Lane Regional Air Protection Agency
Standard Air Contaminant Discharge Permit

REVIEW REPORT

NW Pipeline LLC – Eugene Compressor Station **Permit No. 205811**
85166 North Hideaway Hills Road
Eugene, Oregon 97405
Website: https://www.northwest.williams.com/

Source Information:

Primary SIC	4922 – Natural Gas Transmission
Secondary SIC	--
Primary NAICS	486210 – Pipeline Transportation of Natural Gas
Secondary NAICS	--
Source Categories (LRAPA Title 37, Table 1)	B:75. – All other sources which would have actual emissions, if the source were to operate uncontrolled, 10 or more tons per year of any single criteria pollutant C:3. – All sources electing to maintain the source's netting basis
Public Notice Category	III

Compliance and Emissions Monitoring Requirements:

Unassigned Emissions	N	Source Test [date(s)]	Annually - NOx, SO_2
Emission Credits	N	COMS	N
Special Conditions	N	CEMS	N
Compliance Schedule	N	Ambient monitoring	N

Reporting Requirements

Annual Report (due date)	March 15	Monthly Report (due dates)	N
SACC (due date)	N	Excess Emissions Report	N
GHG Report (due date)	N	Other Reports (due date)	N
NSPS Report (due date)	N		

Air Programs

NSPS (list subparts)	GG, KKKK
NESHAP (list subparts)	JJJJ, ZZZZ
CAM	N
Regional Haze (RH)	N
Synthetic Minor (SM)	N
SM-80	N
Title V	N
Part 68 Risk Management	N
ACDP (SIP)	N
Major FHAP Source	N
Federal Major Source	N
New Source Review (NSR)	N
Prevention of Significant Deterioration (PSD)	N
Acid Rain	N
Clean Air Mercury Rule (CAMR)	N
TACT	N

Permittee Identification

1. Northwest Pipeline LLC ("the facility") operates a natural gas compressor station at 85166 Hideaway Hills Road in Eugene, Oregon that is owned by the Williams Corporation.

General Background

2. The facility operates two natural gas-fired combustion turbines, one of which is portable, and a natural gas blowdown stack. The facility is used primarily to compress natural gas and exert pressure in the 16-inch natural gas pipeline that terminates in Grants Pass, Oregon. By the time the gas reaches the Eugene facility, there is typically sufficient pressure in the pipeline system provided by the compressor stations upstream to propel the gas. The facility only runs during certain times of the day and/or year when natural gas demand is high and/or temperatures are cold enough such that additional pressure is needed.

Reasons for Permit Action and Fee Basis

3. The facility operates a process listed in LRAPA Title 37, Table 1, Part B (B.75, All other sources, both stationary and portable, not listed herein which would have actual emissions, if the source were to operate uncontrolled, of 5 or more tons per year of direct $PM_{2.5}$ or PM_{10} if located in a $PM_{2.5}$ or PM_{10} nonattainment or maintenance area, or 10 or more tons per year of any single criteria pollutant if located in any part of Lane County) and is, therefore, required to obtain a permit. In addition, the facility has elected to maintain the source's netting basis. As such, the facility is required to have a Standard ACDP. The facility has applied for the renewal of their existing Standard ACDP. The application for the renewal of this permit was received on March 11, 2021. The renewed Standard ACDP will be valid for five years.

Attainment Status

4. The facility is located outside the Eugene-Springfield UGB as defined in Title 29. The facility is located in an area that has been designated as attainment for all criteria pollutants.

Permitting History

5. LRAPA has reviewed and issued the following permitting actions to this facility:

Date Approved/Valid	Permit Action Type	Description
10/02/1995-10/01/2000	ACDP	Initial
11/06/1995	NC-205811-A95	Authorization to install blowdown stack
10/02/2000-10/01/2005	ACDP	Renewal
10/02/2005-10/01/2010	ACDP	Renewal
05/12/2009	ACDP Addendum No. 1	Administrative amendment to change the permit type and fee basis
05/06/2010	NC-205811-A10	Authorization to upgrade Solar Saturn Turbine T-1001 to Solar Saturn Turbine T-1302
05/28/2010	ACDP Addendum No. 2	Simple non-technical permit modification to upgrade Solar Saturn Turbine T-1001 to Solar Saturn Turbine T-1302
08/20/2010	Approval Letter	Authorization to install 237 hp natural gas-fired backup generator
03/24/2011-03/24/2016	ACDP	Renewal
2014	ACDP Addendum No. 3	Administrative amendment to change the legal name of the facility
09/14/2016-09/14/2021	ACDP	Renewal

Emission Unit Description

6. The emission units regulated by the permit are the following:

EU ID	Emission Unit Description	Control Device Description	PCD ID
EU-1	Solar Saturn T-1302: 1340 hp natural gas-fired combustion turbine	None	None
EU-2	Solar Saturn T-1310: 1300 hp natural gas-fired combustion turbine (portable)	None	None
EU-3	One (1) natural gas blowdown stack	None	None
Categorically Insignificant Activities			
CIA-1	One (1) natural gas-fired emergency generator, 237 hp	None	None
CIA-2	One (1) natural gas-fired process heater, 0.125 MMBtu/hr	None	None

7. EU-1 is a Solar Saturn T-1302 natural gas-fired combustion turbine with a maximum rating of 1340 hp. This unit was originally a T-1001 combustion turbine. In 2010, the engine core was upgraded to a larger size (1001 to a 1302). The supporting ancillary equipment and controls on the skid were modified or replaced to accommodate the replacement engine. Off-skid ancillary equipment (i.e. exhaust muffler, air inlet, fuel gas system) were reused.

8. EU-2 is a Solar Saturn T-1310 natural gas-fired combustion turbine with a maximum rating of 1300 hp placed in service in 1993. This combustion turbine is portable and is used to provide maintenance support at compressor stations around the Pacific Northwest.

9. EU-3 is a natural gas blowdown stack. This unit is used to flare natural gas within compressors and associated piping when compressor stations are taken offline for maintenance or the system shuts down. The unit is rated at 15 Mscf per hour of natural gas.

10. CIA-1 is a natural gas-fired emergency generator rated at 237 hp and 177 kW. The unit is equipped with a 2009 model year engine and was installed in 2010. This emission unit is considered to be a Categorically Insignificant Activity (CIA) as per the definition of CIA in LRAPA Title 12, Item UU.

11. CIA-2 is a natural gas-fired process heater with a maximum heat input rating of 0.125 MMBtu per hour. The process heater prevents formation of natural gas water hydrates and maintains natural gas temperatures above the desired hydrocarbon dew point. This emission unit is considered to be a Categorically Insignificant Activity (CIA) as per the definition of CIA in LRAPA Title 12, Item C.

General Emission Limitations

12. All emission units at the facility are subject to the visible emission limitations under LRAPA 32-010(3). These emission units may not have visible emissions equal to or greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour.

13. The emission units that meet the definition of “fuel burning equipment” under Title 12 are subject to the particulate matter emission limitations under LRAPA 32-030(1)(b). The only emission unit that meets this definition is CIA-2. For fuel burning equipment installed, constructed or modified after June 1, 1970, but prior to April 16, 2015, the particulate matter emission limit is 0.14 grains per dry standard cubic foot if there are no representative compliance source test results collected prior to April 16, 2015.

14. All other emission units at the facility that do not meet the definition of “fuel burning equipment” under Title 12 are subject to the particulate matter emission limitations under LRAPA 32-015(2)(b)(B). For sources installed, constructed or modified after June 1, 1970, but prior to April 16,

2015, the particulate matter emission limit is 0.14 grains per dry standard cubic foot if there are no representative compliance source test results collected prior to April 16, 2015.

15. None of these emission units are subject to the process weight rate emission limitations under LRAPA 32-045(1) because gaseous fuels and combustion air are not included in the total weight of all materials for determining a particulate emission standard under Section 32-8010.

Typically Achievable Control Technology (TACT)

16. LRAPA 32-008 requires an existing unit a facility to meet TACT if the emission unit meets the following criteria: The emission unit is not already subject to emission standards for the regulated pollutant under Title 30, Title 32, Title 33, Title 38, Title 39 or Title 46 at the time TACT is required; the source is required to have a permit; the emission unit has emissions of criteria pollutants equal to or greater than five (5) tons per year of particulate or ten (10) tons per year of any gaseous pollutant; and LRAPA determines that air pollution control devices and emission reduction processes in use for the emissions do not represent TACT and that further emission control is necessary to address documented nuisance conditions, address an increase in emissions, ensure that the source is in compliance with other applicable requirements, or to protect public health or welfare or the environment.
    16a. EU-1 has the potential to emit more than 10 TPY of NOx. Because this emission unit is subject to an emission standard for NOx under Title 46 it is not required to meet TACT for this pollutant.
    16b. EU-2 has the potential to emit more than 10 TPY CO and is required to meet TACT for this pollutant. LRAPA has previously determined that good combustion practices for this emission unit are considered TACT for this pollutant.

