

Statement of Basis for Air Operating Permit—Draft

Air Liquide Large Industries U.S. LP

Anacortes, Washington

January 11, 2018



Serving Island, Skagit & Whatcom Counties

PERMIT INFORMATION
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TABLE OF CONTENTS

1	INTRODUCTION.....	5
1.1	Permit Changes in the first Renewal	5
2	FACILITY DESCRIPTION.....	6
2.1	Process Description.....	7
2.2	Emission Units and Control	8
2.3	Emissions Inventory.....	9
2.4	Permitting History	10
2.5	Compliance History	12
3	BASIS OF REGULATION APPLICABILITY.....	13
3.1	Washington Administrative Code	13
3.2	NWCAA Regulation.....	13
3.3	New Source Performance Standards (NSPS).....	13
3.4	40 CFR 61 National Emission Standards for Hazardous Air Pollutants (NESHAP) ...	16
3.5	National Emission Standards for Hazardous Air Pollutants (NESHAP)	16
3.6	Compliance Assurance Monitoring (CAM)	19
3.7	Chemical Accident Prevention Provisions.....	19
3.8	New Source Review (NSR)	19
3.9	Greenhouse Gases (GHG) Regulations.....	21
4	GENERAL PERMIT ASSUMPTIONS.....	23
4.1	Permit Content	23
4.2	One Time Requirements	23
4.3	Federal Enforceability	23
4.4	Future Requirements.....	24
4.5	Compliance Options	24
5	PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS	25
5.1	Permit Elements	25
5.2	Permit Information.....	25
5.3	Attest.....	25
5.4	Section 1 Emission Unit Identification.....	25
5.5	Section 2 Standard Terms and Conditions.....	25
5.6	Section 3 Standard Terms and Conditions for NSPS and NESHAP	26
5.7	Section 4 Generally Applicable Requirements	26
5.8	Specifically Applicable Requirements	27
5.9	Gap Filling	27
5.10	Section 6 Inapplicable Requirements.....	28
6	INSIGNIFICANT EMISSION UNITS AND INAPPLICABLE REQUIREMENTS	29
6.1	Insignificant Emission Units.....	29
6.2	Inapplicable Requirements.....	30
7	PUBLIC DOCKET AND DEFINITIONS	31
7.1	Public Docket	31
7.2	Definitions and Acronyms	31

Tables

Table 2-1 Emission Unit Identification	8
Table 2-2 Annual Emissions Inventory	9
Table 2-3 Annual Potential to Emit	10
Table 6-1 Insignificant Activities/Emission Units	29

Figures

Figure 2-1 An aerial photograph showing the Air Liquide facilities at Anacortes, WA (photo from bing.com).	6
Figure 2-2 A view of the Air Liquide facilities (surrounded by blue dots), with the PSR refinery to the north (photo from bing.com).....	7
Figure 2-3 Air Liquide flow diagram	8

1 INTRODUCTION

Air Liquide Large Industries US L.P. (from this point on in this document referred to as Air Liquide, the facility, or permittee) owns and operates an industrial gas production facility located at 8581 South Texas Road in Anacortes, WA.

Air Liquide operates a steam methane reformer (SMR) using pipeline natural gas as a raw material to produce hydrogen. The Northwest Clean Air Agency (NWCAA) has regulated the Air Liquide facility as a registered minor source since operation commenced at the facility in October 2003. However, the Air Liquide facility has been determined to be a support facility to the Puget Sound Refinery (PSR) and is therefore a major source required to obtain an Air Operating Permit (AOP or permit) pursuant to Title V of the 1990 Federal Clean Air Act (FCAA) and chapter 173-401 of the Washington Administrative Code (WAC).

The purpose of this Statement of Basis (SOB) is to set forth the legal and factual evidence for the conditions in Air Liquide's AOP and to provide background information for permit review by interested parties. This Statement of Basis is not a legally enforceable document in accordance with WAC 173-401-700(8).

1.1 Permit Changes in the first Renewal

On March 17, 2017, the NWCAA received an application for the first renewal of the Air Liquide AOP.

The following changes have been made to the AOP during the first renewal:

- Regulatory citations in the permit were revised to reflect new or modified regulations and updated revision/promulgation dates.
- Formatting throughout the entire permit has been updated to current NWCAA standards.
- Contact names and information for Air Liquide and the NWCAA were updated as appropriate. In addition, the Permit Information page reflects the updated permit number and dates for the permit renewal.
- AOP Section 2 (Standard Terms and Conditions) has been replaced with the latest NWCAA standard version, containing any new or modified regulations and updated reference dates.
- AOP Section 3 (Standard Terms and Conditions for NSPS and NESHAP) has been replaced with the latest NWCAA standard version of applicable requirements, containing any new or modified regulations and updated reference dates.
- AOP Section 4 (Generally Applicable Requirements) has been replaced with the latest NWCAA standard version of applicable requirements, containing any new or modified regulations and updated reference dates.
- AOP Section 5: The provisions of OAC 813c in the AOP were replaced with those of OAC 813d which was issued on September 22, 2016.

