Table 1 – 340-253-8010

Oregon Clean Fuel Standard for Gasoline and Gasoline Substitutes

Calendar Year	Oregon Clean Fuel Standard (gCO2e per MJ)	Percent Reduction
2015	None (Gasoline Baseline is 98.62 for 2016-2017, 98.64 for 2018, and 98.06 for 2019 and beyond)	
2016*	98.37	0.25 percent
2017	98.13	0.50 percent
2018	97.66	1.00 percent
2019	96.59	1.50 percent
2020	95.61	2.50 percent
2021	94.63	3.50 percent
2022	93.15	5.00 percent
2023	91.68	6.50 percent
2024	90.21	8.00 percent
2025 and beyond	88.25	10.0 percent

*Initial compliance period is a two-year period for 2016 and 2017.

Table 2 – 340-253-8020

Oregon Clean Fuel Standard for Diesel Fuel and Diesel Substitutes

Calendar Year	Oregon Clean Fuel Standard (gCO2e per MJ)	Percent Reduction
2015	None (Diesel Baseline is 99.64 for 2016-2017, 99.61 for 2018, and 98.74 for 2019 and beyond)	
2016*	99.39	0.25 percent
2017	99.14	0.50 percent
2018	98.61	1.00 percent
2019	97.26	1.50 percent
2020	96.27	2.50 percent
2021	95.29	3.50 percent
2022	93.81	5.00 percent
2023	92.32	6.50 percent
2024	90.84	8.00 percent
2025 and beyond	88.87	10.00 percent

*Initial compliance period is a two-year period for 2016 and 2017.

Table 3 – 340-253-8030

Oregon Clean Fuel Standard for Alternative Jet Fuel

Calendar Year	Oregon Clean Fuel Standard (gCO2e per MJ)
2015	None (Diesel Baseline is 99.64 for 2016-2017, 99.61 for 2018, and 98.74 for 2019 and beyond. The fossil jet baseline is 90.97.)
2019	90.80
2020	90.80
2021	90.80
2022	90.80
2023	90.80
2024	90.80
2025 and beyond	88.87

Table 4 – 340-253-8040

Oregon Carbon Intensity Lookup Table

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity Values (gCO2e/MJ)
			Total Lifecycle Emissions
Gasoline	ORGAS001	Clear gasoline - based on a weighted average of gasoline supplied to Oregon	100.14
	ORGAS002	Imported blended gasoline (E10) – 90% clear gasoline & 10% corn ethanol based on Midwest average. Cannot be used to report exports except when the specific gallon was also imported under this fuel pathway code.	98.06
Diesel	ORULSD001	Clear diesel, based on a weighted average of diesel fuel supplied to Oregon	100.74
	ORULSD002	Imported blended diesel (B5) – 95% clear diesel & 5% soybean biodiesel. Cannot be used to report exports except when the specific gallon was also imported under this fuel pathway code.	98.74
	ORULSD003	Imported blended diesel (B20) – 80% clear diesel & 20% soybean biodiesel. Cannot be used to report exports except when the specific gallon was also imported under this fuel pathway code.	92.68
Compressed Natural Gas	ORCNG001	North American NG delivered via pipeline; compressed in OR	79.98
Liquefied Natural Gas	ORLNG001	North American NG delivered via pipeline; liquefied in OR using liquefaction with 80% efficiency	86.88
Liquefied Petroleum Gas	ORLPG001	Liquefied petroleum gas	80.88

Table 4 – 340-253-8040

Oregon Carbon Intensity Lookup Table

Electricity	ORELEC100	Solar power, produced at or directly connected to the site of the charging station in Oregon, subject to OAR 340-253-0470 (3).	0
	ORELEC101	Wind power, produced at or directly connected to the site of the charging station in Oregon, subject to OAR 340-253-0470 (3).	0
Hydrogen	ORHYF	Compressed H2 produced in Oregon from central steam methane reformation of North American fossil-based NG	120.68
	ORHYFL	Liquefied H2 produced in Oregon from central steam methane reformation of North American fossil-based NG	157.29
	ORHYB	Compressed H2 produced in Oregon from central steam methane reformation of biomethane (renewable feedstock) from North American landfills	116.76
	ORHYBL	Liquefied H2 produced in Oregon from central steam methane reformation of biomethane (renewable feedstock) from North American landfills	149.70
	ORHYEG	Compressed H2 produced in Oregon from electrolysis using Oregon average grid electricity	205.38
	ORHYEB	Compressed H2 produced in Oregon from electrolysis using BPA average grid electricity	31.65
	ORHYER	Compressed H2 produced in Oregon from electrolysis using solar- or wind-generated electricity	13.11