Plant Site Emission Limits (PSELs)

17. Provided below is a summary of the baseline emissions rate, netting basis, plant site emission limit, and emissions capacity.

Pollutant	Original Baseline Emission Rate (TPY)	Adjusted Baseline Emission Rate (TPY)	Netting Basis		Plant Site Emission Limit (PSEL)		PTE (TPY)
			Previous (TPY)	Proposed (TPY)	Previous PSEL (TPY)	Proposed PSEL (TPY)	
PM	0.4	0.4	0.4	0.4	24	24	1.01
PM_{10}	0.4	0.4	0.4	0.4	14	14	1.01
$PM_{2.5}$	NA	NA	NA	0.4	9	9	1.01
CO	1.1	1.1	1.1	1.1	99	99	22.1
NOx	4.3	4.3	4.3	4.3	43	39	21.7
SO_2	0.1	0.1	0.1	0.1	de minimis	de minimis	0.49
VOC	0.2	0.2	0.2	0.2	de minimis	de minimis	0.34
GHGs (CO_2e)	274	346	274	346	de minimis	74,000	17,880

    17a. The baseline emission rates for PM, PM_{10}, CO, NO_x, SO_2, and VOC represent estimated actual emissions from 1978 and were determined in previous permitting actions. A baseline emission rate is not established for $PM_{2.5}$ in accordance with LRAPA 42-0048(3). The baseline emission rate for GHGs represents the actual emissions for calendar year 2010 as established under the ACDP issued on 09/04/2016. The GHG baseline emission rate has been corrected as part of this review to reflect changes in the emission factors used in 40 CFR 98 for combustion of natural gas, changes in the global warming potential factors, and the mistaken use of metric tons rather than short tons to set the baseline.
    17b. The netting basis for PM, PM_{10}, CO, NOx, SO_2, and VOC are the same as the baseline emission rates. The netting basis for GHGs has been modified to reflect the change in the

baseline emission rate made as part of this review. A netting basis was not established for $PM_{2.5}$ under previous reviews. Consistent with 42-0046(2)(b)(B), the $PM_{2.5}$ netting basis was calculated based upon the $PM_{2.5}$ fraction of the PM_{10} PSEL in effect on May 1, 2011, multiplied by the PM_{10} netting basis that would have been in effect on May 1, 2011. The $PM_{2.5}$ fraction of PM_{10} PSEL is assumed to be 100%

17c. The PSELs are set in accordance with 42-0040 and 42-0041. Under 42-0041(1), sources with a potential to emit less than the SER that request a source specific PSEL, the source specific PSEL will be set equal to the generic PSEL level. The PSEL for NO_x was incorrectly set to a source-specific level based on the netting basis plus the SER in previous reviews. The NOx PSEL has been reset to the generic PSEL level. Under 40-0020(3)(a), no PSEL will be set for SO_2 or VOC emissions. A PSEL will be set for GHGs as part of this review because the facility has the capability to emit at more than the de minimis level.

Unassigned Emissions and Emission Reduction Credits

18. The facility has zero (0) unassigned emissions as shown in the table below. Unassigned emissions are equal to the netting basis minus the source's current PTE, minus any banked emission reduction credits. In accordance with LRAPA 42-0055 the maximum unassigned emissions may not be more than the SER.

Pollutant	Unassigned Emissions (TPY)	Emission Reduction Credits (TPY)	SER (TPY)
PM	0	0	25
PM_{10}	0	0	15
$PM_{2.5}$	0	0	10
CO	0	0	100
NO_x	0	0	40
SO_2	0	0	40
VOC	0	0	40
GHGs (CO_2e)	0	0	75,000

Significant Emission Rate

19. The PSEL increase over the netting basis is less than the Significant Emission Rate (SER) as defined in Title 12 for all pollutants as shown below.

Pollutant	PSEL Increase Over Netting Basis (TPY)	Increase Due to Utilizing Capacity That Existed In The Baseline Period (TPY)	Increase Due to Physical Changes or Changes In The Method of Operation (TPY)	SER (TPY)
PM	24	0	0	25
PM_{10}	14	0	0	15
$PM_{2.5}$	10	0	0	10
CO	98	0	0	100
NO_x	39	0	0	40
SO_2	NA	NA	NA	40
VOC	NA	NA	NA	40
GHGs (CO_2e)	74,000	0	0	75,000

Prevention of Significant Deterioration (PSD)

20. Because this source is not a listed source and the proposed PSELs for all regulated pollutants are below the federal major source threshold of 250 TPY, the facility is not a Prevention of Significant Deterioration (PSD) major source. This facility is also not located in a nonattainment, reattainment or maintenance area.

Federal Hazardous Air Pollutants/Toxic Air Contaminants

21. The potential federal HAP emissions from this facility are less than the major source thresholds of 10 tons per year for an individual FHAP and 25 tons per year for the aggregate of all FHAPs. As such, the facility is considered an area source of FHAPs.

22. Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants. LRAPA required reporting of approximately 600 toxic air contaminants in 2016 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in rule. All FHAPs are on the list of approximately 600 toxic air contaminants. The FHAPs and toxic air contaminants listed below are based upon source testing and standard emission factors for the types of emission units at this facility. After the source is notified by LRAPA, they must update their inventory and perform a risk assessment to see if they must reduce risk from their toxic air contaminant emissions. Until then, sources will be required to report toxic air contaminant emissions triennially.

23. The following table lists the potential emissions of FHAPs from the facility. The facility also emits insignificant amounts of metals from the combustion of natural gas which are not represented below.

Pollutant	**Potential Emissions (TPY)**
Acetaldehyde	7.4E-03
Acrolein	2.3E-03
Benzene	2.6E-03
1,3-Butadiene	3.3E-04
Dichlorobenzene	6.5E-07
Formaldehyde	0.12
Hexane	9.8E-04
Methanol	1.5E-03
Methylene Chloride	2.1E-05
Naphthalene	1.9E-04
PAHs	4.0E-04
1,1,2,2-Tetrachloroethane	1.3E-05
Toluene	2.0E-02
Xylene	9.6E-03
Acetaldehyde	7.4E-03
Total Federal HAPs =	0.17

National Emission Standards for Hazardous Air Pollutants (NESHAPs)

40 CFR 63 Subpart HHH – National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities

24. This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of FHAP. If the facility is a major source of FHAP, the affected source under the regulation is each new and existing glycol dehydration unit as defined in the rule. This facility is not a major source of FHAP. In addition, this facility also does not have a glycol dehydration unit. The facility is not subject to this regulation at this time.

40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

25. The natural gas-fired 237 hp emergency generator CIA-1 was installed on November 2, 2010. Any RICE installed on or after June 12, 2006 is considered a new stationary RICE subject to the requirements under 40 CFR Part 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Under 40 CFR 63.6590(c)(1), a new or reconstructed stationary RICE located at an area source of FHAPs must meet the requirements of 40 CFR 63 subpart ZZZZ by meeting the requirements of 40 CFR 60 subpart JJJJ. No further requirements apply for such engines under 40 CFR 63 subpart ZZZZ.

New Source Performance Standards (NSPSs)

40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

26. Stationary gas turbines with a heat input at peak load equal to or greater than 10.7gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired, for which construction, modification, or reconstruction commences after October 3, 1977 is subject to regulation under 40 CFR 60 Subpart GG. EU-2, the portable Solar Saturn T-1310 turbine, is rated at 13.7 MMBtu per hour with an initial in-service year of 1993. Although EU-2 is portable, the definition of "stationary gas turbine" in 40 CFR 60.331(a) includes a unit "mounted on a vehicle for portability". Therefore, EU-2 is subject to 40 CFR 60 Subpart GG.

27. The 40 CFR 60 Subpart GG requirements that are applicable to EU-2 are identified in the following table:

40 CFR 60 Subpart GG Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
60.330	Applicability and designation of affected facility	Yes	EU-2 is rated at 13.7 MMBtu per hour.	NA
60.331	Definitions	Yes	EU-2 meets the definition of a *stationary gas turbine*.	NA
60.332	Standards for nitrogen oxides	Yes	Natural gas has an insignificant amount of fuel bound nitrogen.	18
60.333	Standards for sulfur dioxide	Yes	None.	21
60.334	Monitoring of operations	Yes	None.	22
60.335	Test methods and procedures	Yes	Initial testing requirement was satisfied.	NA

40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

28. Stationary gas turbines with a heat input at peak load equal to or greater than 10.7gigajoules (10 million Btu) per hour, based on the higher heating value of the fuel, for which construction, modification, or reconstruction commences after February 18, 2005 are subject to regulation under 40 CFR 60 Subpart KKKK. EU-1, the Solar Saturn T-1302 turbine, is rated at 15.9 MMBtu per hour and was modified in 2010, when the gas producer and power turbine portion of the stationary combustion turbine were replaced, resulting in an increase in hourly emissions regulated under this standard. Therefore, EU-1 is subject to 40 CFR 60 Subpart KKKK.