2 FACILITY DESCRIPTION

Air Liquide operations are located on leased land that is owned by, as well as contiguous and adjacent to, the Shell Puget Sound Refinery, which is a major facility with its own AOP. The Air Liquide SMR furnace was built to provide hydrogen to the Shell Puget Sound Refinery (PSR) Hydrotreater No.3 project, which was permitted under NWCAA OAC 787 dated January 20, 2003. The hydrogen produced at Air Liquide's hydrogen plant is purchased by the Shell Puget Sound Refinery. The purchased hydrogen is routed to a distribution header within the Shell Puget Sound Refinery. The refinery then distributes the hydrogen to its various refining processes as needed. The distribution of hydrogen produced at the Air Liquide hydrogen facility is controlled by refinery personnel and daily operating requirements of the Shell Puget Sound Refinery. Air Liquide also sends small quantities of excess steam to PSR. The distribution header and all of the operations after the header are part of the PSR AOP.

Aerial photographs showing the facility are shown in Figure 2-1 and Figure 2-2.



Figure 2-1 An aerial photograph showing the Air Liquide facilities at Anacortes, WA (photo from bing.com).



Figure 2-2 A view of the Air Liquide facilities (surrounded by blue dots), with the PSR refinery to the north (photo from bing.com).

2.1 Process Description

Natural gas is first hydrotreated and desulfurized by injecting recycled hydrogen and compressing the natural gas. It is then passed through a preheater and catalyst bed to remove any organic sulfur and methyl mercaptan, before it is mixed with steam at high temperature and sent as feed to the 90.0 MMBtu/hr HHV SMR. In the SMR, in the presence of a catalyst, methane reacts with steam to produce synthesis gas (syngas), a mixture of carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), and methane (CH₄). The gas then undergoes a “shift conversion” in which the CO produced further reacts with steam in the presence of a catalyst to form hydrogen and CO₂.

Following a cooling process, the product gas is passed through a Pressure Swing Adsorption (PSA) unit to purify it and produce 99.99% pure product hydrogen. The remaining carbon dioxide, hydrogen, methane, and carbon monoxide rejected from the PSA unit (called PSA offgas) is recycled back as fuel to the SMR furnace. For events of emergency and startup/shutdown, the process gases are routed to a flare and destructed.

A schematic diagram of the Air Liquide process is shown in Figure 2-3.

