

Air Emissions and Noise



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*Regulatory Framework: Air Emission Permits

	Federal	State
Construction	NSR/PSD, NSPS	ACDP
Operating	NESHAPS	Title V, GHG Reporting, Acid Rain Program

- Prevention of Significant Deterioration (PSD) from major new sources through a New Source Review (NSR)*
- New Source Performance Standards (NSPS) - sets limits for criteria pollutants in specific source categories
- Air Contaminant Discharge Permits (ACDP)
 - Defines Plant Site Emission Limits
 - Application submitted September, 2017

*Regulatory Framework: Air Emission Permits

	Federal	State
Construction	NSR/PSD, NSPS	ACDP
Operating	NESHAPS	Title V, GHG Reporting, Acid Rain Program

- Title V
 - Application to be filed 12 months after commissioning
- National Emissions Standard for Hazardous Air Pollutants (NESHAPS)
 - Requirements for Natural Gas Turbines stayed by CFR 63.6095(d), therefore no additional requirements

Regulatory Framework: Air Emissions

The over all project must not contribute to a degradation in air quality that results in an exceedance of the national ambient air quality standards (NAAQS)

Regulated pollutants with a national ambient air quality standard (NAAQS) are

Criteria Pollutants:
GHG, NO_x, SO₂, HAPs, VOCs, PM, CO

Criteria Pollutants: Green House Gases, GHG

"GHGs are gasses that trap heat in the atmosphere" - EPA

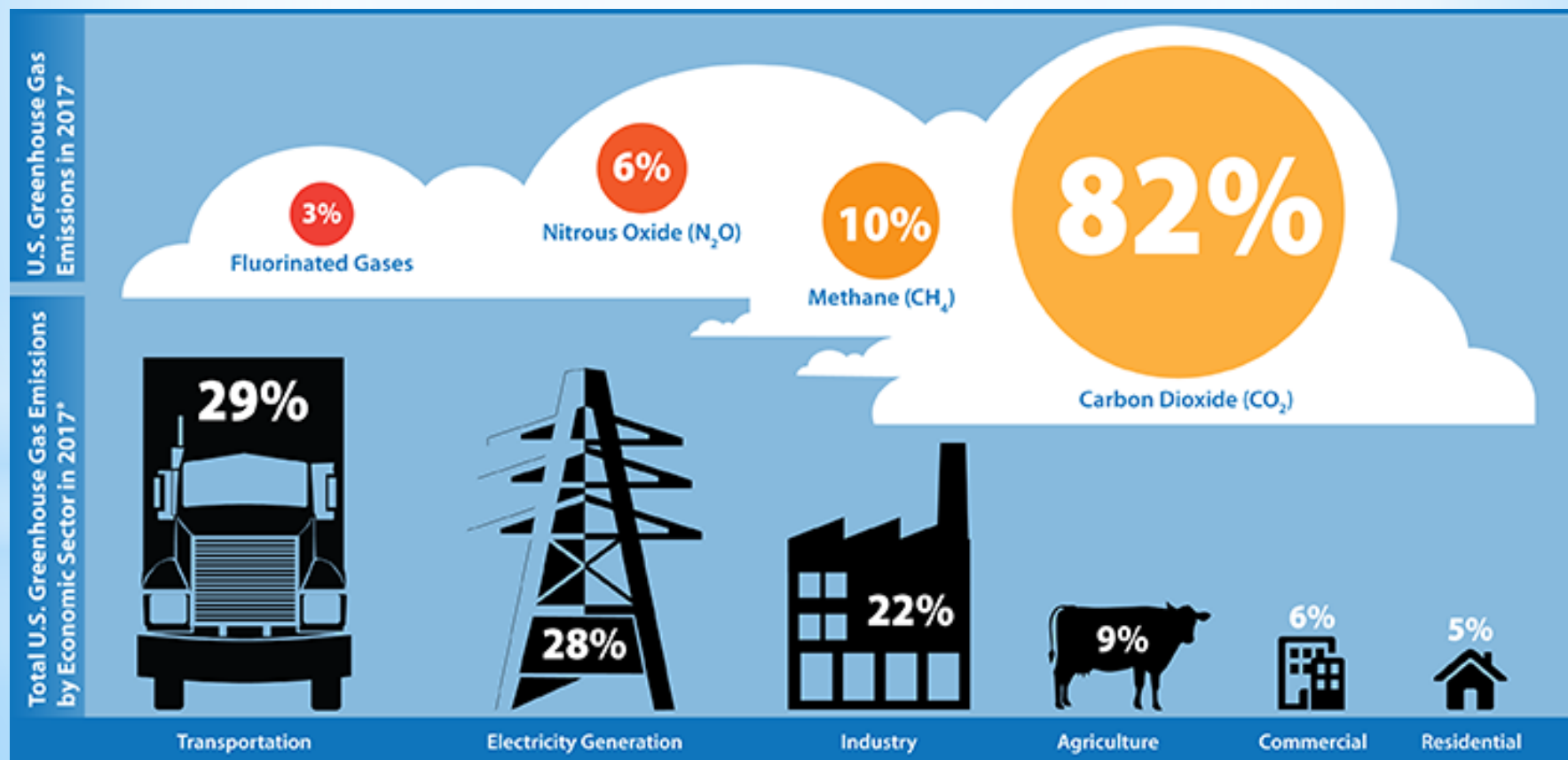
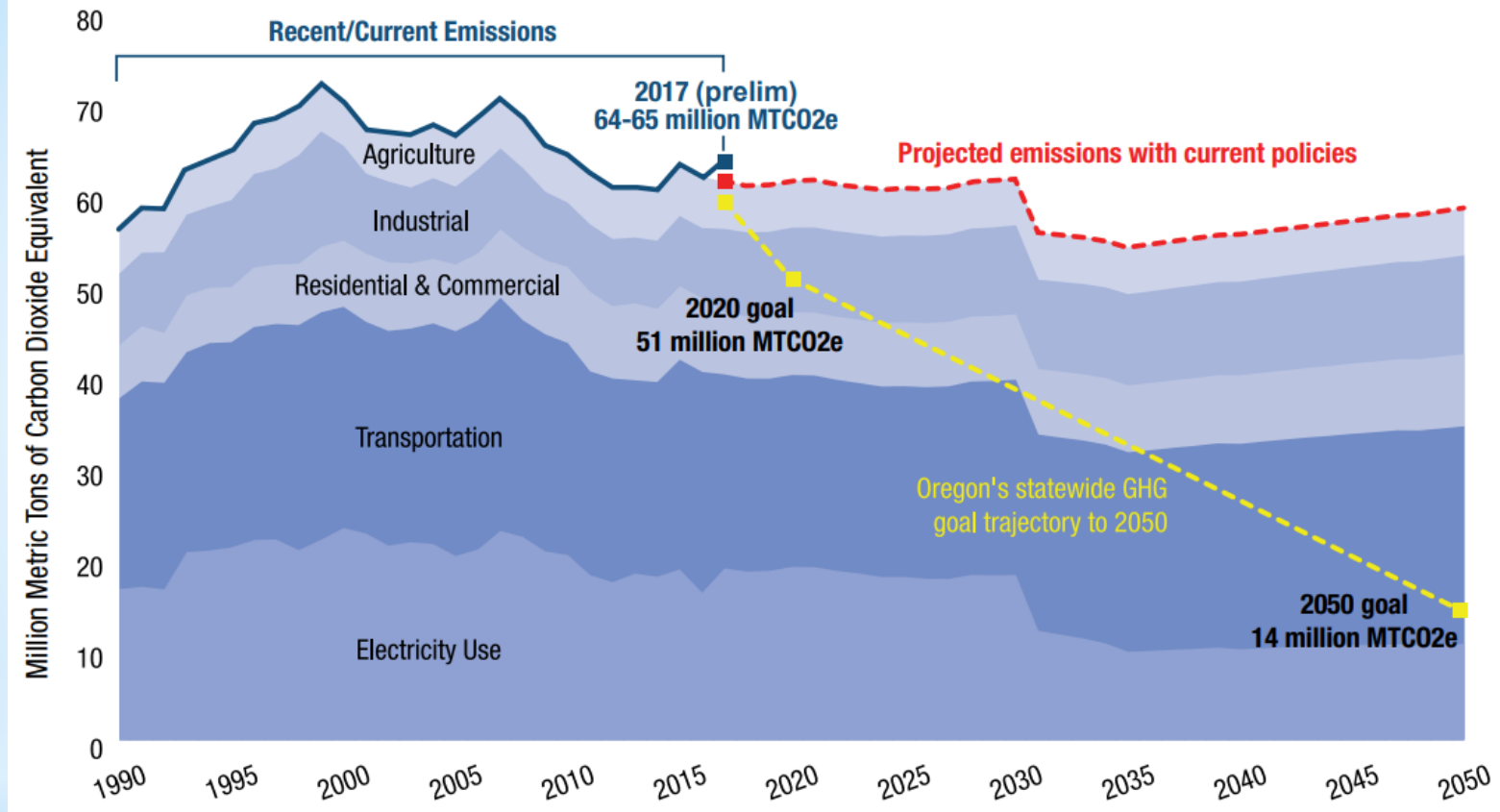