Table 5 – 340-253-8050

Summary Checklist of Quarterly Progress and Annual Compliance Reporting Requirements

State of Oregon Department of Environmental Quality

Parameters to Report	Gasoline & Diesel Fuel	Ethanol, Biodiesel & Renewable Diesel	CNG, LNG & LPG	Electricity	Hydrogen & Hydrogen Blends
Company or organization name	x	x	x	x	x
Reporting period	x	x	x	x	x
Fuel pathway code	x	x	x	x	x
Transaction type	x	x	x	x	x
Transaction date	x	x	x	x	x
Business Partner	x	x	x	x	x
Production Company ID and Facility ID	n/a	x	n/a	n/a	x
Physical transport mode code	x	x	x	x	x
Aggregation	x	x	x	x	x
Application / EER	x	x	x	x	x
Amount of each fuel used as gasoline replacement	x	x	x	x	x
Amount of each fuel used as diesel fuel replacement	x	x	x	x	x
*Credits/deficits generated per quarter (MT)	x	x	x	x	x
For Annual Compliance Reporting (in addition to the items above)					
*Credits and Deficits generated per year (MT)	x	x	x	x	x

Table 5 – 340-253-8050

Summary Checklist of Quarterly Progress and Annual Compliance Reporting Requirements

State of Oregon Department of Environmental Quality

*Credits/deficits carried over from the previous year (MT), if any	x	x	x	x	x
*Credits acquired from another party (MT), if any	x	x	x	x	x
*Credits sold to another party (MT), if any	x	x	x	x	x
*Credits retired within LCFS (MT) to meet compliance obligation, if any	x	x	x	x	x

State of Oregon Department of Environmental Quality

Table 6 – 340-253-8060

Oregon Energy Densities of Fuels

Fuel (unit)	MJ/unit
Gasoline (gallon)	122.48 (MJ/gallon)
Diesel fuel (gallon)	134.48 (MJ/gallon)
Compressed natural gas (therm)	105.5 (MJ/therms)
Electricity (kilowatt hour)	3.60 (MJ/kilowatt hour)
Denatured ethanol (gallon)	81.51 (MJ/gallon)
Clear biodiesel (gallon)	126.13 (MJ/gallon)
Liquefied natural gas (gallon)	78.83 (MJ/gallon)
Hydrogen (kilogram)	120.00 (MJ/kilogram)
Liquefied petroleum gas (gallon)	89.63 (MJ/gallon)
Renewable hydrocarbon diesel (gallon)	129.65 (MJ/gallon)
Undenatured anhydrous ethanol (gallon)	80.53 (MJ/gallon)
Alternative Jet Fuel (gal)	126.37 (MJ/gallon)

State of Oregon Department of Environmental Quality

Table 7 – 340-253-8070

Oregon Energy Economy Ratio Values for Fuels

Light/Medium Duty Applications (Fuels used as gasoline replacements)		Heavy-Duty/Off-Road Applications (Fuels used as diesel replacements)		Aviation Applications (Fuels used as jet fuel replacements)	
Fuel/Vehicle Combination	**EER Value Relative to Gasoline**	**Fuel/Vehicle Combination**	**EER Value Relative to Diesel**	**Fuel/Vehicle Combination**	**EER Value relative to conventional jet**
Gasoline (including E10) or any other gasoline-ethanol blend	1	Diesel fuel (including B5) or any other blend of diesel and biodiesel or renewable hydrocarbon diesel	1	Alternative Jet Fuel	1
CNG Internal Combustion Engine Vehicle (ICEV)	1	CNG, LNG, or LPG (Spark-Ignition Engines)	0.9		
Electricity/Battery Electric Vehicle or Plug-In Hybrid Electric Vehicle	3.4	CNG,LNG, or LPG(Compression-Ignition Engines)	1		
Electricity/On-Road Electric Motorcycle	4.4	Electricity/Battery Electric Vehicle or Plug-In Hybrid Electric Vehicle	5		
Propane/Propane Forklift	0.9	Electricity/Battery Electric or Plug-in Hybrid Transit Bus	5		
Hydrogen/Fuel Cell Vehicle	2.5	Electricity/Fixed Guideway Light Rail	3.3		
		Electricity/Fixed Guideway Streetcar	2.1		
		Electricity/Fixed Guideway Aerial Tram	2.6		

Table 7 – 340-253-8070

Oregon Energy Economy Ratio Values for Fuels

	Electricity/Electric Forklift	3.8	
	Electricity/Electric TRU (eTRU)	3.4	
	Hydrogen/Fuel Cell Vehicle	1.9	
	Hydrogen/Fuel Cell Forklift	2.1	