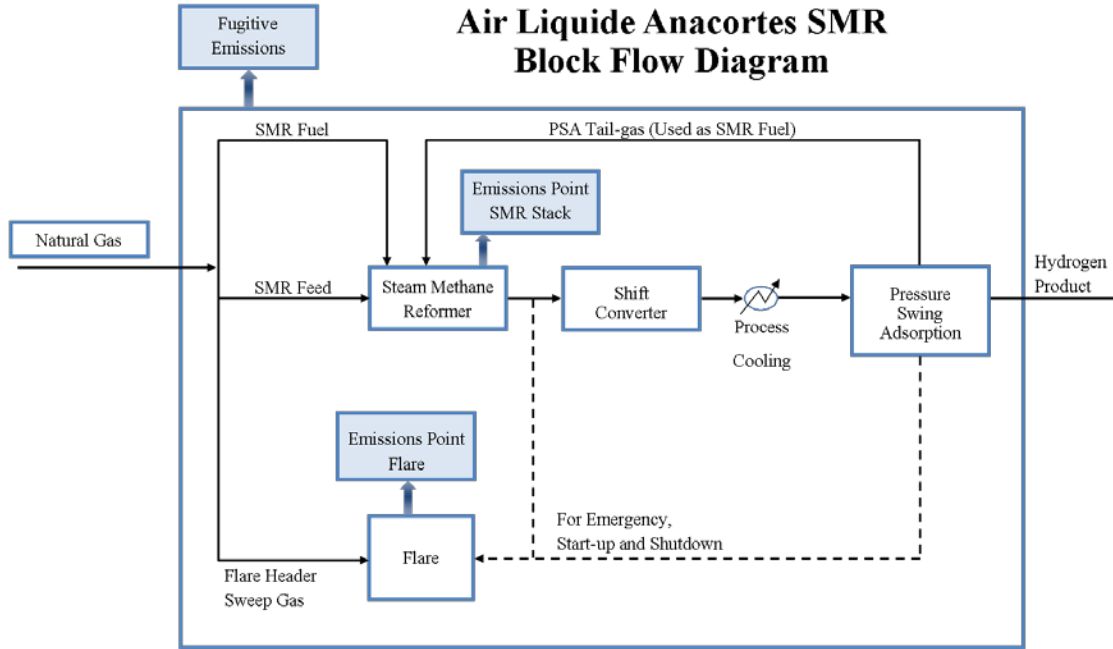


Figure 2-3 Air Liquide flow diagram

2.2 Emission Units and Control

Primary emission sources at the facility are listed in Table 2-1. There are also insignificant emission units at the facility that are exempt according to WAC 173-401-532.

Table 2-1 Emission Unit Identification

Emission Unit Identification	Construction /Modification Year	Control Device	Process Description
SMR	2003	Flare	Feed to the Steam Methane Reformer (SMR) consists of desulfurized recycled hydrogen and natural gas, mixed with steam. In the reformer, methane catalytically reacts with steam at high temperature to produce syngas, a mixture of hydrogen (H ₂), carbon dioxide (CO ₂), carbon monoxide (CO) and methane (CH ₄). Another catalytic reaction, called "shift conversion" reacts the CO with steam to form hydrogen and carbon dioxide (CO ₂). After cooling, this gas mixture is purified by removing CO ₂ in the Pressure Swing Adsorption (PSA) unit, producing high-purity hydrogen. The remaining CO ₂ , H ₂ , CH ₄ , and CO rejected from the PSA unit (called PSA offgas) is recycled back as fuel (along with

Emission Unit Identification	Construction /Modification n Year	Control Device	Process Description
			supplemental natural gas) to the SMR furnace.
Flare	2003	None	Process gases are routed to a flare for combustion during SMR startups, shutdowns, maintenance events, and in the event of an emergency.

2.3 Emissions Inventory

NWCAA has been collecting emissions inventory data from Air Liquide since the facility submitted its AOP application. Air Liquide reported actual emissions from the emission units at the facility for 2009 - 2016 as shown in Table 2-2.

Table 2-2 Annual Emissions Inventory

Pollutant	2009	2010	2011	2012	2013	2014	2015	2016
Criteria Pollutants	Tons							
CO	5.07	6.47	6.47	6.43	6.19	6.66	0.33	1.14
NOx	7.76	9.91	9.90	9.84	9.48	10.16	14.62	12.6
TSP	1.05	1.34	1.33	1.30	1.28	1.37	1.39	1.2
PM10	1.05	1.34	1.33	1.30	1.28	1.37	1.39	1.2
SO ₂	0.25	0.30	0.31	0.26	0.22	0.21	0.12	0.08
VOC	1.60	1.60	1.60	1.61	1.6	1.6	1.62	1.51

2.3.1 Potential to Emit

Air Liquide replaced the burners in the SMR furnace with new ultra-low NOx burners. Included with the permit application for the replacement, received on August 8, 2016, was the potential to emit for the new burners. This is shown below, on Table 2-3.

Table 2-3 Annual Potential to Emit

Pollutant	Emissions (ton/yr)
PM10	1.94
PM2.5	1.94
NOx	12.34
CO	2.36
SO2	N/A
VOC	0.67

Air Liquide is not, in itself, major for any pollutants. As discussed at the start of Section 2, the facility is required to have an AOP because it is a support facility for PSR. PSR is major and has the potential to emit:

- 100 tons or more of oxides of nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter, volatile organic compounds (VOC) , and carbon monoxide (CO);
- 10 tons per year or more of any hazardous air pollutant (HAP);
- 25 tons per year or more of a combination of HAP; and
- Both 100,000 tons or more of CO_{2e} per year and 100 tons or more of greenhouse gases (GHG) per year.

2.4 Permitting History

2.4.1 Northwest Clean Air Agency Orders of Approval to Construct

2.4.1.1 OAC 813

Air Liquide received OAC 813 from the NWCAA on October 7, 2002. The order was issued for a new steam methane reformer (SMR) that was built as a dedicated support facility to provide hydrogen for PSR’s new hydrotreating unit #3.

2.4.1.2 OAC 813a

On September 13, 2004, NWCAA issued OAC 813a, revising the previous OAC. Revisions included reformatting of the permit and adding an annual NO_x limit for the flare with associated recordkeeping.