Figure 8. Oregon past and projected greenhouse gas emissions compared to goals



* 2018 Oregon Global Warming Commission report

The projected combined annual emissions of GHG of JCE and PCP is either:
36.8 million MTCO2e - OIL Change International JC LNG and PCP GHG Emissions Briefing Jan, 2018

OR

2.4 million MTCO2e - EIS

OR

?

Regulatory Framework revisited

GHG as Listed in EIS

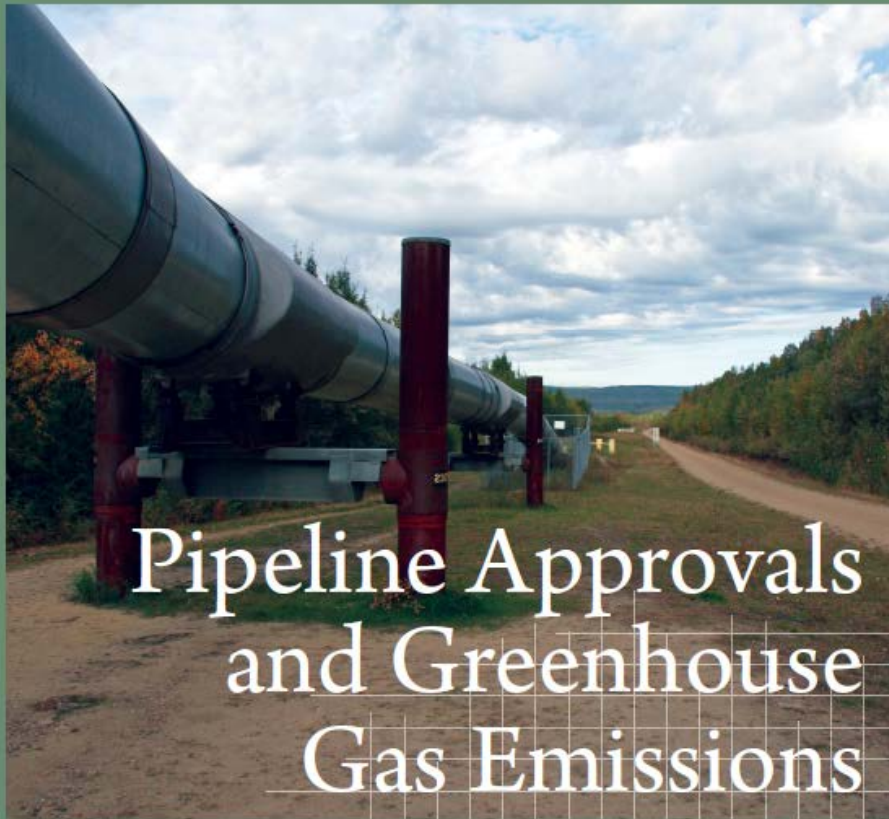
Source	Period	Source	Qty (MTCO2e)	
Table 4.12.1.3-1	5 years Construction	JCE Terminal	1.1	
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	2	*
Table 4.12.1.4-1	Construction	PCP and Compressor Station	0.05	
Table 4.12.1.4-2	Operations, Annual	PCP and Compressor Station	0.4	*