29. The 40 CFR 60 Subpart KKKK requirements that are applicable to EU-1 are identified in the following table:

40 CFR 60 Subpart KKKK Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
60.4300	Purpose of this subpart	Yes	None.	NA
60.4305	Applicability	Yes	EU-1 is rated at 15.9 MMBtu per hour and was modified in 2010.	NA
60.4310	Exemptions	No	None.	NA
60.4315	Pollutants regulated	Yes	None.	NA
60.4320	Emission limits for nitrogen oxides (NOx)	Yes	None.	11
60.4325	Emission limits for NOx for combination fuels	No	None.	NA
60.4330	Emission limits for sulfur dioxide (SO_2)	Yes	None.	12
60.4333	General requirements	Yes	None.	13
60.4335	NOx compliance demonstration with water/steam injection	No	None.	NA
60.4340	NOx compliance demonstration without water/steam injection	Yes.	None.	14
60.4345	CEMS requirements	No	None.	NA
60.4350	Using CEMS for excess emissions	No	None.	NA
60.4355	Parameter monitoring plan	No	None.	NA
60.4360	Determining total sulfur content of fuels	No	None.	NA
60.4365	Total sulfur content monitoring exemptions	Yes	None.	17
60.4370	Sulfur content determination frequency	No	None.	NA
60.4375	Reports	Yes	None.	16
60.4380	Excess emissions and monitor downtime for NOx	No	None.	NA

40 CFR 60 Subpart KKKK Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
60.4385	Excess emissions and monitoring downtime for SO_2	No	None.	NA
60.4390	Reporting requirements for emergency or R&D turbines	No	None.	NA
60.4395	Reports	No	Related to CEMS or CMS.	NA
60.4400	Performance tests for NOx	Yes	None.	15
60.4405	Performance tests for a NOx CEMS	No	None.	NA
60.4410	Establishing valid parameter ranges	No	None.	NA
60.4415	Performance tests for sulfur	Yes	None.	17
60.4420	Definitions	Yes	None.	NA

40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

30. This regulation applies to any stationary SI RICE that commence construction after July 12, 2006 based on various manufacture dates and engine power ratings. Natural gas-fired 237 hp emergency generator CIA-1 meets the definition of an *emergency stationary internal combustion engine* under 40 CFR 60.4248 and is a model year 2009 engine installed in 2010. This engine is not certified by the manufacturer to meet the emission standards under 40 CFR 60.4233(e). As required under 40 CFR 60.4243(b)(2)(i) and 40 CFR 60.4243(f), a performance test was conducted on the engine on April 5, 2011 which demonstrated compliance with the applicable emission standards. The facility is not required to conduct subsequent performance tests on this engine unless the engine is rebuilt or undergoes major repair or maintenance.

Emission Unit	Test Date	Results	Permit Limit
CIA-1	04/05/2011	19.84 ppm NOx @ 15% O_2	160 ppm NOx @ 15% O_2
CIA-1	04/05/2011	211.83 ppm CO @ 15% O_2	540 ppm CO @ 15% O_2
CIA-1	04/05/2011	2.95 ppm VOC @ 15% O_2	86 ppm VOC @ 15% O_2

31. Emergency stationary ICE may be operated for maintenance checks and readiness testing for a maximum of 100 hours per calendar year. The federal requirements also allow an emergency stationary ICE to operate for up to 50 of the 100 hours per year in non-emergency situations listed in the regulation. However, an emergency generator as defined in “Categorically Insignificant Activity” LRAPA Title 12, Category UU is not allowed to be used in this manner and this use has not been included the draft permit. There is no time limit on the use of emergency stationary ICE in emergency situations.

32. On May 1, 2015, the D.C. Courts of Appeals vacated the exemption provisions for emergency demand response in 40 CFR 63 Subpart ZZZZ, 40 CFR 60 Subpart IIII, and 40 CFR 60 Subpart JJJJ (*Delaware Dept. of Nat. Resources and Envtl. Control v. EPA*). The vacated provisions have not been included in the draft permit even though US EPA has not revised the applicable regulations at this time.

33. The 40 CFR 60 Subpart JJJJ requirements that are applicable to the natural gas-fired emergency generator CIA-1 are identified in the following table:

40 CFR 60 Subpart JJJJ Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
60.4230	Applicability	Yes	None.	NA
60.4231	Emission standards for manufacturers	No	Manufacturer requirements only.	NA
60.4232	Emission standard timeframes for manufacturers	No	Manufacturer requirements only.	NA
60.4233	Emission standards for owners/operators	Yes	The engine must comply with the applicable emission standards in Table 1 as required by 40 CFR 60.4233(e).	23
60.4234	Emission standard timeframes for owners/operators	Yes	None.	24
60.4235	Fuel requirements	No	Gasoline only.	NA
60.4236	Importing/installing deadlines	Yes	Deadlines have passed.	NA
60.4237	Monitoring requirements for emergency engines	No	None.	NA
60.4238	Compliance requirements ≤19 KW	No	Manufacturer requirements only.	NA
60.4239	Compliance requirements >19 KW using gasoline	No	Manufacturer requirements only.	NA
60.4240	Compliance requirements >19 KW for rich burn LPG	No	Manufacturer requirements only.	NA
60.4241	Compliance requirements for voluntary certification	No	Manufacturer requirements only.	NA
60.4242	Other requirements for manufacturers	No	Manufacturer requirements only.	NA
60.4243	Compliance requirements for owners/operators	Yes	Initial testing requirement was satisfied.	25, 26
60.4244	Test methods and procedures for owners/operators	Yes	Initial testing requirement was satisfied.	NA
60.4245	Notification, reporting, and recordkeeping for owners/operators	Yes	None.	27
60.4246	General provisions	Yes	None.	NA
60.4247	Mobile source provisions for manufacturers	No	Manufacturer requirements only.	NA
60.4248	Definitions	Yes	None.	NA

40 CFR 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification, or Reconstruction Commenced after August 23, 2011, and on or Before September 18, 2015

34. This regulation may apply to one or more onshore affected facilities listed in the regulation that have been constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015. This facility is considered to be in the "natural gas transmission" segment as defined under 40 CFR 60.5430. No applicable emission units have been constructed, modified, or reconstructed since August 23, 2011. Thus, the requirements of 40 CFR 60 subpart OOOO do not apply to this facility.

40 CFR 60 Subpart OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced after September 18, 2015, last amended on September 15, 2020

35. This regulation may apply to crude oil and natural gas production sources that have been constructed, modified or reconstructed after September 18, 2015. This facility is considered to be in the "natural gas transmission and storage segment" as defined under 40 CFR 60.5430a. No applicable emission units have been constructed, modified, or reconstructed since September 18, 2015. Thus, the requirements of 40 CFR 60 subpart OOOOa do not apply to this facility. For the purposes of this rule, a "modification" to a compressor station occurs when: (1) an additional compressor is installed at a compressor station; or (2) One or more compressors at a compressor station is replaced by one or more compressors of greater total horsepower than the compressor(s) being replaced. When one or more compressors is replaced by one or more compressors of an equal or smaller total horsepower than the compressor(s) being replaced, installation of the replacement compressor(s) does not trigger a modification of the compressor station for purposes of this regulation.

Compliance History

36. This facility is regularly inspected by LRAPA and occasionally by other regulatory agencies. The following table indicates the inspection history of this facility:

Type of Inspection	Date	Results
LRAPA - Full Compliance Evaluation	09/17/1997	In compliance
LRAPA - Full Compliance Evaluation	09/14/2000	In compliance
LRAPA - Informational Compliance Evaluation	12/18/2007	In compliance

37. There have been no enforcement actions taken against this facility by LRAPA.

Performance Testing

38. The permit does not include any requirement to conduct performance testing for emission factor verification purposes. NO_x performance testing is required for EU-1 in accordance with 40 CFR 60 Subpart KKKK. The facility is required to conduct NOx performance testing annually unless the results of the most recent NOx tests are less than or equal to 75% of the applicable NOx emission limit – then the frequency of performance tests may be once every 2 years (no more than 26 calendar months following the previous performance test). The facility will provide LRAPA with the dates of the performance tests and source test plan 30 days prior to testing. The facility will provide LRAPA with copies of the performance test results within 30 days of receipt unless otherwise approved by LRAPA.

