340-253-8010

Table 1 — Oregon Clean Fuel Standard for Gasoline and Gasoline Substitutes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)

Oregon Department of Environmental Quality 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 beyond)	
2016*	98.37	0.25 percent
2017	98.13	0.50 percent
2018	97.663	1.00 percent
2019	97.164	1.50 percent
2020	96.185	2.50 percent
2021	95.197	3.50 percent
2022	93.7169	5.00 percent
2023	92.231	6.50 percent
2024	90.753	8.00 percent
2025 and beyond	88.786	10.0 percent

*Initial compliance period is a two-year period for 2016 and 2017. ~~The 2016 standard is to be used only to calculate deficits and credits in 2016 under OAR 340-253-2010.~~

340-253-8020

Table 2 — Oregon Clean Fuel Standard for Diesel Fuel and Diesel Substitutes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)

State of Oregon Department of Environmental Quality 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, and 99.61 for 2018 and beyond)	
2016*	99.39	0.25 percent
2017	99.14	0.50 percent
2018	98.614	1.00 percent
2019	98.125	1.50 percent
2020	97.125	2.50 percent
2021	96.125	3.50 percent
2022	94.636	5.00 percent
2023	93.146	6.50 percent
2024	91.647	8.00 percent
2025 and beyond	89.658	10.00 percent

*Initial compliance period is a two-year period for 2016 and 2017. ~~The 2016 standard is to be used only to calculate deficits and credits in 2016 under OAR 340-253-2010.~~

340-253-8030

Table 3 — Oregon Carbon Intensity Lookup Table for Gasoline and Gasoline Substitutes

Oregon Department of Environmental Quality Table 3 – 340-253-8030 **Oregon Carbon Intensity Lookup Table for Gasoline and Gasoline Substitutes**					
Fuel	**Pathway Identifier**	**Pathway Description**	**Carbon Intensity Values (gCO2e/MJ)**		
			Direct Lifecycle Emissions	**Land Use or Other Indirect Effect**	**Total Emissions**
Gasoline	ORGAS001	Clear gasoline - based on a weighted average of gasoline supplied to Oregon	100.77	-	100.77
	ORGAS002	Blended gasoline (E10) - 90% clear gasoline & 10% corn ethanol based on Midwest average	98.~~54~~64	-	98.~~54~~64
Compressed Natural Gas	ORCNG001	North American NG delivered via pipeline; compressed in OR	79.93	-	79.93
Liquefied Natural Gas	ORLNG001	North American NG delivered via pipeline; liquefied in OR using liquefaction with 80% efficiency	94.46	-	94.46
Liquefied Petroleum Gas	ORLPG001	Liquefied petroleum gas	83.05	-	83.05
Electricity	ORELEC100	Solar power, produced at or directly connected to the site of the charging station in	0		0

Oregon Department of Environmental Quality Table 3 – 340-253-8030 **Oregon Carbon Intensity Lookup Table for Gasoline and Gasoline Substitutes**					
		Oregon subject to OAR 340-253-0470 (3).			
	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		0

~~**NOTE**: DEQ recognizes that indirect effects, including indirect land use change, are real. However the methodologies to quantify these effects are still in development. DEQ intends to monitor the science of indirect effect and will adjust carbon intensity values through future rulemaking as methodologies improve.~~

340-253-8040

Table 4 — Oregon Carbon Intensity Lookup Table for Diesel and Diesel Substitutes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)

Oregon Department of Environmental Quality Table 4 – 340-253-8040 **Oregon Carbon Intensity Lookup Table for Diesel and Diesel Substitutes**					
Fuel	**Pathway Identifier**	**Pathway Description**	**Carbon Intensity Values (gCO2e/MJ)**		
			Direct Lifecycle Emissions	**Land Use or Other Indirect Effect**	**Total Emissions**
Diesel	ORULSD001	Clear diesel, based on a weighted average of diesel fuel supplied to Oregon	101.65	-	101.65
	ORULSD002	Blended diesel (B5) - 95% clear diesel & 5% soybean biodiesel	99.~~64~~61	-	99.~~64~~61
	ORULSD003	Blended diesel (B20) – 80% clear diesel & 20% soybean biodiesel	93.41		93.41

