

2027 CLEAN FUELS FORECAST

October 1, 2026

Hari Vellaipandian, Economist

Michael Kennedy, Senior Economist

Mitchell D'sa, Economist



Department of Administrative Services

155 Cottage Street NE

Salem, OR 97301

503-378-3104

[Oregon.gov/das](https://oregon.gov/das)

Table of Contents

Accessibility Statement.....	3
Background	4
Data Sources	4
Clean Fuels Program 2027 Reported Volumes Forecast	5
Deficit and Credit Generation and Banked Credits	8
Potential Supply of Alternative Fuels.....	11
Potential Supply of Biofuels.....	13
Forecast Risks and Considerations.....	16
Appendix A	17
Appendix B	19

Accessibility Statement

The Department of Administrative Services is committed to ensuring that all individuals have equitable access to our services, resources, and programs.

If you have a disability and require assistance to read this document, please email the DAS coordinator at das.accessibility@das.oregon.gov.

Background

Oregon Revised Statutes (2017) Chapter 750, Section 163 authorizes the Office of Economic Analysis (OEA), with substantial assistance from the Department of Environmental Quality, to assess the availability of fossil and alternative fuels to Oregon. In particular, the forecast is to determine whether fuel supply will be sufficient to generate the necessary number of carbon reduction credits from alternative fuels (ethanol, electricity, and diesel substitutes - including biodiesel, renewable diesel, natural gas, and propane) to meet the scheduled applicable low carbon fuel standards for the compliance period. The forecast report is required to include an assessment of banked deficits and credits at the beginning of the compliance period.

In preparing the forecast, the Office of Economic Analysis has formed a Clean Fuels Forecast Advisory Committee comprised of relevant experts and stakeholders to assist in reviewing forecast assumptions, as well as methodological considerations and potential data sources. A membership list can be found in Appendix A.

Data Sources

The forecast uses available public and program data to develop the estimates of low-carbon fuels available to Oregon and projected volumes of fossil and alternative fuels in Oregon. The sources of these data include:

- Oregon Fuels Reporting System (OFRS)
- Fuel Pathway Codes (carbon intensity values) approved in Oregon and California
- Oregon Department of Transportation's (ODOT) Revenue Forecast
- Oregon Department of Transportation's Electric Vehicle Forecast
- Annual Energy Outlook and other resources from the US Energy Information Administration
- Trade associations (Renewable Fuels Association and the National Biodiesel Board) on their members' production capacity

Clean Fuels Program 2027 Reported Volumes Forecast

To determine the number of deficits that will be generated in 2027, and thus the amount of credits needed for compliance, a forecast for the volumes reported to the Clean Fuels Program of all relevant fuels is made. The following are the volume projections for each fuel type.

Motor Gasoline

1497.3 million gallons of gasoline, including ethanol, were reported to the program in 2025, the most recent full year of data available. ODOT's forecast for gasoline consumption projects a -2.4 percent annualized growth from 2025 to the 2027 compliance year, resulting in a projected volume of 1432.8 million gallons¹. After subtracting the projected amount of ethanol (see below), the final forecast for conventional gasoline is 1287.4 million gallons.

Diesel

According to CFP reported data, 767.9 million gallons of diesel, including bio- and renewable diesel, were reported to the program in 2025, the most recent full year of data collected. Growth projections exhibited in the Oregon Department of Transportation's April 2025 forecast anticipate -1.1 percent growth annualized from 2025 to 2027. This results in a projected 750.4 million gallons of total diesel. After subtracting biodiesel and renewable diesel (see below), the final forecast for conventional diesel in 2027 is 433.3 million gallons.

Ethanol

The amount of ethanol reported for 2025 equaled 146.9 million gallons. The amount of ethanol projected for 2027 is based on a blend rate assumption driven by historical observations and trends. The latest observation for an ethanol blend rate, for calendar year 2025, was 9.8 percent. Given the passage of House Bill 3051, which allows for blends above 10 percent, the assumption for 2027 is 10.15 percent. This results in a 2027 forecast for reported ethanol of 145.4 million gallons, which is 0.5 percent below the 2025 volume on an annualized basis.