39. The following table contains the results of the NOx compliance testing for EU-1 in accordance with NSPS Subpart KKKK since the turbine was modified in 2010:

Emission Unit	Test Date	NOx Result	Permit Limit	Load
EU-1	04/05/2011	56.06 ppm @ 15% O_2	150 ppm @ 15% O_2	90.1%
EU-1	05/09/2013	53.16 ppm @ 15% O_2	150 ppm @ 15% O_2	96.2%
EU-1	05/05/2015	46.95 ppm @ 15% O_2	150 ppm @ 15% O_2	95.3%
EU-1	02/21/2017	46.23 ppm @ 15% O_2	150 ppm @ 15% O_2	92.0%
EU-1	04/18/2019	47.65 ppm @ 15% O_2	150 ppm @ 15% O_2	97.7%
EU-1	05/20/2021	53.44 ppm @ 15% O_2	150 ppm @ 15% O_2	100%

Recordkeeping Requirements

40. The facility is required to keep and maintain a record of the following information for a period of five (5) years, unless otherwise required by permit or regulation:

Activity	Units	Minimum Recording Frequency
PSEL Recordkeeping		
Hours of operation of EU-1 and EU-2	Hours	Monthly
Fuel use for EU-1, EU-2 and EU-3	Mscf	Monthly
NSPS GG Recordkeeping		
Documentation of performance tests related to EU-2	NA	Each occurrence
Documentation of maintenance performed on EU-2	NA	Each occurrence
Documentation of the maximum total sulfur content of the natural gas in a current, valid purchase contract, tariff sheet or transportation contract	NA	Annually
NSPS JJJJ Recordkeeping		
Records of all notifications, including supporting documentation	NA	Each occurrence
Maintenance conducted on CIA-1	NA	Each occurrence
Documentation that CIA-1 meets the emission standards	NA	Each occurrence
The date and times of operation of CIA-1	Date, Hours of operation	Each occurrence
Reason for operation of CIA-1	NA	Each occurrence
The total amount of time that CIA-1 operates for non-emergencies	Hours	Monthly
The total amount of time that CIA-1 operates for emergencies	Hours	Monthly
NSPS KKKK Recordkeeping		
Documentation of the maximum total sulfur content of the natural gas in a current, valid purchase contract, tariff sheet or transportation contract	NA	Annually
Documentation related to NOx performance tests performed annually or biennially	NA	Each performance test
Documentation related to SO_2 performance tests performed annually	NA	Current documentation

Reporting Requirements

41. The facility must submit to LRAPA the following reports by the dates indicated in the table below:

Report	Reporting Period	Due Date
The excess emission log information, if required	Annual	March 15
Annual emissions, including the supporting process parameter and emission factor information	Annual	March 15

42. The facility is required to submit an annual report to LRAPA by March 15th of each year this permit is in effect. The annual compliance report must include emissions calculations, recordkeeping requirements, and any entries in the upset log as required by permit Condition G15

Public Notice

43. The draft permit was on public notice from July 19, 2021 to August 22, 2021. Written comments were submitted during the 35-day comment period, and a public hearing was requested by an individual representing a group of more than ten (10) individuals. LRAPA provided notice of the hearing at least 30 days before the hearing as required by LRAPA 31-0070(1). The public hearing was announced on September 10, 2021 and held on October 12, 2021 at 5:30pm via Zoom.

    After the comment period and hearing, LRAPA responded to comments received and has taken final action to issue the permit.

Public Notice Comments

LRAPA received and responded to the following comments at the close of the public comment period:

[All public comments that were received for this project are a public record and are retained with the public permit review files. For purposes of this summary document, the public comments may have been edited to reduce length or consolidated with similar comments. Public comments that are not related to the review report or draft permit, such as those comments that are statements of fact or express an opinion, are not presented in this document, and do not require a response from LRAPA.]

Comment 1: Northwest Pipeline LLC's application lists EPA AP-42 Air Emissions Factors in the calculation of emission rates. According to EPA documents, AP-42 gives an emission factor for methane produced by gas turbines at natural gas compressor stations but Northwest Pipeline LLC does not include an emission rate for methane. Why is methane not addressed? Has LRAPA tested for methane at the site? Natural gas pipeline compressor stations have been identified as a significant source of methane release.

Response 1: The commenter is correct that NW Pipeline did not include methane emissions from the combustion of natural gas at their Eugene compressor station in their application. LRAPA has included methane emissions from the combustion of natural gas in the Emissions Detail sheets attached to the review report as part of the total greenhouse gas emissions from each emission unit. The combustion of natural gas results in the emissions of carbon dioxide, methane, and nitrous oxide – each of which are greenhouse gases. The greenhouse gas emission calculations are performed using the emission factors for the combustion of natural gas in 40 CFR 98, Tables C-1 and C-2 along with the global warming potentials from 40 CFR 98, Table A-1. LRAPA has not performed any methane testing at the site.

Comment 2: Northwest Pipeline states, "NOx and CO emission factors were calculated using the average of eight source tests conducted on Solar Saturn T-1302 turbines in various geographical locations between the years 1995-2015" and, "NOx and CO emission factors for portable turbine were estimated using the average of the source test results from testing in 2004 & 2005 at the Oregon City Compressor Station." Please define "source test." What technologies were used in this testing? Tests were conducted at various locations, some up to 26 years ago. Are the conditions and equipment at those test sites comparable to the equipment and operating conditions at the Eugene site?

Response 2: A source test is the direct measurement of a regulated pollutant from an emission unit using a test method approved by the regulatory agency. The two combustion turbines allowed to operate at this facility have been tested historically using US EPA Test Method 10 for carbon monoxide and US EPA Test Method 7E for nitrogen oxides. The nitrogen oxide emissions from EU-1 – Solar Saturn T-1302 Turbine are required to be tested at least once every two years. As indicated in the Emission Detail sheets attached to the review report, the emission factor for nitrogen oxides from this emission unit is based on the average of three source tests conducted in 2021, 2019, and 2015. In the case of carbon monoxide, the facility is using the test results from other Solar Saturn T-1302 model combustion turbines at compressor station locations in the Pacific Northwest. These tests are conducted typically as close to the maximum capacity of the emission unit as practicable. It is also common practice to use emission factors developed for the same or similar model of equipment when appropriate.

Comment 3: The LRAPA Review Report page 11. notes the last Full Compliance Evaluation of the Eugene Compressor Station was 09/14/2000 with the last Informational Compliance Evaluation dated 12/18/2007. What is the required frequency of these evaluations? Would best practice suggest they be done more often?

Response 3: There is no required full compliance evaluation frequency for a facility assigned to a Standard ACDP unless the facility is considered a synthetic minor source whose potential emissions of at least one regulated pollutant are greater than or equal to 80% of the major source threshold for the facility to be included under the federal Title V air permit program. The compliance history in the review report lists only the dates of compliance evaluations performed by LRAPA that involved an on-site inspection. Because the facility operates so infrequently, LRAPA has determined compliance primarily through the review of operational records submitted annually by the facility and the results of the required source testing on EU-1 – Solar Turbine T-1302.

Comment 4: The LRAPA Review Report page 1. notes that source tests occur annually for NOx and SO2. What testing technologies are used? Is resulting information available to the public?

Response 4: EU-1 – Solar Turbine T-1302 is subject to the emission limitations and requirements of 40 CFR 60 subpart KKKK. Under this regulation, T-1302 must be tested for compliance with the nitrogen oxide emission limits at least once every two years, depending on the results of the last source test. If the results of the last source test were greater than 75 percent of the nitrogen oxide emission limit, the turbine must be tested annually until such time as the test results are less than or equal to 75 percent of the nitrogen oxide emission limit. The facility is not required to directly test the emissions of sulfur dioxide from the combustion of natural gas. Annually, the facility provides LRAPA a current, valid purchase contract, tariff sheet, or transportation contract for the natural gas, specifying the maximum total sulfur content as allowed under 40 CFR 60.4415. As discussed in Response 2, the facility is required to use a test method approved by LRAPA. The facility is required to use US EPA Test Method 7E for determining nitrogen oxide emissions. Source test reports are available for review by the general public in our office and more recent source test reports are available electronically upon request.

Comment 5: The LRAPA Review Report page 4. 16b. states, “EU-2 has the potential to emit more than 10 TPY CO and is required to meet TACT (Typically Available Control Technology) for this pollutant. LRAPA has previously determined that good combustion practices for this emission unit are considered TACT for this pollutant.” When was that determination made? How does LRAPA measure the effectiveness of these practices and assure they are ongoing?

Response 5: The original determination that good combustion practices represented Typically Available Control Technology (TACT) was made in the review report for the Air Contaminant Discharge Permit

(ACDP) issued on July 9, 2008. Combustion turbines with the heat input capacity located at this facility do not typically have any available control technology to reduce regulated pollutant emissions. LRAPA uses documentation that the facility is conducting maintenance on this emission unit to demonstrate that the emission unit is obtaining good combustion.