GHG as Modeled by Oil Change International

Table 1: Lifecycle GHG Emissions from Jordan Cove LNG and Pacific Connector Pipeline

Lifecycle Stage	Reference Case (MMT/Y)	
Gas Production	10.9	
Gas Processing	0.51	
Pipeline Transport to Jordan Cove	0.78	*
Gas Liquefaction	1.8	*
Tanker Transport	0.44	
LNG Gasification	0.40	
Foreign Transmission & Storage	1.3	
Foreign Distribution	0.43	
Combustion	20.2	
Total	36.8*	

Note: Oil Change International Model does not account for offsets from coal replacement.



“ FERC has a legal obligation to analyze and consider upstream and downstream greenhouse gas emissions.....

As of April 2019, FERC is reevaluating its approach to considering certificate applications.....”



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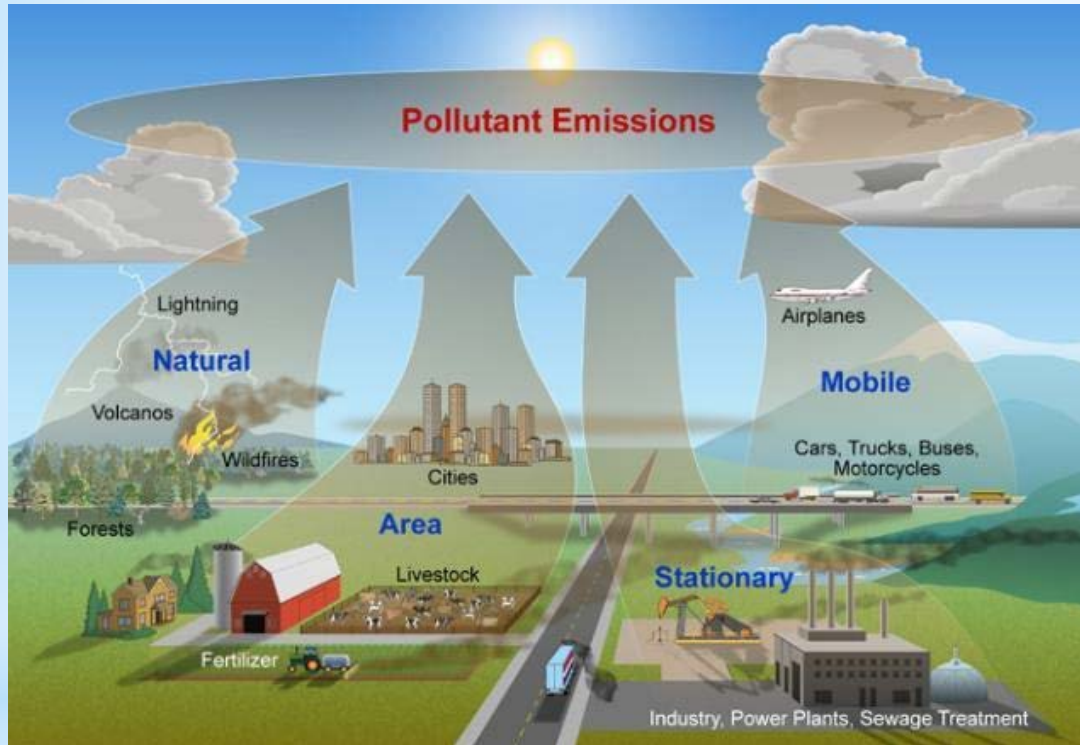
April 2019
Jayni Hein
Jason Schwartz
Avi Zevin

Regulatory Framework: Air Emissions

- *Prevention of Significant Deterioration (PSD) New Source Review(NSR) Permits : Authorize major sources of pollutants.
- * The current JCE design no longer qualifies as a major PSD source.
- * Criteria pollutant emissions from the Pacific Connector Pipeline Project compressor station would be well below major source thresholds.
- * Although GHGs are above thresholds for the PCP, the Supreme Court made a ruling on June 23, 2014 (Utility Air Regulatory Group [UARG] v. EPA [No. 12-1146]) that effectively disallowed the triggering of NSR/PSD based on the significance of GHG emissions alone.
- * Therefore, the Pacific Connector Pipeline Project is not expected to trigger NSR/PSD. - EIS

* Criteria Pollutants: Hazardous Air Pollutants (HAP)

HAPs are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.