Biodiesel

The reported volume of biodiesel in 2025 amounted to 61.4 million gallons. The amount of biodiesel projected for 2027 is based on a blend rate assumption driven by historical observations and patterns. The biodiesel blend rate is expected to rise from 8.0 percent in

¹ The projected growth in Clean Fuels reported gasoline differs due to the inclusion of actuals for 2026 quarter one.

2025 to 9.8 percent for the 2027 compliance period, resulting in a volume projection of 73.2 million gallons. This represents growth of 9.1 percent versus 2025 on an annualized basis.

Renewable Diesel

The amount of renewable diesel reported in 2025 was 101.2 million gallons. Like biodiesel, the forecast for renewable diesel is driven by the assumption of the fraction of total diesel reported comprised of renewable diesel. The blend rate observed for 2025 in the Clean Fuels data was 12.9 percent. The blend rate is assumed to increase to 32.5 percent in 2027, leading to a forecast for reported renewable diesel of 243.9 million gallons, a 55.3 percent increase from the 2025 value on an annualized basis.

Electricity

Consumption of electricity for on-road vehicles is based on a projection of the number of plug-in hybrid and battery electric vehicles in use for the compliance period. The forecast equals an average of 47,796 Plug-in Hybrids and 122,404 Battery Electric vehicles. Estimates are employed for the average KWh charged per vehicle, both at a residence and at non-residential charging stations. When converted to gasoline gallon equivalents, the forecast is 19.0 million gallons including residential charging. This equates to a 16.1 percent increase from 2025 on an annualized basis.

For electricity reported for off-road use, volumes are expected to reach 6.1 million gallons in 2027. This is a 17.7 percent annualized rate compared to 2025.

Natural Gas and Liquefied Petroleum Gas

The amount of natural gas, including renewable natural gas (biogas), reported in 2025 in gasoline gallon equivalents equaled 4.0 million gallons. Annualized growth from the 2025 base year to 2027 is assumed to be 3.0 percent. This results in a forecast of 4.2 million gallons. The blend rate for renewable natural gas is expected to stable at 99.5 percent, resulting in a volume of renewable natural gas of 4.2 million gasoline gallon equivalents.

Liquefied Petroleum Gas exhibits the smallest quantity of alternative fuel reported in 2025 at 2.1 million gallons. Annualized growth from the 2025 base year to 2027 is assumed to be 4.2 percent, resulting in a forecast of 2.3 million gallons.

The following table presents the 2027 reported volumes forecast in detail. Note that the percent change figures for 2027 represent annual growth from the last available actuals in 2025.

Table 1: Summary of fossil and alternative fuel volumes

Table 1: Clean Fuels Forecast - Reported Volumes

(Mil. gallons, percent)	2023	2024	2025	2026F	2027F	annual %ch vs. 2025
Conventional Gasoline	1,325.4	1,350.8	1,350.4	1,309.1	1,287.4	-2.4%
Ethanol	154.8	150.0	146.9	150.9	145.4	-0.5%
<i>Ethanol Blend Rate</i>	<i>10.5%</i>	<i>10.0%</i>	<i>9.8%</i>	<i>10.3%</i>	<i>10.2%</i>	
Blendstock	1,480.2	1,500.8	1,497.3	1,460.0	1,432.8	-2.2%
Fossil Diesel	588.9	581.8	605.3	462.1	433.3	-15.4%
Biodiesel	78.9	78.8	61.4	72.5	73.2	9.1%
<i>Biodiesel Blend Rate</i>	<i>9.9%</i>	<i>9.5%</i>	<i>8.0%</i>	<i>9.6%</i>	<i>9.8%</i>	
Renewable Diesel	126.2	169.7	101.2	217.6	243.9	55.3%
<i>Renew diesel Blend Rate</i>	<i>15.9%</i>	<i>20.4%</i>	<i>13.2%</i>	<i>28.9%</i>	<i>32.5%</i>	
Total Diesel	794.0	830.3	767.9	752.2	750.4	-1.1%
Electricity (on-road)	9.1	11.3	14.1	16.2	19.0	16.1%
Electricity (off-road)	4.3	4.1	4.4	5.3	6.1	17.7%
Fossil Natural Gas	0.0	0.0	0.0	0.0	0.0	17.9%
Biogas	3.9	3.9	4.0	4.1	4.2	3.0%
<i>Biogas Blend Rate</i>	<i>99.1%</i>	<i>99.6%</i>	<i>99.6%</i>	<i>99.5%</i>	<i>99.5%</i>	
Total Natural Gas	4.0	3.9	4.0	4.1	4.2	3.0%
Fossil LPG	2.5	2.6	1.8	1.6	1.7	-1.9%
Bio LPG	0.7	0.0	0.3	0.3	0.6	32.6%
<i>LPG Blend Rate</i>	<i>22.6%</i>	<i>0.0%</i>	<i>15.4%</i>	<i>17.2%</i>	<i>25.0%</i>	
Liquified Petroleum Gas	3.3	2.6	2.1	1.9	2.3	4.2%