Comment 6: The LRAPA Review Report lists PSELs. Why is methane not listed as a PSEL (Plant Site Emission Limit)?

Response 6: Under LRAPA subsection 42-0020(1), PSELs are only established for regulated pollutants listed under the definition of Significant Emission Rate in LRAPA Title 12 or for federal hazardous air pollutants as discussed under LRAPA section 42-0060. Because methane is considered a greenhouse gas pollutant, the emission of methane, adjusted to carbon dioxide equivalents, is included in the PSEL for greenhouse gases.

Comment 7: The LRAPA Review Report page 4. 17a refers to, “estimated actual emissions from 1978.” Is that the year the facility went into operation?

Response 7: 1978 represents the baseline period used to establish the baseline emission rate for pollutants other than $PM_{2.5}$ and GHGs. The facility began operation in the early 1970’s.

Comment 8: The LRAPA Review Report at page 7. Section 26 under, “Standards for nitrogen oxides” (for EU-2) has the note, “Natural gas has an insignificant amount of fuel bound nitrogen.” Does natural gas have significant amounts of thermal NOx or prompt NOx? Are either applicable to EU-2?

Response 8: Under 40 CFR 60 subpart GG, an emission unit subject to nitrogen oxide limit may elect to add a NOx emission allowance for fuel-bound nitrogen. This allowance effectively increases the allowable nitrogen oxide emission limit for the emission unit. The note indicates that natural gas contains an insignificant amount of fuel bound nitrogen and the use of the NOx emission allowance for this operational scenario is not appropriate. The combustion of natural gas results in the formation of nitrogen oxides, primarily through what is known as thermal NOx and secondarily through what is known as prompt NOx. The source testing and emission factors used in the review report for all combustion sources at the facility, including EU-2, represent total nitrogen oxides – regardless of how the nitrogen oxides are formed.

Comment 9: Has LRAPA received complaints from the public on the operation of the Eugene Compressor Station since 2009? (noise, odors, flaring, visible emissions, ash, other particulate matter, health complaints etc.). Is LRAPA aware of complaints pertaining to the Eugene Compressor Station that have been directed to other local, state or federal agencies?

Response 9: Based upon a review of our records, LRAPA has not received a complaint related to the operation of this facility since 2009. LRAPA is not aware of any complaints related to this facility that were directed to any other local, state or federal agencies.

Comment 10: The LRAPA Review Report page 6. Section 22, says, “Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants.” Why have risk assessments not been required to-date? What would trigger LRAPA to do so?

Response 10: In 2019, LRAPA prepared a prioritization list to manage the work load for calling-in existing sources to perform risk assessments under the Cleaner Air Oregon (CAO) program. The prioritization of

existing sources is based on actual emissions data, demographic information of the surrounding area, and qualitative factors. This facility is currently in Group 3 of the prioritization list. It is unlikely that LRAPA will move this facility higher on the prioritization list as almost all toxic air contaminants (TAC) from this facility result from the combustion of natural gas. Under CAO, toxic emission units (TEU) that solely combust natural gas must calculate the risk from the combustion of natural gas, but the risk from natural gas may be excluded from the total risk for the purpose of determining compliance with CAO Risk Action Levels (RAL).

Comment 11: 17c in the Review Report states, "A PSEL will be set for GHGs as part of this review because the facility has the capability to emit more than the de minimis level." Is the Proposed PSEL based on the possible but highly unlikely scenario that the facility could operate continuously (8,760 hours/year)? Other reason?

Response 11: The proposed GHG PSEL is based on the Generic PSELs as defined in LRAPA Title 12. Under LRAPA subsection 42-0041(1), for a source with a potential to emit less than the Significant Emission Rate (SER) for a regulated pollutant, the source specific PSEL will be set to the generic PSEL level for that regulated pollutant. As shown in the Emission Detail sheets attached to the review report, the potential GHG emissions from this facility assuming all emission units are operating 8,760 hours per year are less than SER. Thus, the GHG PSEL has been established at the Generic PSEL level of 74,000 tons per year.

Comment 12: A SER (Significant Emission Rate) for GHGs is set at 75,000 TPY in the LRAPA Review Report (page 5. 18.). 75,000 TPY seems excessive. It is approximately the equivalent to the annual GHG generation of 15,000 automobiles. What is the source for that SER and the reasoning for establishing that level?

Response 12: On May 13, 2010, the US EPA issued the Tailoring Rule which established an approach to regulating greenhouse gas emissions from stationary sources under the Clean Air Act. Under this rule, US EPA established a Significant Emission Rate (SER) for sources that performed modifications that resulted in an increase in emissions by at least 75,000 tons per year as carbon dioxide equivalents and also emitted at least 100 or 250 tons per year of greenhouse gases (GHG) on a mass basis were potentially subject to review under major attainment area New Source Review, also known as Prevention of Significant Deterioration (PSD). The Tailoring Rule was issued in an attempt by US EPA to avoid subjecting thousands of facilities to PSD under the traditional major source emission thresholds used for other criteria pollutants, such as nitrogen oxides or carbon monoxide, of 100 tons per year for listed sources or 250 tons per year for all other sources. The Supreme Court partially upheld and partially invalidated the Tailoring Rule in *Utility Air Regulatory Group v. EPA* issued on June 23, 2014. As a result of this decision, 75,000 tons per year as carbon dioxide equivalents remains as the SER for GHGs.

Comment 13: In the LRAPA Review Report page 6. Section 23. which pollutants (15 listed) are carcinogens? Please explain the term, "Excess Cancer Risk" contained Cleaner Air Oregon air quality regulations and its application to the Eugene Compressor Station.

Response 13: As listed in Oregon Administrative Rule 340-245-0020, Excess Cancer Risk means the probability of developing cancer resulting from exposure to toxic air contaminant emissions from a Toxic Emission Unit (TEU) or an entire source under an applicable exposure scenario, over and above the background rate of cancer. Excess cancer risk is expressed in terms of "X" in a million, and means that approximately "X" number of additional cases of cancer would be expected in a population of one million people subject to the applicable exposure scenario. The table below indicates which pollutants as listed in the review report are considered to have an associated cancer risk based concentration (RBC) under the Cleaner Air Oregon program:

Pollutant	Potential Emissions (TPY)	Associated Cancer RBC?
Acetaldehyde	7.4E-03	Yes
Acrolein	2.3E-03	No
Benzene	2.6E-03	Yes
1,3-Butadiene	3.3E-04	Yes
Dichlorobenzene	6.5E-07	Yes
Formaldehyde	0.12	Yes
Hexane	9.8E-04	No
Methanol	1.5E-03	No
Methylene Chloride	2.1E-05	Yes
Naphthalene	1.9E-04	Yes
PAHs	4.0E-04	Yes
1,1,2,2-Tetrachloroethane	1.3E-05	Yes
Toluene	2.0E-02	No
Xylene	9.6E-03	No

Comment 14: How often are blowdowns conducted at the Eugene Compressor Station? On average, blowdowns at natural gas compressor stations release 15,000 Mcf of gas into the atmosphere (source: EPA).

Response 14: The blowdowns at this facility are not directly released to the atmosphere. In 1996, the facility installed a blowdown stack, also known as an enclosed flare, to combust blowdown natural gas releases that result for operational or safety reasons. This facility reports the amount of blowdown natural gas that is combusted by EU-3 – Natural Gas Blowdown Stack in their annual report. In calendar year 2020, this facility combusted a total of 234 Mscf of natural gas. These blowdowns occurred in 8 of the 12 calendar months of 2020.

Comment 15: What best practices have LRAPA suggested or required of the company to reduce emissions when taking equipment off-line?

Response 15: This facility installed equipment in 1996 to combust blowdown natural gas releases that result for operational or safety reasons. LRAPA has not suggested or required the company to further reduce emissions when taking equipment off-line.

Comment 16: In general, what are the known health impacts of the other pollutants (in addition to the 15 addressed in Question 13 above) including PM, $PM_{2.5}$, PM_{10}, NOx, CO, SO_2, GHGs and VOC?

Response 16: As LRAPA is not a public health authority and does not set the National Ambient Air Quality Standards (NAAQS) associated with many of these criteria pollutants, LRAPA suggests that the commenter visit www.epa.gov/criteria-air-pollutants for a more authoritative discussion of the health impacts of the listed pollutants. Please note that volatile organic compounds (VOCs), along with nitrogen oxides, contribute to the formation of ground level ozone. The health effects of VOCs as a class are considered under ozone. At this time, greenhouse gases (GHGs) as a class do not have a NAAQS standard.