Oregon Department of Environmental Quality Table 4 – 340-253-8040 **Oregon Carbon Intensity Lookup Table for Diesel and Diesel Substitutes**					
Compressed Natural Gas	ORCNG001	North American NG delivered via pipeline; compressed in OR	79.93	-	79.93
Liquefied Natural Gas	ORLNG001	North American NG delivered via pipeline; liquefied in OR using liquefaction with 80% efficiency	94.46	-	94.46
Liquefied Petroleum Gas	ORLPG001	Liquefied petroleum gas, crude and natural gas mix	83.05	-	83.05
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		0
	ORELEC101	Wind power, produced at the site of the charging station in Oregon, subject to	0		0

Oregon Department of Environmental Quality Table 4 – 340-253-8040 **Oregon Carbon Intensity Lookup Table for Diesel and Diesel Substitutes**					
		OAR 340-253-0470 (3).			

340-253-8050

Table 5 - Summary Checklist of Quarterly Progress and Annual Compliance Reporting Requirements

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)
~~Stat. Auth.: ORS 468.020 Sec. 6, ch. 754, OL 2009, (2011 Edition)~~
~~Stats. Implemented: Sec. 6, ch. 754, OL 2009, (2011 Edition)~~

Oregon Department of Environmental Quality Table 5 – 340-253-8050 **Summary Checklist of Quarterly Progress and Annual Compliance Reporting Requirements**					
Parameters to Report	**Gasoline & Diesel Fuel**	**Ethanol & Biodiesel & Renewable Diesel**	**CNG, LNG~~,~~ & LPG ~~& Renewable Diesel~~**	**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

Oregon Department of Environmental Quality

Table 5 – 340-253-8050

Summary Checklist of Quarterly Progress and Annual Compliance Reporting Requirements

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
*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

*Values will be calculated and stored in the CFP Online System.

340-253-8060 ~~(Former 340-253-3030)~~

Table 6 - Oregon Energy Densities of Fuels

Stat. Auth.: ORS 468A.275~~020 Sec. 6, ch. 754, OL 2009~~, (2015~~1~~ Edition)
Stats. Implemented: ORS 468A.275~~Sec. 6, ch. 754, OL 2009~~, (~~2011~~ 2015 Edition)

Oregon Department of Environmental Quality

Table 6 – 340-253-8060

Oregon Energy Densities of Fuels

Fuel (unit~~s~~)	MJ/unit
Gasoline (gallon)	~~116.09~~122.48 (MJ/gallon)
Diesel fuel (gallon)	134.48~~29.49~~ (MJ/gallon)
Compressed natural gas (standard cubic ~~feet~~foot)	~~0.98~~1.04 (MJ/standard cubic foo~~ee~~t)
Electricity (kilowatt hour)	3.60 (MJ/kilowatt hour)
Denatured ethanol (gallon)	81.51 (MJ/gallon)
Clear biodiesel (gallon)	126.13~~19.55~~ (MJ/gallon)
Liquefied natural gas (gallon~~s~~)	~~76.84~~78.83 (MJ/gallon)
Hydrogen (kilogram~~s~~)	123.00 (MJ/kilogram)
Liquefied petroleum gas (gallon~~s~~)	~~96~~89.63~~5~~ (MJ/gallon)
Renewable hydrocarbon diesel (gallon)	129.65 (MJ/gallon)
Pure methane (standard cubic foot)	1.02 (MJ/standard cubic foot)
Undenatured anhydrous ethanol (gallon)	80.53 (MJ/gallon)

340-253-8070 ~~(Former 340-253-3040)040~~

Table 7 - Oregon Energy Economy Ratio Values for Fuels Used as Gasoline Substitutes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)
~~Stat. Auth.: ORS 468.020 Sec. 6, ch. 754, OL 2009, (2011 Edition)~~
~~Stats. Implemented: Sec. 6, ch. 754, OL 2009, (2011 Edition)~~

Oregon Department of Environmental Quality

Table 7 – 340-253-8070

Oregon Energy Economy Ratio Values for Fuels Used as Gasoline Substitutes

Fuel/Vehicle Combination	EER Value Relative to Gasoline
Gasoline (including E10) or any other ethanol blend	1.0
Compressed Natural Gas (CNG) or Internal Combustion Engine Vehicle (ICEV)	1.0
Electricity~~,~~ /Battery Electric Vehicle or Plug-In Hybrid Electric Vehicle	3.4
Hydrogen ~~or~~/ Fuel Cell Vehicle	2.5