Notes:

Electricity and Natural Gas denoted in gasoline gallon equivalents.

On-road electricity includes a calculation for residential charging.

Deficit and Credit Generation and Banked Credits

To estimate the number of deficits and credits associated with the reporting of each fuel type, the energy densities and carbon intensity differentials must be known. Most of the pertinent parameters are [published here](#) in administrative rule by the Department of Environmental Quality (see Tables 1, 2, 4, 6 and 7 in the PDF document referenced halfway down the page). The following table presents these parameters for each fuel. The highlighted carbon intensities for ethanol, biodiesel, renewable diesel, electricity and renewable natural gas are not set in rule and were discussed in detail by the advisory committee. Finally, energy economy ratios are presented for electric and natural gas engines.

Table 2: Parameter values for the 2026 forecast

	Energy Density	Carbon Intensity Target	Carbon Intensity Assumption 2025 Actual	2026 Proj.	2027 Proj.
Gasoline	122.48	82.99	100.14	98.12	98.12
Ethanol	81.51	82.99	46.07	45.00	44.00
Diesel	134.48	88.34	100.74	104.92	104.92
Biodiesel	126.13	88.34	47.51	46.00	46.00
Renewable Diesel	129.65	88.34	31.07	34.50	33.00
Electricity	3.60	82.99	-18.81	-15.00	-15.00
KWh/vehicle (res)	3103				
EERelect	3.40				
EER_NG	0.90				
Natural Gas	134.48	88.34	79.98	81.89	81.89
Biogas	134.48	88.34	-172.73	-200.00	-200.00
Liq. Petroleum Gas	89.63	82.99	45.00	15.00	15.00

Banked Credits

The number of credits and deficits is taken from the OFRS. The number of gross credits registered through the end of calendar year 2025 equaled 16.0 million, while the number of deficits amounted to 15.2 million. The net credits banked equaled 739,416. OEA currently projects that 296,641 net credits will be added to the bank during the 2026 compliance year. The total projected banked credits at the beginning of the 2027 compliance period is now expected to total 1,036,057.

Table 3: Summary of actual and projected net banked credits

Year	Deficits	Credits	Net Banked Credits	Cumulative Total
2016	-594,832	809,411	214,579	214,579
2017	-644,372	855,272	210,900	425,479
2018	-864,910	943,646	78,736	504,215
2019	-1,002,047	1,220,755	218,708	722,923
2020	-1,154,536	1,260,547	106,011	828,934
2021	-1,507,200	1,443,575	-63,625	765,309
2022	-1,928,809	1,812,920	-115,889	649,420
2023	-2,100,440	2,572,003	471,563	1,120,983
2024	-2,483,845	2,723,383	239,538	1,360,521
2025	-2,966,090	2,344,985	-621,105	739,416
2026 est.	-3,026,663	3,323,304	296,641	1,036,057
Total	-18,273,744	19,309,801	1,036,057	
Thru 2025	-15,247,081	15,986,497		

Credit and Deficit Summary

The table below summarizes the forecast for deficit generation and credit generation for both the 2027 compliance year, as well as the intervening 2026 that is still a forecast in the model. The 2027 forecast calls for 223,742 net credits to be added to the credit bank, increasing the credit bank to a projected total of 1,259,799. The equations for calculating the deficits and credits can be found in Appendix B.