Comment 17: Has LRAPA requested a history of Optical Gas Imaging (OGI) reports for the facility, or asked the company if imaging or other testing for methane has been conducted? Do the requirements

discussed in EPA Rulemaking Docket EPA-HQ-OAR-2017-0483 apply to the Eugene Compressor Station?

Response 17: LRAPA has not requested a history of Optical Gas Imaging (OGI) reports for the facility. According to the facility contact, OGI is conducted at the facility as part of the company's internal safety and maintenance procedures. The facility is not subject to the requirements discussed in EPA rulemaking docket EPA-HG-OAR-2017-0483, also known as 40 CFR 60 subpart OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced after September 18, 2015, last amended on September 15, 2020. This regulation may apply to crude oil and natural gas production sources that have been constructed, modified or reconstructed after September 18, 2015. This facility is considered to be in the "natural gas transmission and storage segment" as defined under 40 CFR 60.5430a and no applicable emission units have been constructed, modified, or reconstructed since September 18, 2015. Thus, the requirements of 40 CFR 60 subpart OOOOa do not apply to this facility.

Comment 18: For a non-engineer like myself, the reports are difficult to read. Would be nice if there was a summary for citizen's to read, so we know exactly what's going on. The company is allowed to self report? Wonder how accurate that is? LRAPA should be doing the testing or at least a few random spot tests to check compliance. Look at all of the pollution this one compressor station is putting out! On page 2 (NW-Pipeline_207459_permit_2021) the chart shows all these PSELs, but no actual amounts, is this in tons per year? NW-Pipeline should be reducing emissions, not just continuing on like climate change isn't happening. I hope LRAPA will become a climate change activist, not just rubber stamping any and all industrial permits.

Response 18: LRAPA agrees with the commenter that the environmental regulations related to air pollution control can be difficult to understand. All facilities are allowed to self-report on a semiannual or annual basis. Compliance officers at LRAPA review this information for inconsistencies that may point to noncompliance and perform on-site inspections to review documentation and inspect equipment directly as applicable. This facility is required to perform testing on EU-1 – Solar Saturn T-1302 Turbine to determine compliance with nitrogen oxide emissions at least once every two years. The PSELs listed in the permit represent the Generic PSEL levels in tons per year – the lowest level that LRAPA is allowed to set in a Standard ACDP. The 2020 actual emissions from this facility and the potential emissions from this facility operating at maximum capacity for 8,760 hours per year are significantly lower than the PSEL limits in the permit.

Pollutant	2020 Actual Emissions (tons per year)	Potential Emissions (tons per year)	PSEL Limits (tons per year)
Nitrogen Oxides	0.20	21.7	39
Carbon Monoxide	0.13	22.1	99
PM / PM_{10} / $PM_{2.5}$	0.05 / 0.05 / 0.05	1.01 / 1.01 / 1.01	24 / 14 / 9
GHGs (as CO_2 eq.)	940	17,880	74,000

Public Comment Receipt Log

Written or oral comments were received from:

Peter Dragovich mp4ever@me.com Representing 350 Eugene	Sue Mandeville 723 Crest Lane Springfield, OR pearlsperson@gmail.com	

Public Hearing Comments

Comment 1: Outstanding concerns include monitoring and reporting of potential methane leaks at the facility and the health impact of the facilities emissions. There's no testing at the site for fugitive methane leaks. The company conducts optical gas imaging at the Eugene compressor station but does not share that information with our LRAPA. Does the company have a leak detection and repair program? Does the leak detection and repair program if it exists include the monitoring of methane gas distribution pipeline in Lane County?

Response 1: See Response 5 for additional information regarding fugitive leaks at this facility. The Eugene compressor station will be required to have a leak detection and repair program (LDAR) if applicable equipment is modified in the future such that the compressor station is subject to a New Source Performance Standard (NSPS) or National Emission Standard for Hazardous Air Pollutants (NESHAP) that requires LDAR. The air contaminant discharge permits issued by LRAPA are for a particular physical location. At such time as the Eugene compressor station is subject to an LDAR requirement, it will only involve leaks on the compressor station property and not the entire natural gas distribution pipeline system in Lane County.

Comment 2: From the viewpoint of human-caused global heating even a 1 percent loss of methane gas as it is transported calls into question the concept of methane gas as a clean bridge fuel. As noted in a recent National Geographic Science News article titled, “Natural Gas is a Much Dirtier Energy Source than we Thought.” There are quote, “a flotilla of studies” over the past few years showing that the whole argument for methane gas a bridge fuel is gone. That article cites the 1% threshold for leakage I mentioned. The International Energy Agency recently stated methane gas is not a bridge fuel it is a wall giving three reasons: climate goals cannot be achieved without halting investment in new gas, oil or coal production, the use of fossil fuels must be capped, 2) The cost of renewables has fallen dramatically and are now cheaper than fossils in most of the world, peak demand is better handled with storage than fossils and third, the extent of methane leakage from gas infrastructure undermines the claims of methane gas as a bridge fuel. As Oregon’s Senator Merkley said several weeks ago, “methane gas is a bridge to nowhere, it is a bridge to an unlivable future.”

Response 2: LRAPA does not take a position on this comment as it is a mixture of fact and opinion which do not directly address the draft renewal of the Standard ACDP or the review report.

Comment 3: We must have monitoring and reporting on fugitive methane leaks, whether through efforts by LRAPA, transparency by the company or a combination of both. Currently, we as the public have no answers to critical questions.

Response 3: Based on Response 5 below, LRAPA believes that methane leaks are reasonably controlled and/or accounted for at the Eugene compressor station. Until the facility is modified in such a way that a federal NSPS or NESHAP is applicable, LRAPA does not have the regulatory authority to require additional monitoring for fugitive leaks. LRAPA has added additional discussion to the review report to describe two additional NSPS and one additional NESHAP that may require monitoring of fugitive leaks if the facility is modified in the future.

Comment 4: Regarding human health impacts of compressor stations, I refer to a study titled, “Natural Gas Pipeline Compressor Stations: VOC Emissions and Mortality Rates” By the School of Public Health, Indiana University, April 2020. This study examined data from over 1,600 methane gas compressor stations located in 767 US counties across 45 states. It analyzed associations between pollutant emissions from compressor stations and age-adjusted mortality rates for the US population. Quote, “The

study focused on emissions of volatile organic compounds because they are known to occur from compressor stations, because they are known to have direct adverse human health impacts, and because they interact with nitrogen oxides to generate ground ozone, which is an established human health risk. It found, quote, "VOC emissions from natural gas pipeline compressor stations were associated with higher age-adjusted mortality rates controlling for covariates." Citing references in addition to its own findings, the study concluded, quote, "The results of the current study, along with finding from other research, challenge the conventional wisdom that natural gas is a clean fuel that we may rely on to provide for our energy needs with little adverse effect. VOC emissions from natural gas compressor stations are related to higher human mortality rates and compressor stations are an understudied source of pollutant emissions." End quote. As LRAPA has noted, there are nine pollutants associated with the Eugene Compressor Station that have Risk Based Concentrations for cancer. Methane Gas Compressor stations exact costs to human health and the health of the planet, costs which are externalized for the rest of us to pay. Burning fossil fuels for energy is based on 100 year+ old technology that needs to be closely monitored and quickly phased out.

Response 4: The health effects of criteria pollutants, such as ozone for which VOCs are a precursor, are reviewed by the US EPA when they establish the National Ambient Air Quality Standards (NAAQS). The NAAQS are established by the US EPA following a process that reviews many epidemiological studies. The federal and state rules and regulations that LRAPA includes in air contaminant discharge permits are expected to maintain or bring into compliance a particular air quality management area with the NAAQS. According to the LRAPA air quality monitors located at Highway 99 and Amazon Park in Eugene, the Eugene-Springfield area is in compliance with the NAAQS for ozone. It should be noted that two of the main constituents of natural gas, methane and ethane, are not considered VOCs by the US EPA or LRAPA.

Comment 5: Overall, 3% of methane gas traveling through pipelines is leaked and 16% of methane gas is leaked in the transmission and storage product lifecycle process. It is not surprising that NW fracked gas did not include an emission rate for methane at their North Hideaway Hills Rd. Eugene compressor station. A methane emission rate should be required before permitting. LRAPA or a third party agency should perform regular methane testing at the compressor station site.