2.4.1.3 OAC 813b

On August 19, 2013, NWCAA issued OAC 813b, revising OAC 813a. Changes in OAC 813b were as follows:

- Revise NO_x and CO limits in Conditions 6 and 7 from a three-hour rolling average to a 1 hour average (same numerical limit).

- Revise Condition 8 from an initial stack test to an annual stack test.
- Remove Condition 9 as part of the OAC cleanup.

2.4.1.4 OAC 813c

On February 25, 2014, NWCAA issued OAC 813c, revising OAC813b. Changes in OAC 813c were as follows:

- Include 40 CFR 63 Subpart DDDDD and 40 CFR 60 Subpart J in the preamble of the OAC.
- Remove lb/MMBtu limits for NO_x and CO.
- Clarify Conditions 5 (opacity) and 8 (testing)

In the original permit issuance (OAC 813), NO_x and CO levels in the exhaust were written with a lb/hr limit or a lb/MMBtu limit. For NO_x, the limits were 2.8 lb/hr or 0.035 lb/MMBtu, and for CO the limits are 1.7 lb/hr or 0.022 lb/MMBtu.

According to past NWCAA practice, the facility would be in compliance if it passed either of the two limits (lb/hr or lb/MMBtu). Also, note that the lb/hr limit is based on the lb/MMBtu limit (multiply the lb/MMBtu by the 80.2 MMBtu/hr – the capacity of the SMR - to get the lb/hr).

In a facility such as this, it is straightforward to measure the lb/hr using EPA methods 1, 2, 3A, 4, and 7E (for NO_x) and 1, 2, 3A, 4, and 10 (for CO). Measuring lb/MMBtu would require EPA method 19, which is more complicated since the SMR burns natural gas and PSA off-gas.

2.4.1.5 OAC 813d

On July 1, 2016, Agreed Compliance Order No. 16 was issued. As part of that Order, Air Liquide agreed to replace the burners with ultra-low NO_x burners on their SMR furnace.

On August 8, 2016, the NWCAA received a permit application from Air Liquide for replacement of the burners in the SMR furnace.

OAC 813d was issued on September 22, 2016. The NO_x and CO limits are identical to the previous OAC 813c, at 2.8 lb/hr and 1.7 lb/hr respectively.

2.4.2 Compliance Reports

The Air Liquide AOP requires periodic, semiannual, and annual reports to be submitted to the NWCAA as part of the facility's ongoing compliance demonstration. When a permit deviation occurs, the facility is required to submit a periodic report within 30 days after the end of the month (during which the deviation occurred) identifying any excess emissions, discussing any deviations, discussing the cause and what was done to correct the problem. The facility must also submit a semiannual summary report of emissions, process information, and continuous monitoring system performance. In addition, semiannual reports must be certified by the responsible corporate official as to the truth, accuracy, and completeness of reports submitted during the previous six-month period. Annually, the responsible corporate official also certifies compliance with all applicable requirements in the AOP term-by-term, and state whether the facility was fully or intermittently in compliance with each term.

2.5 Compliance History

2.5.1 Consent Order 3

Discussions between the NWCAA, the EPA, and Air Liquide culminated with Consent Order 3 issued by NWCAA on April 1, 2011. The Consent Order 3 required Air Liquide to apply for a Title V permit and pay AOP fees to the NWCAA.

According to article VII of Consent Order 3, the provisions of the order are deemed satisfied upon Air Liquide's submittal of a Title V permit application and payment of the Title V permit program fees. Air Liquide submitted their original permit application on May 27, 2011 and have been since paying the applicable Title V permit program fees.

2.5.2 NOV 4188 and Compliance Order 16

On July 27, 2015, Air Liquide failed a required annual source test for NOx. According to the test results, the measured NOx emission result was 2.9 lb/hr (permit limit was is 2.8 lb/hr).

As a result, NOV 4188 was issued on December 15, 2015.

Compliance Order 16 was issued on July 1, 2016, and provided resolution to NOV 4188 and included a schedule for returning the SMR furnace to compliance with the permit on or before April 15, 2017.

According to the provisions of Compliance Order 16, Air Liquide was to file an NOC application for the installation of ultra-low NOx burners, obtain a permit, and perform a stack test on the SMR furnace within 90 days of installation of the new burners. Air Liquide was also assessed a penalty of \$4,000.

Article VII of Compliance Order 16 required NWCAA to provide written notification to Air Liquide when the provisions of the Order had been satisfied. Such notification was sent to Air Liquide on December 4, 2017.

3 BASIS OF REGULATION APPLICABILITY

3.1 Washington Administrative Code

The Washington Administrative Code (WAC) primarily contains requirements that apply generally to all air pollution sources. These generally applicable requirements, such as limits on visible emissions (opacity), SO₂, and fugitive particulate matter are addressed in Section 4 of the AOP.