Table 4: Summary of Deficits and Credits

Credit / Deficit Summary

		2026F	2027F
Deficits	Gasoline	-2,121,524	-2,385,632
	Diesel	-905,139	-966,194
Deficit Total		-3,026,663	-3,351,826
Credits	Ethanol	482,373	462,180
	Biodiesel	391,777	390,700
	Renewable Diesel	1,577,007	1,749,706
	Electricity, on-road	597,000	660,976
	Electricity, off-road	115,997	140,437
	Natural Gas	149,944	157,580
	Liquified Petroleum Gas	9,206	13,988
Credit Total		3,323,304	3,575,567
Net Credits/Deficits		296,641	223,742
Beginning Banked Credits		739,416	1,036,057
Total Net Credits/Deficits		1,036,057	1,259,799

Forecasted Fuel Supply Deferral Analysis

As shown above, the forecast does not imply such an action.

Potential Supply of Alternative Fuels

Oregon Revised Statutes (2017) Chapter 750, Section 272 directs the Office of Economic Analysis to estimate the “potential volumes of gasoline, gasoline substitutes and gasoline alternatives and diesel, diesel fuel substitutes and diesel alternatives available to Oregon.” To make such estimates, a number of assumptions must be made. Potential is read to mean “could be made available to Oregon under a wide range of market conditions”. Currently, suppliers must be registered by the Department of Environmental Quality to deliver fuel into Oregon. In addition, they must report volumes of fuel sold in Oregon to the OFRS. Thus, the capacity of facilities that were certified for the most recent compliance period (2025) is assumed to be theoretically “available” to Oregon.

In addition, the Office of Economic Analysis is directed to consider “Constraints that may be preventing access to available and cost-effective low carbon fuels by Oregon, such as geographic and logistical factors, and alleviating factors to those constraints”. Only biofuels that might pose a supply constraint that could limit the number of credits available to deficit holders are called out explicitly. Should supply issues arise for the more mature fuel markets such as conventional gasoline and diesel, as well as electricity, such issues would be added to the report. This is not anticipated for the foreseeable future. See “Risks and Considerations” for more details regarding biofuel supply.

Table 5 presents Environmental Protection Agency data for renewable fuel production through the first six months of 2025. The current year’s production is estimated based on the year-over-year growth observed through May, assuming that this rate will hold for the year as a whole. Given the volumes and the near-term growth assumptions depicted in Table 1 above, none of the production figures presented would appear to pose supply issues for Oregon.

Table 5: Renewable Fuel Production

EPA Renewable Fuel Standard Program - Reported Production								
(millions of gallons)		2020	2021	2022	2023	2024	2025	2026 Est.
Ethanol	Domestic	12,870.7	14,138.5	14,439.9	14,700.6	14,937.2	14,780.5	15,053.2
	Importer	197.2	72.9	94.6	35.8	14.5	14.2	15.2
Total Ethanol		13,067.9	14,211.4	14,534.6	14,736.4	14,951.7	14,794.7	15,068.5
Y/Y change		-12.6%	8.8%	2.3%	1.4%	1.5%	-1.0%	1.9%
Biodiesel	Domestic	1,824.9	1,704.6	1,620.2	1,675.6	1,672.1	1,106.6	1,409.1
	Importer	209.5	208.5	240.4	511.4	407.7	34.0	4.7
Total Biodiesel		2,034.4	1,913.1	1,860.6	2,187.0	2,079.8	1,140.6	1,413.8
Y/Y change		7.2%	-6.0%	-2.7%	17.5%	-4.9%	-45.2%	23.9%
Renewable Diesel	Domestic	533.5	845.4	1,455.3	2,428.0	3,142.3	2,868.8	3,020.5
	Foreign	435.5	471.0	446.4	480.8	430.1	104.5	34.2
Total Renewable Diesel		969.0	1,316.4	1,901.8	2,908.8	3,572.5	2,973.4	3,054.7
Y/Y change		6.2%	35.9%	44.5%	53.0%	22.8%	-16.8%	2.7%
Renewable Natural Gas	Domestic	469.0	533.4	631.2	731.7	928.4	1,163.0	1,141.4
	Importer	34.9	36.1	37.1	43.3	46.2	44.0	19.8
Total Natural Gas		503.9	569.5	668.3	775.0	974.7	1,207.0	1,161.2
Y/Y change		24.6%	13.0%	17.3%	16.0%	25.8%	23.8%	-3.8%
Propane	Domestic	4.3	4.6	4.5	4.7	0.9	3.3	3.6
Y/Y change		2.3%	6.6%	-2.3%	5.2%	-80.3%	252.7%	10.9%