Response 5: Based on the public's concern regarding methane leakage at compressor stations, LRAPA investigated potential fugitive leaks at this facility. The significant sources of natural gas releases at the typical transmission compressor station result from depressurization events and compressor section leaks. As already discussed, the Eugene station is equipped with a blowdown stack to combust natural gas during depressurization events. This facility has a centrifugal compressor with wet seals that act as a barrier to prevent the high pressure natural gas from escaping around the shaft as it exits the compressor casing. This type of compressor has been demonstrated to result in a significant loss of natural gas from degassing as the seal oil is recirculated. According to NW Pipeline, the Eugene station is equipped with a wet seal degassing recovery system that routes the degassed natural gas back into the compressor suction for injection back into the pipeline. According to NW Pipeline, there is a small amount of natural gas vented from the seal oil reservoir after the degassing recovery system. NW Pipeline measures this discharge during their maintenance activities if the station is operating and has found at larger compressor stations that the leak rate is in the range of 1-2 cubic feet per minute. Assuming a leak rate of 1.5 cubic feet per minute would add 520 tons to the 17,880 tons per year of potential greenhouse gas emissions listed in the review report. Based on 2020 operating hours, a leak rate of 1.5 cubic feet per minute would add 8 tons to the 124 tons per year of actual greenhouse gas emissions emitted in 2020. The facility may also have insignificant leaks from valves, flanges, etc. Until such time as the Eugene compressor station is subject to a NSPS or NESHAP that requires LDAR, which is often performed by a third party, LRAPA does not have the authority to require regular monitoring of fugitive leaks.

Comment 6: LRAPA's response to a full compliance evaluation of the Eugene compressor station was in Sept. 14, 2000…was " this facility operates so infrequently". How often is the operation of this compressor

station? (Ans.:164 hrs. in 2020) How many stops and restarts per year? Blowdown occurred in 8 of 12 months of 2020. Are all of these processed through the blowdown stack? Methane monitoring should be taken during these stops and restarts.

Response 6: Reviewing the last 6 years of annual reports, the facility operated an average of 645.5 hours per calendar year – ranging from 164 hours in 2020 to 1,277 hours in 2017. Unless the facility experiences an emergency shutdown, natural gas is combusted by the blowdown stack (enclosed flare) during depressurization. While the facility is not required to report the number of stops and restarts per year, they are required to report the amount of natural gas combusted by the blowdown stack.

Comment 7: The last TACT review report for air contamination discharge permit (ACDP) was issued on 7/9/2008, 13 years ago. LRAPA uses documentation provided by the operator to determine the emission unit is obtaining good combustion. Isn't that like the fox watching the hen house? Shouldn't these maintenance reports be verified every few years?

Response 7: LRAPA compliance officers routinely request information from facilities in Lane County to assist them in verifying a facility's ongoing compliance with applicable air program rules and regulations. The draft permit includes improved language requiring the facility document these maintenance activities and submit this documentation to LRAPA upon request.

Comment 8: LRAPA's scope is chemical compound release monitoring similar to conditions at Seneca Sustainable LLC, LRAPA as an air monitoring agency should contract with a third-party agency to monitor methane and greenhouse gas emissions from these facilities. 87% of fossil gas is made up of methane, which is 84% more potent than carbon dioxide in a 20-year period. And this has caused 30% of global heating. I hope LRAPA considers a third-party agency to regularly monitor fugitive methane leakage.

Response 8: Oregon DEQ enhanced the greenhouse gas monitoring rules that apply to the state's largest sources, including industrial facilities with air permits, in May of 2020. This enhanced greenhouse gas monitoring requires third party verification of data submitted to the Greenhouse Gas Reporting and Clean Fuels Program. Unfortunately, this requirement is only applicable to facilities whose actual anthropogenic greenhouse gas emissions exceed 25,000 tons per year. The Eugene compressor station is unlikely to ever exceed this threshold. As discussed in Response 1, until such time as the Eugene compressor station is subject to a New Source Performance Standard (NSPS) or National Emission Standard for Hazardous Air Pollutants (NESHAP) that requires LDAR, which is often performed by a third party, LRAPA does not have the authority to require regular monitoring of fugitive leaks.

Public Hearing Receipt Log

Written and/or oral comments were received from:

Peter Dragovich mp4ever@me.com Representing 350 Eugene	Jim Neu jjneusies2@gmail.com Representing 350 Eugene	

JJW/cmw
10/25/2021

Northwest Pipeline LLC - Eugene Compressor Station
Permit No. 205811
Criteria Pollutants

Source Info			Pollutant	Emission Factor		Reference	Potential Emission Rates			
EU-1: Solar Saturn T-1302 Turbine (station			NOx	2.79	lbs/hr	Emissions Test, see Note 1	2.79	lbs/hr	12.22	TPY
Size:	1,340	hp	CO	1.52	lbs/hr	Emissions Test, see Note 1	1.52	lbs/hr	6.66	TPY
Hours:	8,760	hrs	VOC	2.14	lbs/MMscf	AP-42 Table 3.1-2a	0.04	lbs/hr	1.6E-01	TPY
Fuel Use:	16.9	Mscf/hr	SO2	3.26	lbs/MMscf	AP-42 Table 3.1-2a, see Note 3	0.06	lbs/hr	2.4E-01	TPY
			PM/PM10/PM2.5	6.73	lbs/MMscf	AP-42 Table 3.1-2a, see Note 4	0.11	lbs/hr	5.0E-01	TPY
			GHGs	120,142	lbs/MMscf	40 CFR 98, Tables C-1, C-2	2,030	lbs/hr	8,893	TPY
EU-2: Solar Saturn T-1310 Turbine (portab			NOx	1.86	lbs/hr	Emissions Test, see Note 2	1.86	lbs/hr	8.15	TPY
Size:	1,300	hp	CO	3.07	lbs/hr	Emissions Test, see Note 2	3.07	lbs/hr	13.45	TPY
Hours:	8,760	hrs	VOC	2.14	lbs/MMscf	AP-42 Table 3.1-2a	0.04	lbs/hr	1.5E-01	TPY
Fuel Use:	16.5	Mscf/hr	SO2	3.26	lbs/MMscf	AP-42 Table 3.1-2a, see Note 3	0.05	lbs/hr	2.4E-01	TPY
			PM/PM10/PM2.5	6.73	lbs/MMscf	AP-42 Table 3.1-2a, see Note 4	0.11	lbs/hr	4.9E-01	TPY
			GHGs	120,142	lbs/MMscf	40 CFR 98, Tables C-1, C-2	1,982	lbs/hr	8,683	TPY
CIA-1: Emergency Generator			NOx	2285	lbs/MMscf	AP42 Table 3.2-3, see Note 6	4.51	lbs/hr	1.13	TPY
Size:	237	hp	CO	3687	lbs/MMscf	AP42 Table 3.2-3, see Note 6	7.28	lbs/hr	1.82	TPY
Hours:	500	hrs	VOC	30.19	lbs/MMscf	AP42 Table 3.2-3	0.06	lbs/hr	1.5E-02	TPY
Fuel Use:	1.98	Mscf/hr	SO2	6.00	lbs/MMscf	AP42 Table 3.2-3	0.01	lbs/hr	3.0E-03	TPY
			PM/PM10/PM2.5	19.8	lbs/MMscf	AP42 Table 3.2-3	0.04	lbs/hr	9.8E-03	TPY
			GHGs	120,142	lbs/MMscf	40 CFR 98, Tables C-1, C-2	237	lbs/hr	59	TPY
CIA-2: Process Heater			NOx	100	lbs/MMscf	AP42 Table 1.4-1	0.01	lbs/hr	5.4E-02	TPY
Size:	0.125	MMBtu/hr	CO	84	lbs/MMscf	AP42 Table 1.4-1	0.01	lbs/hr	4.5E-02	TPY
Hours:	8,760	hrs	VOC	5.5	lbs/MMscf	AP42 Table 1.4-2	0.00	lbs/hr	3.0E-03	TPY
Fuel Use:	0.12	Mscf/hr	SO2	6.00	lbs/MMscf	AP42 Table 1.4-2	0.00	lbs/hr	3.2E-03	TPY
			PM/PM10/PM2.5	7.6	lbs/MMscf	AP42 Table 1.4-2	0.00	lbs/hr	4.1E-03	TPY
			GHGs	120,142	lbs/MMscf	40 CFR 98, Tables C-1, C-2	15	lbs/hr	64	TPY
EU-3: Blow Down Stack			NOx	100	lbs/MMscf	AP42 Table 1.4-1	1.50	lbs/hr	1.5E-01	TPY
Size:	15	Mscf/hr	CO	84	lbs/MMscf	AP42 Table 1.4-1	1.26	lbs/hr	1.3E-01	TPY
Hours:	200	hrs	VOC	5.5	lbs/MMscf	AP42 Table 1.4-2	0.08	lbs/hr	8.3E-03	TPY
Fuel Use:	15	Mscf/hr	SO2	6.00	lbs/MMscf	AP42 Table 1.4-2	0.09	lbs/hr	9.0E-03	TPY
			PM/PM10/PM2.5	7.6	lbs/MMscf	AP42 Table 1.4-2	0.11	lbs/hr	1.1E-02	TPY
			GHGs	120,142	lbs/MMscf	40 CFR 98, Tables C-1, C-2	1,802	lbs/hr	180	TPY
FACILITY TOTALS			NOx				10.68	lbs/hr	21.70	TPY
			CO				13.14	lbs/hr	22.10	TPY
			VOC				0.21	lbs/hr	3.4E-01	TPY
			SO2				0.21	lbs/hr	4.9E-01	TPY
			PM/PM10/PM2.5				0.38	lbs/hr	1.01	TPY
			GHGs				6,067	lbs/hr	17,880	TPY

Notes:

1. NO_x emission factors were calculated using the average of three source tests conducted on EU-1 in 2021, 2019, and 2015. CO emission factors were calculated using the average of eight source tests conducted on Solar Saturn T-1302 turbines, in various geographical locations, between the years of 1995 to 2015. The CO emission factor information was provided to LRAPA by the source in a Notice of Intent to construct in 2010 and in a source test report in 2015.