340-253-8080 ~~(Former 340-253-3050)~~

Table 8 – Oregon Energy Economy Ratio Values for Fuels Used as Diesel Substitutes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)
~~Stat. Auth.: ORS 468.020 Sec. 6, ch. 754, OL 2009, (2011 Edition)~~
~~Stats. Implemented: Sec. 6, ch. 754, OL 2009, (2011 Edition)~~

Oregon Department of Environmental Quality

Table 8 – 340-253-8080

Oregon Energy Economy Ratio Values for Fuels Used as Diesel Substitutes

Fuel/Vehicle Combination	EER Value Relative to Diesel
Diesel fuel (including B5) or other biodiesel or renewable hydrocarbon diesel blends	1.0
Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) (Spark-Ignition Engines)	0.9
Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) (Compression-Ignition Engines)	1.0
Electricity~~,~~ /Battery Electric Vehicle or Plug-In Hybrid Electric Vehicle	2.7
Electricity/Battery Electric or Plug-in Hybrid Transit Bus	4.2
Electricity/Fixed Guideway Light Rail	3.3
Electricity/Fixed Guideway Streetcar	2.1
Electricity/Fixed Guideway Aerial Tram	2.5
Hydrogen/ ~~or~~ Fuel Cell Vehicle	1.9

NEW TABLE 340-253-8090

Table 9 – Temporary Fuel Pathway Codes

Stat. Auth.: ORS 468A.275, (2015 Edition)
Stats. Implemented: ORS 468A.275, (2015 Edition)

Oregon Department of Environmental Quality 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	100.77
	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 oils	Grid electricity, natural gas, and/or renewables	ORBIOD201T	65.03
	Any feedstock	Any	ORBIOD202T	101.65

Oregon Department of Environmental Quality Table 9 – 340-253-8090 **Oregon Temporary Fuel Pathway Codes for Fuels with Indeterminate CIs**				
Renewable Diesel (UOP Process)	Any feedstock derived from animal fats, corn oil, or a waste stream~~Any feedstock derived from animal fats~~	Grid electricity, natural gas, and/or renewables	ORRNWD300T	39.26
	Any feedstock derived from plant oils except for Palm oils~~Any feedstock derived from plant oils~~	Grid electricity, natural gas, and/or renewables	ORRNWD301T	56.55
	Any feedstock	Any	ORRNWD302T	101.65
Fossil CNG	Petroleum Natural Gas	N/A	ORCNG400T	
Fossil LNG	Petroleum Natural Gas	N/A	ORLNG401T	
Fossil L-CNG	Petroleum Natural Gas	N/A	ORLCNG402T	
Liquefied Petroleum Gas	Liquefied petroleum gas	N/A	ORLPG403T	-
Biomethane CNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORCNG500T	63.96
Biomethane LNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORLNG501T	80.44
Biomethane L-CNG	Landfill or Digester Gas	Grid electricity, natural gas, and/or renewables	ORLCNG502T	84.65

Oregon Department of Environmental Quality Table 9 – 340-253-8090 **Oregon Temporary Fuel Pathway Codes for Fuels with Indeterminate CIs**				
Electricity	Coal, Natural Gas, Hydroelectric Dams, Wind Mills ~~mills~~, etc.	Oregon average electricity mix	ORELEC600T	135.00
Any Gasoline Substitute Feedstock-Fuel Combination Not Included Above	Any	Any	ORSG800T	100.77
Any Diesel Substitute Feedstock-Fuel Combination Not Included Above	Any	Any	ORSD801T	101.65

NEW TABLE 340-253-8100

Oregon Department of Environmental Quality 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

Oregon Department of Environmental Quality

Table 10 – 340-253-8100

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

Sugarcane ~~Ethanol~~	11.80
Soybean ~~Biodiesel, Renewable Hydrocarbon Diesel~~	29.10
Canola ~~Biodiesel, Renewable Hydrocarbon Diesel~~	14.50
Palm ~~Biodiesel, Renewable Hydrocarbon Diesel~~	71.40