Note: 2026 estimates based on year-over-year growth through first five months, except propane which extrapolates the first five months of data through the rest of the year.

Potential Supply of Biofuels

Ethanol

As exhibited in Table 5, the potential supply of ethanol to Oregon per the methodology outlined above is 2.8 billion gallons. This compares to a projected reported volume for ethanol of 145.4 million gallons, or 5.2 percent of the potential supply, for the 2027 compliance period.

Table 5: Ethanol Supply

Ethanol Supply Available to Oregon (Existing Suppliers in 2026)		
State	Nameplate Capacity (Mil. Gallons)	Number of Facilities
South Dakota	1,081	12
Nebraska	826	11
Iowa	326	5
North Dakota	215	2
Minnesota	148	3
Colorado	120	2
Kansas	55	1
Oregon	43	1
Total Oregon Suppliers	2,814	37
Data from Clean Fuels Program.		

Biodiesel

Table 6 presents the potential supply of biodiesel to Oregon, equaling 850 million gallons in capacity for certified facilities in 2026. This compares to a projected volume of biodiesel in 2027 of 73.2 million gallons, or 8.6 percent of the potential supply.

Table 6: Biodiesel Supply

Biodiesel Supply Available to Oregon (Existing Suppliers in 2026)		
Locality	Nameplate Capacity (Mil. Gallons)	Number of Facilities
Iowa	215	5
Missouri	122	3
Illinois	120	2
Washington	100	1
Oregon	95	1
Canada	90	2
Oklahoma	35	1
Minnesota	30	1
California	22	1
South Korea	22	2
Michigan	1	1
Total Oregon Suppliers	850	20
Data from Clean Fuels Program.		

Renewable Diesel

As presented below, the potential supply of renewable diesel to Oregon equals 2.7 billion gallons. This compares to a projected volume of renewable diesel in 2027 of 243.9 million gallons, which translates to 9.2 percent of the potential supply.

Table 7: Renewable Diesel Supply

Renewable Diesel Supply Available to Oregon (Existing Suppliers in 2026)		
Locality	Nameplate Capacity (Mil. Gallons)	Number of Facilities
Louisiana	1,008	2
California	607	2
Texas	397	1
Wyoming	261	2
Canada	138	1
New Mexico	132	1
Washington	109	1
Montana	2	1
North Dakota	1	1
Total Oregon Suppliers	2,654	12
Data from the Clean Fuels Program		