2. NO_x and CO emission factors for portable turbine were estimated using the average of the source test reults from testing in 2004 & 2005 at the Oregon City Compressor Station.

3. SO_2 emissions based on referenced AP-42 emission factor equation 0.94S lb/MMBtu (where "S" is the sulfur percentage in the natural gas) and with average total sulfur content in natural gas of 2 grains/100 scf or 34 ppm (0.0034%).

4. All particulate matter is assumed to be less than 2.5 microns in diameter, so PM_{10} emissions equal $PM_{2.5}$ emissions.

5. Fuel use on generator estimated assuming an average fuel use of 8,500 Btu/hp-hr and fuel HHV of 1,020 Btu/scf.

6. Calculated the average NOx and CO emission factors from AP-42 4-stroke rich burn engine.

7. AP-42 emission factors converted from lb/MMBtu to lb/MMscf assuming a HHV of 1020 Btu/scf. GHG conversion assumes 1026 Btu/scf.

Federal Hazardous Air Pollutants

Source Info			Pollutant	Emission Factor		Reference	Potential Emissions	
EU-1: Solar Saturn T-1302 Turbine (stationary)			Acetaldehyde	4.0E-05	lb/MMBtu	AP42 Table 3.1-3	3.0E-03	TPY
Size:	1,340	hp	Acrolein	6.4E-06	lb/MMBtu	AP42 Table 3.1-3	4.8E-04	TPY
Hours:	8,760	hrs	Benzene	1.2E-05	lb/MMBtu	AP42 Table 3.1-3	9.1E-04	TPY
Fuel Use:	148.0	MMscf/yr	Ethylbenzene	3.2E-05	lb/MMBtu	AP42 Table 3.1-3	2.4E-03	TPY
	151,005	MMBtu/yr	Formaldehyde	7.1E-04	lb/MMBtu	AP42 Table 3.1-3	5.4E-02	TPY
			Naphthalene	1.3E-06	lb/MMBtu	AP42 Table 3.1-3	9.8E-05	TPY
			PAHs	2.2E-06	lb/MMBtu	AP42 Table 3.1-3	1.7E-04	TPY
			Toluene	1.3E-04	lb/MMBtu	AP42 Table 3.1-3	9.8E-03	TPY
			Xylene	6.4E-05	lb/MMBtu	AP42 Table 3.1-3	4.8E-03	TPY
EU-2: Solar Saturn T-1310 Turbine (portable)			Acetaldehyde	4.0E-05	lb/MMBtu	AP42 Table 3.1-3	2.9E-03	TPY
Size:	1,300	hp	Acrolein	6.4E-06	lb/MMBtu	AP42 Table 3.1-3	4.7E-04	TPY
Hours:	8,760	hrs	Benzene	1.2E-05	lb/MMBtu	AP42 Table 3.1-3	8.8E-04	TPY
Fuel Use:	144.5	MMscf/yr	Ethylbenzene	3.2E-05	lb/MMBtu	AP42 Table 3.1-3	2.4E-03	TPY
	147,431	MMBtu/yr	Formaldehyde	7.1E-04	lb/MMBtu	AP42 Table 3.1-3	5.2E-02	TPY
			Naphthalene	1.3E-06	lb/MMBtu	AP42 Table 3.1-3	9.6E-05	TPY
			PAHs	2.2E-06	lb/MMBtu	AP42 Table 3.1-3	1.6E-04	TPY
			Toluene	1.3E-04	lb/MMBtu	AP42 Table 3.1-3	9.6E-03	TPY
			Xylene	6.4E-05	lb/MMBtu	AP42 Table 3.1-3	4.7E-03	TPY
CIA-1: Emergency Generator			Acetaldehyde	2.79E-03	lb/MMBtu	AP42 Table 3.2-3	1.4E-03	TPY
Size:	237	hp	Acrolein	2.63E-03	lb/MMBtu	AP42 Table 3.2-3	1.3E-03	TPY
Hours:	500	hrs	Benzene	1.58E-03	lb/MMBtu	AP42 Table 3.2-3	8.0E-04	TPY
Fuel Use:	0.99	MMscf/yr	1,3-Butadiene	6.63E-04	lb/MMBtu	AP42 Table 3.2-3	3.3E-04	TPY
	1,007	MMBtu/yr	Formaldehyde	2.05E-02	lb/MMBtu	AP42 Table 3.2-3	1.0E-02	TPY
			Methanol	3.06E-03	lb/MMBtu	AP42 Table 3.2-3	1.5E-03	TPY
			Methylene Chloride	4.12E-05	lb/MMBtu	AP42 Table 3.2-3	2.1E-05	TPY
			PAHs	1.41E-04	lb/MMBtu	AP42 Table 3.2-3	7.1E-05	TPY
			1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	AP42 Table 3.2-3	1.3E-05	TPY
			Toluene	5.58E-04	lb/MMBtu	AP42 Table 3.2-3	2.8E-04	TPY
			Xylene	1.95E-04	lb/MMBtu	AP42 Table 3.2-3	9.8E-05	TPY
CIA-2: Process Heater			Benzene	2.1E-03	lbs/MMscf	AP42 Table 1.4-3	1.1E-06	TPY
Size:	0.125	MMBtu/hr	Dichlorobenzene	1.2E-03	lbs/MMscf	AP42 Table 1.4-3	6.4E-07	TPY
Hours:	8,760	hrs	Formaldehyde	7.5E-02	lbs/MMscf	AP42 Table 1.4-3	4.0E-05	TPY
Fuel Use:	1.07	MMscf/yr	Hexane	1.8E+00	lbs/MMscf	AP42 Table 1.4-3	9.7E-04	TPY
	1,095	MMBtu/yr	Naphthalene	6.1E-04	lbs/MMscf	AP42 Table 1.4-3	3.3E-07	TPY
			PAHs	5.2E-05	lbs/MMscf	AP42 Table 1.4-3	2.8E-08	TPY
			Toluene	3.4E-03	lbs/MMscf	AP42 Table 1.4-3	1.8E-06	TPY
EU-3: Blow Down Stack			Benzene	2.1E-03	lbs/MMscf	AP42 Table 1.4-3	1.6E-08	TPY
Size:	15	Mscf/hr	Dichlorobenzene	1.2E-03	lbs/MMscf	AP42 Table 1.4-3	9.0E-09	TPY
Hours:	NA	hrs	Formaldehyde	7.5E-02	lbs/MMscf	AP42 Table 1.4-3	5.6E-07	TPY
Fuel Use:	0.02	MMscf/yr	Hexane	1.8E+00	lbs/MMscf	AP42 Table 1.4-3	1.4E-05	TPY
	15	MMBtu/yr	Naphthalene	6.1E-04	lbs/MMscf	AP42 Table 1.4-3	4.6E-09	TPY
			PAHs	5.2E-05	lbs/MMscf	AP42 Table 1.4-3	3.9E-10	TPY
			Toluene	3.4E-03	lbs/MMscf	AP42 Table 1.4-3	2.6E-08	TPY
FACILITY TOTALS			Acetaldehyde				7.4E-03	TPY
			Acrolein				2.3E-03	TPY
			Benzene				2.6E-03	TPY
			1,3-Butadiene				3.3E-04	TPY
			Dichlorobenzene				6.5E-07	TPY
			Formaldehyde				0.12	TPY
			Hexane				9.8E-04	TPY
			Methanol				1.5E-03	TPY
			Methylene Chloride				2.1E-05	TPY
			Naphthalene				1.9E-04	TPY
			PAHs				4.0E-04	TPY
			1,1,2,2-Tetrachloroethane				1.3E-05	TPY
			Toluene				2.0E-02	TPY
			Xylene				9.6E-03	TPY
			Total Federal HAPs				0.17	TPY

Notes:

Does not include insignificant emissions of metals from natural gas combustion

Does not include emissions of HAPs which were not emitted above the detection limit