Operating levels are below
Title V Operating Permit
threshold

NESHAP is stayed for
Natural Gas Turbines

Source	Period	Source	Qnty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	37.5
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	8.1
Table 4.12.1.4-1	Construction	PCP and Compressor Station	13.8
Table 4.12.1.4-1	Operations, Annual	PCP and Compressor Station	3.3

* Criteria Pollutants: Volatile organic compounds (VOCs)



Title V Operating Permit

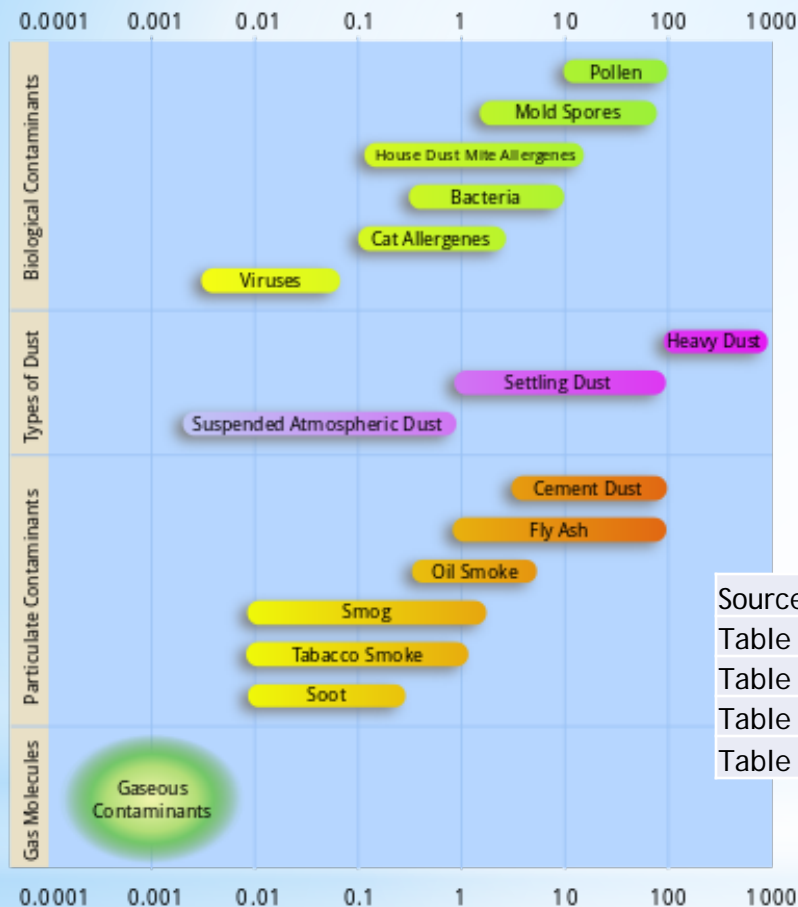
Potential for New Source Performance Standards @ Compressor Station

VOCs are emitted as gases from certain solids or liquids and include a variety of chemicals, some of which may have short- and long-term adverse health effects. - EPA

Harmful VOCs typically are not acutely toxic, but have compounding long-term health effects. Because the concentrations are usually low and the symptoms slow to develop, research into VOCs and their effects is difficult. - Wikipedia

Source	Period	Source	Qnty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	167
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	80
Table 4.12.1.4-1	Construction	PCP and Compressor Station	17
Table 4.12.1.4-2	Operations, Annual	PCP and Compressor Station	19

Criteria Pollutants: Particulate Matter (PM10/PM2.5)



