.

Figure eight demonstrates the fluctuation in retail gasoline prices in the past decade in Oregon. While there has been wide variability in the price per gallon of gasoline, the general trend for the retail price of gasoline has increased over the long term.

Further, Oregon possesses no internal crude resources or refining capabilities. As a result, Oregon imports 100 percent of its refined petroleum products. More than 90 percent of Oregon's refined product comes from four refineries located in the Puget Sound area of Washington state.³⁷ The fuel is transported 230 miles from the refiners via the Olympic Pipeline Company to seven petroleum distribution terminals located in the Portland Harbor.³⁸ From this single point of entry, fuel is



LINN-BENTON COMMUNITY COLLEGE WORKFORCE DEVELOPMENT LEBANON

Linn-Benton Community College has developed the Advanced Transportation Technology Center which provides technical education on alternative energy transportation skills. The center offers training to apply, develop and adopt alternative energy technologies including biofuels, electric vehicles, compressed natural gas (CNG), hydrogen, hybrids and telematics.

The college also provides training to emergency responders to prepare them for safety issues that might arise from the installation, maintenance and repair of alternative fuel vehicles.

³⁷ Oregon Department of Energy and Oregon Public Utility Commission, *Oregon State Energy Assurance Plan*, August 2012, <http://www.oregon.gov/energy/docs/Oregon%20State%20Energy%20Assurance%20Plan%202012.pdf>

³⁸ Oregon Department of Geology and Mineral Industries, *Earthquake Risk Study for Oregon's Critical Energy Infrastructure Hub*, 2013,

distributed across the state. This situation makes Oregon extremely vulnerable should a natural disaster or other emergency disrupt operations.

The Oregon State Energy Assurance Plan identifies the ability to integrate alternative fuels in the state's emergency planning as critical to the state's response to fuel supply disruptions. Elimination of the Clean Fuels sunset will increase production of alternative fuels and provide an increased regional supply to source from during short-term and long-term emergency response events. Further, it will improve Oregon's energy security by diversifying available resources.

Figure 8: Price of Gasoline in Oregon from 2004-2014



The Advisory Committee finds that significant fluctuations in the price of gasoline adversely affect Oregonians' economic security and leave them especially vulnerable to price increases due to supply disruptions. The committee also recognizes the need for Oregon to plan for short-term fuel supply disruptions due to natural disasters and other emergencies. Increasing utilization of alternative fuels in the transportation fuel mix will increase energy security and improve the state's ability to respond to fuel supply disruptions.

Recommendation: *Utilization of alternative fuels for emergency response will further increase the benefits of the Clean Fuels program for Oregonians. The state should advance integration of alternative fuels into statewide emergency response planning.*

Complementary Measures

The Advisory Committee finds that there are several measures that are or could be complementary to the Clean Fuels Program and the goals outlined above. This section provides a general overview of secondary measures that could be taken to remove existing market barriers and improve the effectiveness of the Clean Fuels Program.

Existing State Incentives and Commitments

The Advisory Committee recognizes that the state has three existing incentive programs that complement the Clean Fuels Program: the Residential Energy Tax Credit, the Biomass Producer or Collector Tax Credit, and the Energy Incentives Program. Each of these programs currently has sunsets within the first few years of the Clean Fuels Program. The Advisory Committee recommends consideration of an extension of the relevant sunsets and increases in the level of incentives of the programs.

Energy Incentives Program (EIP): the EIP program provides business with up to 35 percent of eligible alternative fuel infrastructure projects tax credit. Funded projects include compressed natural gas fueling stations, electric vehicle charging stations, propane, biogas refineries, biodiesel dispensers and refineries, and ethanol dispensers. Effective 2015, ODOE will offer tax credits for when purchasing or converting two or more alternative fuel vehicles that replace existing gasoline or diesel vehicles. Consideration should be given to modifying the credit so that participants are not required to replace vehicles when purchasing a new alternative fuel vehicles. This would reward fleet owners seeking to expand their fleets with alternative fuel vehicles.

Residential Energy Tax Credit (RETC): the RETC program provides consumers with a tax credit of 25 percent of project costs – up to \$750 for alternative fuel infrastructure projects. Projects that qualify include home electric vehicle charging and compressed natural gas fueling stations.

Small-Scale Energy Loan Program (SELP): SELP promotes the use of alternative fuels by providing loans to individuals, businesses, and organizations at a competitive fixed interest rate. Loans can be used to convert vehicles to alternative fuels, including the purchase of fueling infrastructure.

Alternative Fuel Vehicle Revolving Loan Program: the revolving loan fund provides a continual, revolving pool of funds to borrowers to defray the upfront incremental cost of converting vehicles to alternative fuels. This program allows specific fleets to purchase new alternative fuel vehicles, and to convert existing gasoline or diesel vehicles to alternative fuels by offsetting the cost of purchase or conversion.

Biomass Producer or Collector Tax Credit (BPTC): the BPTC provides tax credits for the production or collection of biomass that is used for energy production.

Future Incentives

The state should explore the use of additional incentives to encourage growth in the alternative fuel market. These incentives should be implemented quickly. Specifically, incentives may be needed to ensure stations are available for public fueling. For example, new CNG refueling

stations will be installed in the years ahead of the Clean Fuels Program but an incentive may be necessary for these stations to offer the public refueling access "over the fence." Without such subsidies, the state will not have the network of public CNG infrastructure necessary to aid conversion to the lower cost and alternative fuels. Incentives could include:

- An enhanced incentive under the Energy Incentives Program for a facility that provides publicly accessible refueling. For example, increasing the EIP credit from 35 percent to 50 percent (with a maximum per project) for the public access portion of the project would provide a useful incentive for fleet owners to provide outside the fence refueling facilities.
- Where a utility has a tariff for infrastructure, the commission could consider permitting the utility to rate-base some or all of the costs associated with public access.

Beyond augmenting incentives to aid with vehicle conversion and public refueling, the state should explore a clear commitment to convert its own fleet to alternative fuels over a set timeline to assist in meeting the state's own conversion goals.

Conclusion

These recommendations are the result of this Advisory Committee meeting seven times over 11 months. The Committee welcomes questions from the Governor and legislators on the recommendations herein and how they were reached.