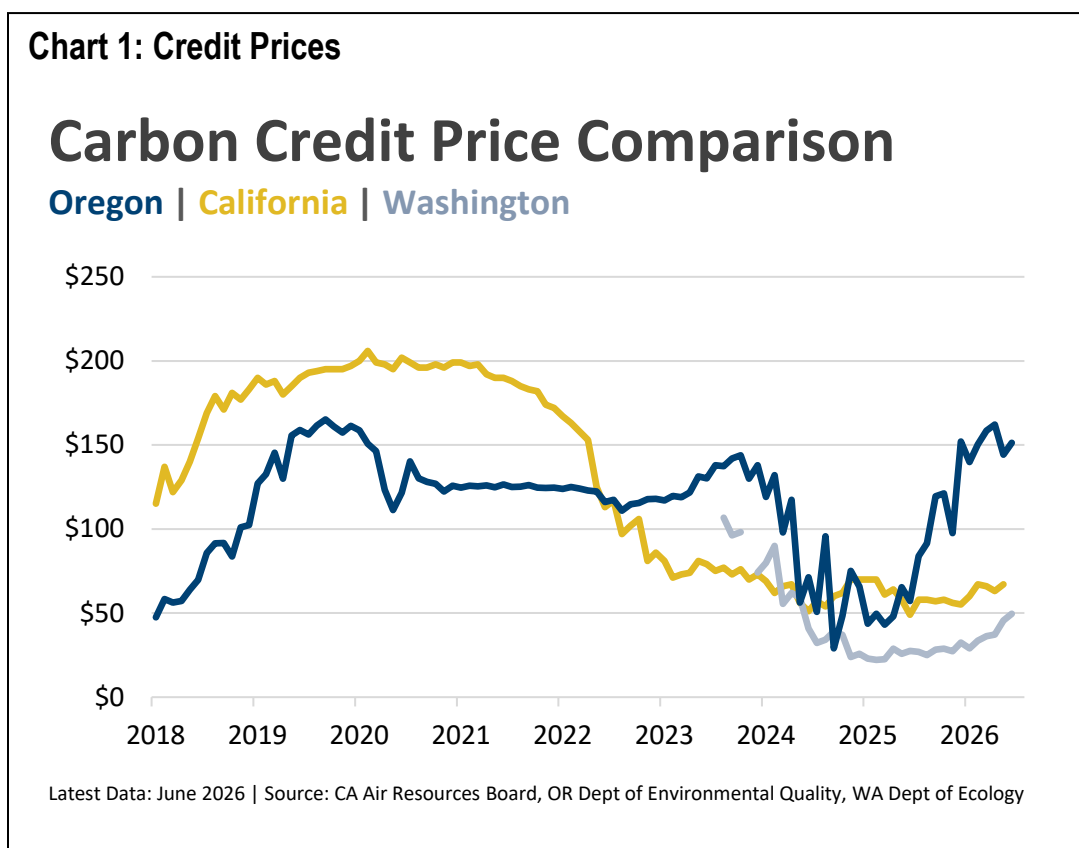
Renewable Natural Gas

The amount of renewable natural gas potentially available to Oregon amounts to 51.8 million gasoline gallon equivalents. This compares to a projected volume for this biofuel of 4.2 million gallons equivalents in 2026, or 8.1 percent of the potential supply.

Table 8: Renewable Natural Gas

Renewable Natural Gas Supply Available to Oregon (Existing Suppliers in 2026)		
Locality	Nameplate Capacity (Mil. Gallons)	Number of Facilities
Pennsylvania	34.4	2
Louisiana	17.4	1
Canada	14.0	1
Texas		
Kansas		
Idaho		
California		
Wisconsin	2.74	4
Washington	0.10	1
New York	0.08	3
Total Oregon Suppliers	51.8	12
Data from the Clean Fuels Program		

Finally, that a particular volume of fuel will make its way to Oregon depends on the relative value of the fuel between Oregon and other states. Currently, the value of credits, which are currently unique to Oregon, California, Washington and British Columbia, add a premium to the market value of the fuel relative to other states and for the most part ensure that sufficient supply will be available to Oregon. Oregon Revised Statutes (2017) chapter 750 section 166 subsection (4) specifies a maximum credit price, indexed for inflation. At some point in the future, this constraint could theoretically pose a barrier to supply. The chart below presents the recent history of the price of credits in Oregon, California and Washington, while British Columbia is omitted due to frequently missing data)².



² Information regarding credit prices is presented for informational purposes only. The reported volumes, credit/deficit and supply forecasts are not dependent on any specific credit price values.

Forecast Risks and Considerations

This section highlights factors and considerations that could cause the projected volumes and associated credits and deficits to deviate from the baseline outlook presented earlier. In particular, there are a few potential risks to this 2027 Clean Fuels Forecast, both positive and negative, and they are:

- (a) The most fundamental risk to the forecast amounts to potential deviations from the assumptions highlighted in each fuel type discussion. Blend rates and carbon intensities for biofuels could be subject to significant error.
- (b) This forecast represents a “current law” representation of the compliance period in question. OEA’s methodology does not take potential future state or federal policy actions into account.
- (c) There is a discrepancy between the diesel consumption numbers reported to the Clean Fuels Program data and the taxable gallons tabulated by ODOT. Explicitly, more gallons of diesel are reported to the former than the latter. This forecast applies projected growth of taxable diesel, at least initially, to the base year 2025 reported volumes of diesel in the CFP. To the degree that taxable gallons per ODOT are not a perfect proxy for reported gallons in the CFP, actual reporting of diesel to the Clean Fuels program, and thereby the number of deficits and credits generated could deviate from this forecast.
- (d) The ethanol availability presented above is not comprehensive and does not include other potential sources, such as sugarcane ethanol imported from Brazil. Given that potential supply characterized in table 5 greatly exceeds the projected 2027 volume, this is not an immediate threat to the forecast. However, it may need to be addressed as consumption increases or as carbon intensity targets are lowered.

In addition, the advisory committee in the past has discussed a couple of considerations outside the scope of the baseline forecast:

- (a) The supply forecast assumes that certified fossil and renewable fuel capacity is potentially available to Oregon fuel distributors and consumers. This depends on several factors, including transportation modalities and storage availability. While stated capacity may be more available in the urban corridor, it may not be universally available in the rural areas of the state. Specifically, storage options are limited outside of the Portland metropolitan region.
- (b) The impact of climactic conditions on the various fuels is another factor that is not explicitly considered in the supply forecast. For example, “cloud point”, i.e. the temperature at which a liquid begins to emulsify and/or solidify, is something that should be considered as biodiesel, renewable diesel and fossil diesel all have different cloud points and ways to address that concern.

Appendix A

Membership of the Clean Fuels Forecast Advisory Committee:

Member Name	Affiliation	Email
Alderson, Greg	PGE	gregory.alderson@pgn.com
Apter, Nora	Oregon Environmental Council	noraa@oeconline.org
Bolte, John	Oregon State University	boltej@engr.orst.edu
Bond Steve	Crimson Sequential	steve.bond@crimsonrenewable.com
Brennan, Patrick H.	OR Leg. Policy and Research	patrick.h.brennan@oregonlegislature.gov
Brooks, Kelly	Oregon Governor's Office	kelly.s.brooks@oregon.gov
Chingos, Thomas	Shell Oil Company	thomas.chingos@shell.com
Constantino, Jon	Tradesman Advisors	jon@tradesmanadvisors.com
Donaca, Sata	Dept. of Transportation	sata.donaca@odot.oregon.gov
Dodds, Marie	Oregon/Idaho AAA	marie.dodds@aaaoregon.com
Freese, Mike	The Romaine Group	mfreese@theromaingroup.com
Garcia Oscar	Neste US, Inc	oscar.garcia@neste.com
Gilstrap, Don	Chevron	dgilstrap@chevron.com
Hart, Jon	Legislative Revenue Office	jonathan.hart@oregonlegislature.gov
Hepp, Elizabeth	Valero	beth.hepp@valero.com
Hoffman, Jessica	RPMG	jwhoffmann@rpmglc.com
Illig, Danielle	Clean Energy Fuels	danielly.illig@cleanenergyfuels.com
Jarvis, Jana	Oregon Trucking Association	jana@ortrucking.org
Kennedy, Michael	Office of Economic Analysis	michael.kennedy@das.oregon.gov
Kleebb, Douglas J.	Dept. of Transportation	douglas.j.kleeb@state.or.us
Koehler, Tom	Alto Columbia	tom@tomkoehler.org
Machado, Antonio	Western States Petroleum Association (WSPA)	amachado@wspa.org
Malik, Mazen G.	Legislative Revenue Office	mazen.g.malik@oregonlegislature.gov
Malsam, Derek	Jubitz	derek.malsam@jubitz.com
Martin, Jeremy	Union of Concerned Scientists	martin@ucsusa.org