Both trigger
Title V

PM₁₀

Source	Period	Source	Qty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	997
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	124
Table 4.12.1.4-1	Construction	PCP and Compressor Station	324
Table 4.12.1.4-1	Operations, Annual	PCP and Compressor Station	17

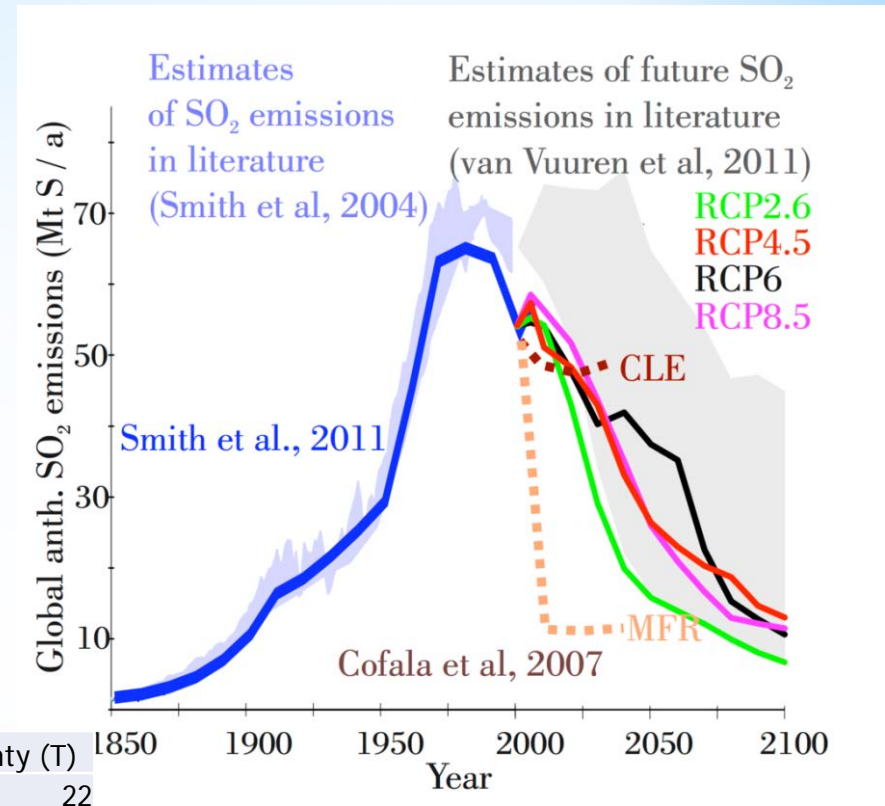
PM_{2.5}

Source	Period	Source	Qty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	311
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	124
Table 4.12.1.4-1	Construction	PCP and Compressor Station	180
Table 4.12.1.4-1	Operations, Annual	PCP and Compressor Station	17.4

* Criteria Pollutants: Sulfur Dioxide (SO₂)

The concentration of sulfur dioxide in the atmosphere can influence the habitat suitability for plant communities, as well as animal life.

Sulfur dioxide emissions are a precursor to acid rain and atmospheric particulates.



Source	Period	Source	Qty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	22
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	69
Table 4.12.1.4-1	Construction	PCP and Compressor Station	9
Table 4.12.1.4-2	Operations, Annual	PCP and Compressor Station	9

The Cofala et al. estimates are for sensitivity studies on SO₂ emission policies,
CLE: Current Legislation,
MFR: Maximum Feasible Reductions.
RCPs (Representative Concentration Pathways) are used in CMIP5 simulations for latest (2013-2014) IPCC 5th assessment report.

*Criteria Pollutants: Nitrous Oxide (NO₂)

Nitrous oxide is a greenhouse gas usually produced during the combustion of fuels.

NO_x + VOCs + sunlight = photochemical smog
a form of air pollution.