Table 8 – 340-253-8080
Oregon Substitute Fuel Pathway Codes

Fuel	Fuel Pathway code	CI (gCO2e/MJ)
Substitute CI for Ethanol. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not for transportation use, and exempt fuel use.	ETH0116	40
Substitute CI for Biodiesel. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not for transportation use, and exempt fuel use.	BIOD0116	15
Substitute CI for Renewable Diesel. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not for transportation use, and exempt fuel use.	RNWD0116	15
Substitute CI for E10 Gasoline. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not for transportation use, and exempt fuel use.	ORGAS0116	For 2019: 96.59 For 2020 and beyond: 96.00
Substitute CI for B5 Diesel. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not	ORULSD01165	For 2019: 97.26 For 2020 and beyond: 96.71

Table 8 – 340-253-8080
Oregon Substitute Fuel Pathway Codes

for transportation use, and exempt fuel use.		
Substitute CI for B20 Diesel. This pathway may only be used to report transactions that are sales or purchases without obligation, exports, loss of inventory, not for transportation use, and exempt fuel use.	ORULSD011620	84.45

Table 9 – 340-253-8090

Oregon Temporary Fuel Pathway Codes for Fuels with Indeterminate CIs

Fuel	Feedstock	Process Energy	FPC	CI (gCO_2e/MJ)
Ethanol	Corn	Grid electricity, natural gas, and/or renewables	ORETH100T	77.35
	Sorghum	Grid electricity, natural gas, and/or renewables	ORETH101T	93.35
	Sugarcane and Molasses	Bagasse and straw only, no grid electricity	ORETH102T	57.09
	Any starch or sugar feedstock	Any	ORETH103T	100.14
	Corn Stover, Wheat Straw, or Sugarcane Straw	As specified in OR-Greet 2.0	ORETH104T	41.05
Biodiesel	Any feedstock derived from animal fats, corn oil, or a waste stream	Grid electricity, natural gas, and/or renewables	ORBIOD200T	47.30
	Any feedstock derived from plant oils except for Palm-derived oils	Grid electricity, natural gas, and/or renewables	ORBIOD201T	65.03
	Any feedstock	Any	ORBIOD202T	100.74
Renewable Diesel	Any feedstock derived from animal fats, corn oil, or a waste stream	Grid electricity, natural gas, and/or renewables	ORRNWD300T	39.26
	Any feedstock derived from plant oils except for Palm-derived oils	Grid electricity, natural gas, and/or renewables	ORRNWD301T	56.55

Table 9 – 340-253-8090
Oregon Temporary Fuel Pathway Codes for Fuels with Indeterminate CIs

	Any feedstock	Any	ORRNWD302T	100.74
Biomethane CNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORCNG500T	63.96
	Municipal Wastewater sludge, Food Waste, Green Waste, or Other Organic Waste	Grid electricity, natural gas, and/or parasitic load	ORCNG501T	50
Biomethane LNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORLNG501T	80.44
	Municipal Wastewater sludge, Food Waste, Green Waste, or Other Organic Waste	Grid electricity, natural gas, and/or parasitic load	ORLNG502T	65
Biomethane L-CNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORLCNG502T	84.65
	Municipal Wastewater sludge, Food Waste, Green Waste, or Other Organic Waste	Grid electricity, natural gas, and/or parasitic load	ORLCNG503T	70
Biomethane CNG, LNG, L-CNG	Dairy Manure	Grid electricity, natural gas, and/or parasitic load	ORLCNG504T	-150
Electricity	Coal, Natural Gas, Hydroelectric Dams, Wind Mills, etc.	Oregon average electricity mix	ORELEC600T	135.00

Table 9 – 340-253-8090
Oregon Temporary Fuel Pathway Codes for Fuels with Indeterminate CIs

Any Gasoline Substitute Feedstock-Fuel Combination Not Included Above	Any	Any	ORSG800T	100.14
Any Diesel Substitute Feedstock-Fuel Combination Not Included Above	Any	Any	ORSD801T	100.74

Table 10 – 340-253-8100

Oregon Summary of Indirect Land-Use Change Values for Crop-Based Biofuels

Feedstock	ILUC Value (gCO_2e/MJ)
Corn Ethanol	7.60
Sorghum Ethanol	19.40
Sugarcane Ethanol	11.80
Soybean Biodiesel or Renewable Diesel	29.10
Canola Biodiesel or Renewable Diesel	14.50
Palm Biodiesel or Renewable Diesel	71.40