Mcconnaha, Colin	Dept. of Environmental Quality	colin.mcconnaha@deq.oregon.gov
Mcdonald, Brian	Andeavor	bcmcdonald@marathonpetroleum.com
McMullen, Mark	Common Sense Institute	mark@csinstituteor.org
Mitrovic, Stefan	Shell Oil Company	stefan.mitrovic@shell.com
Molina, Allen	Dept. of Transportation	allen.molina@odot.oregon.gov
Morgan, Tim	Oregon AAA	tim.morgan@aaaoregon.com
Neal, Shelby	Darling	shelby.neal@darlingii.com
Nowicki, Jesse	RPMG	jnowicki@rpmgllc.com
Noyes, Graham	Noyes Law Corporation	graham@noyeslawcorp.com
Peters, Bill	Dept. of Environmental Quality	bill.n.peters@deq.oregon.gov
Porter, Daniel R.	Dept. of Transportation	daniel.r.porter@odot.oregon.gov
Proudfoot Josh	Good Company	joshua.proudfoot@goodcompany.com
Psareas, Yanni	RNG Coalition	yanni@rngcoalition.com
Riccadonna, Carl	Office of Economic Analysis	carl.riccadonna@das.oregon.gov
Rogers, Evan	Dept. of Transportation	evan.rogers@odot.oregon.gov
Romain, Danelle	The Romaine Group	dromain@theromaingroup.com
Schlusser, Amy	Oregon DOE	amy.schlusser@oregon.gov
Sutton, Julie	Clean Energy Fuels	julie.sutton@cleanenergyfuels.com
Thornton John	Clean Future	john@cleanfuture.us
Van't Hof, David	NEXT, Inc.	vanthofd30@gmail.com
Vellaipandian, Hari	Office of Economic Analysis	hari.vellaipandian@das.oregon.gov
Ventura, Marc	Phillips 66	marc.v.ventura@p66.com
Verburg, Jim	BP	james.verburg@bp.com
Wade, Samuel	RNG Coalition	sam@rngcoalition.com
Wind, Cory-Ann	Clean Fuels Alliance	cwind@cleanfuels.org
Wine, Sean	Clean Energy Fuels	sean.wine@cleanenergyfuels.com

Appendix B

The following are the formulas resulting in the deficits and credits presented in Table 4 of the Clean Fuels Forecast.

Gasoline

$$\text{Deficit}_G = \text{CBOB} * \text{ED}_G * (\text{CIT}_G - \text{CIA}_G) / 1,000,000$$

Diesel

$$\text{Deficit}_D = V_D * \text{ED}_D * (\text{CIT}_D - \text{CIA}_D) / 1,000,000$$

Ethanol

$$\text{Credit}_E = V_E * \text{ED}_E * (\text{CIT}_G - \text{CIA}_E) / 1,000,000$$

Biodiesel

$$\text{Credit}_{BD} = V_{BD} * \text{ED}_{BD} * (\text{CIT}_D - \text{CIA}_{BD}) / 1,000,000$$

Renewable Diesel

$$\text{Credit}_{RD} = V_{RD} * \text{ED}_{RD} * (\text{CIT}_D - \text{CIA}_{RD}) / 1,000,000$$

Electricity

$$\text{Credit}_C = K_C * \text{EER}_C * \text{ED}_C * (\text{CIT}_G - (\text{CIA}_C / \text{EER}_C)) / 1,000,000$$

Natural Gas

$$\text{Credit}_{NG} = V_{FNG} * \text{ED}_D * \text{EER}_{NG} * (\text{CIT}_D - (\text{CIA}_{FNG} / \text{EER}_{NG})) / 1,000,000 + V_{RNG} * \text{ED}_D * \text{EER}_{NG} * (\text{CIT}_D - (\text{CIA}_{RNG} / \text{EER}_{NG})) / 1,000,000$$

Propane

$$\text{Credit}_P = V_P * \text{ED}_P * (\text{CIT}_G - \text{CIA}_P) / 1,000,000$$

Table B.1: Definition of Symbols

Where:	
G = Gasoline	D = Diesel
CBOB = Conventional Blendstock for Oxygenated Blending	E = Ethanol
	BD = Biodiesel
ED = Energy Density	RD = Renewable Diesel
V = Volume consumed	C = Electricity
CIT = Carbon Intensity Target	NG = Natural Gas
CIA = Carbon Intensity Actual	FNG = Fossil Natural Gas
K = Total Kilowatts (Total Electric Vehicles * Kilowatts Per Vehicle per Year)	RNG = Renewable Natural Gas