NO₂ + Ozone + H₂O = Acid Rain



Title V

NSPS for

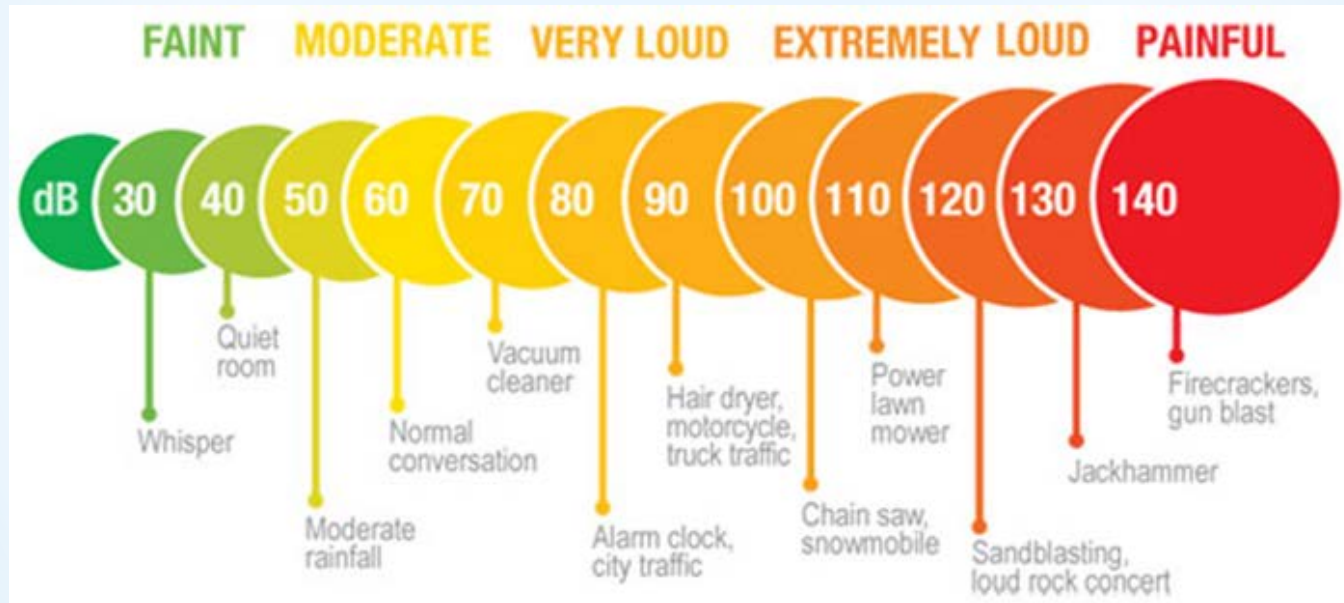
- Turbines
- Auxiliary Boiler
- Generator

Source	Period	Source	Qty (T)
Table 4.12.1.3-1	5 years Construction	JCE Terminal	1139
Table 4.12.1.3-2	Operations, Annual	JCE Terminal	215
Table 4.12.1.4-1	Construction	PCP and Compressor Station	140
Table 4.12.1.4-2	Operations, Annual	PCP and Compressor Station	147

EIS Conclusion on Air Emissions:

- * National Emissions Standard for Hazardous Air Pollutants (NESHAPS) stayed for Nat Gas Turbines
 - * NSR/PSD triggering disallowed based on the significance of GHG emissions alone
 - * Project approval will require compliance with New Source Performance Standards (NSPS) for specific equipment
-
- * ACDPermit will set define Plant Site Emission Limits
 - * Title V Operating Permit will follow commissioning
 - * ? How does this fit with Oregon's GHG goals & pending Climate Authority?

Noise



constant sound level of less than 48.6 dBA Leq would ensure compliance with the FERC requirement limiting the Ldn at the nearest NSAs to less than or equal to 55 dBA.

TABLE 4.12.2.1-1				
Oregon Noise Limits For Industrial and Commercial Noise Sources				
Percentile Noise Level In Any One Hour	Noise-Sensitive Properties Located Outside Designated Quiet Areas		Within Designated Quiet Areas at a Point 400 Feet or More from the Noise Source	
	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.
L ₅₀	55 dBA	50 dBA	50 dBA	45 dBA
L ₁₀	60 dBA	55 dBA	55 dBA	50 dBA
L ₀₁	75 dBA	60 dBA	60 dBA	55 dBA
Notes: The noise limits in this table do not apply to noise from construction sites, agricultural or forestry operations, vehicle traffic, rail traffic, aircraft operations, and various other exempt sources.				
Source: OAR 340-035-0035(1)(a), 340-035-0035(1)(b), and 340-035-0035(1)(c).				

City of North Bend prohibits making of “unnecessary noise” however daytime construction activity between 7 a.m. and 6 p.m. is exempt.

Construction Related Noise Levels

TABLE 4.12.2.3-2							
Predicted Pile Driving Noise Levels at NSAs (dBA)							
Receptor	Ambient L_{dn}	Pile Driving Noise Level, Daytime, L_d	Pile Driving Noise Level, Nighttime, L_n	Pile Driving Noise Level, L_{dn}	Future Combined Level, L_{dn}	Increase over Ambient, L_{dn}	Predicted Maximum Level, L_{max}
NSA 1	53	54	53	60	61	8	65
NSA 2	65	39	38	45	65	<1	55
NSA 3	56	42	42	48	57	1	60
REC 1	55	51	51	57	59	4	69

Exceeds Federal and State standards.

Monitoring, potential cessation until mitigation has been installed and approved has been recommended.

Construction Related Noise Levels

Horizontal Directional Drilling

TABLE 4.12.2.4-1				
Ambient Noise Levels for the Pacific Connector HDD Sites Measured at Nearby NSAs				
Crossing	Measurement Location	Daytime L_{eq} , dBA	Nighttime L_{eq} , dBA	Ambient L_{dn} , dBA
Coos Bay East and West Entry	Measurement Site #1	63	46	61
	Measurement Site #2	65	46	63
MP25 (BPA Powerline Corridor)	NSA #1	54	49	56
	NSA #2	43	45	51
Coos River	NSA #1	65	35	63
	NSA #2	65	38	63
	NSA #3	60	41	58
	NSA #4	60	37	58
South Umpqua	NSA #1	53	50	57
	NSA #2	63	59	66
	NSA #3	57	51	59
	NSA #4	62	53	63

Exceeds Federal and State standards in some areas. Alternate construction methods may be deployed but are not required.

Horizontal Directional Drilling

TABLE 4.12.2.4-1 (continued)				
Ambient Noise Levels for the Pacific Connector HDD Sites Measured at Nearby NSAs				
Crossing	Measurement Location	Daytime L_{eq} , dBA	Nighttime L_{eq} , dBA	Ambient L_{dn} , dBA
Rogue River	NSA #1	46	35	46
	NSA #2	46	35	46
	NSA #3	46	35	46
	NSA #4	46	35	46
	NSA #5	54	35	52
	NSA #6	36	35	42
	NSA #7	45	35	45
Klamath River	NSA #1	62	46	61
	NSA #2	57	47	57
	NSA #3	53	43	53

Exceeds Federal and State standards in some areas. Alternate construction methods may be deployed but are not required.

TABLE 4.12.2.3-4

Predicted Project Noise Emissions at NSAs compared to Regulatory Limits for Jordan Cove LNG Project (dBA)

Receptor	Predicted Project Sound Level (L_{eq})	2017 Nighttime Measured 1-hour L_{eq}/L_{50}	Increase Over Existing Ambient	Predicted Project Sound Level (L_{dn})	Existing Ambient L_{dn}	Future Level (Project + Ambient)	Increase Over Existing Ambient
NSA 1	45	44	1	51	53	55	2
NSA 2	37	58	0	43	65	65	<1
NSA 3	43	40	3	49	56	57	1
REC 1	49	48	1	55	55	58	3

Exceeds federal and state standards in some locations, however background ambient levels are elevated.

Noise Conclusion:

Pile driving and directional drilling activities will result in exceedances of state and federal noise standards.

EIS recommends:

- * daytime noise monitoring during pile driving -
 - * if impacts are 10 dBA over ambient they should cease pile-driving,
 - * install noise mitigation and seek authorization to resume.
- * Noise surveys 60 days after liquefaction activities have commenced to ensure that levels are below 55 dBA at nearest noise sensitive area