3.2 NWCAA Regulation

The NWCAA Regulation primarily contains requirements that are generally applicable to all air pollution sources. These generic limits are addressed in Section 4 of the AOP.

Most of the requirements in NWCAA Section 580 apply specifically to various petroleum refinery processes (storage vessels, equipment leaks, turnarounds and vacuum systems, and loading racks). Sections 580.25-580.10 are not applicable to Air Liquide because Air Liquide does not own or operate sources that belong to those categories addressed in the corresponding section.

The implementation of federal Clean Air Act requirements (in particular programs related to the NAAQS) has been delegated (in part) to NWCAA. State and local (NWCAA) regulations that support compliance with the NAAQS are part of NWCAA's State Implementation Plan (SIP) and are therefore enforceable by both the EPA and the NWCAA. There is a lag between a change to a state/local regulation and EPA's approval of the revision to the regulation into the SIP. The AOP lists both the SIP-approved version of a regulation and the version of the regulation that isn't yet SIP approved (identified as "state only").

The NWCAA does not have authority to issue PSD permits. The Washington Department of Ecology has retained that authority. After a PSD is issued, the PSD conditions are incorporated into the facility's AOP.

The NWCAA has authority to enforce requirements identified in the AOP.

3.3 New Source Performance Standards (NSPS)

3.3.1 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)

The SMR furnace is equipped with natural gas/PSA offgas burners. These burners meet the definition of process heaters in 40 CFR 60 Subpart Dc (NSPS Subpart Dc). The burners are used primarily for driving the reformer reaction, so they qualify as a process heater and not as a steam generating unit. Any steam generated from latent heat in the waste gas from the SMR is incidental to the primary operation of the reformer. Therefore, Air Liquide is not subject to NSPS Subpart Dc. Note that this is consistent with a similar EPA determination¹.

¹ <http://cfpub.epa.gov/adi/pdf/adi-nsps-9900003.pdf>, accessed on 9.18.2012

3.3.2 40 CFR 60 Subpart J (Standards of Performance for petroleum refineries)

The requirements of 40 CFR 60 Subpart J (NSPS Subpart J) apply to refinery fuel gas combustion devices such as process heaters constructed after 6/11/73 but before 5/14/07, and flares constructed after 6/11/73 but before 6/24/08. Air Liquide is a support facility of a petroleum refinery and the SMR and flare were constructed in 2004. Therefore, the SMR and flare are potentially subject to NSPS Subpart J.

SMR: The SMR fires both natural gas and PSA off-gas. “Fuel gas” under NSPS Subpart J is defined as “any gas which is generated at a petroleum refinery and which is combusted”. Because the PSA off-gas is generated by the hydrogen processing equipment onsite, it is technically generated at a petroleum refinery so qualifies as “fuel gas”. According to the definition in NSPS Subpart J, any natural gas mixed with refinery-generated gas is also considered fuel gas. As such, the SMR is subject to NSPS Subpart J requirements for fuel gas combustion devices.

Flare: Similarly to the SMR, the flare combusts gases generated at Air Liquide, a petroleum refinery, is subject to NSPS Subpart J requirements for fuel gas combustion devices.

Note, however, that fuel gas combustion devices are only subject to sulfur oxide emission standards under NSPS Subpart J. According to 40 CFR 60.105(a)(4)(iv)(C), fuel gas combustion devices that combust fuel gas that is inherently low in sulfur do not require a continuous SO₂ monitor. Hydrogen plants are explicitly listed as process units that are intolerant to sulfur contamination and, thus, are considered inherently low in sulfur. Therefore, the SMR and the flare must meet NSPS Subpart J emissions standards, recordkeeping, and reporting but are not subject to continuous monitoring requirements.

3.3.3 40 CFR 60 Subpart Ja (Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007)

40 CFR 60 Subpart Ja (NSPS Subpart Ja) applies to fuel gas combustion devices that are constructed, reconstructed, or modified after May 14, 2007. Unlike NSPS Subpart J, the NSPS Subpart Ja definition of a “fuel gas combustion device” specifically excludes flares. However, the SMR furnace does qualify as a fuel gas combustion device.

As discussed in Section 3.3.2, the SMR was originally constructed before May 1, 2007. However, Air Liquide replaced the burners in 2016 (OAC 813d, issued on 22 September, 2016). The burner replacement requires further review to determine whether it qualified as reconstruction or modification under Subpart Ja.

According to §60.15 of 40 CFR 60 Subpart A, *reconstruction* means the replacement of components of an existing facility to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. The cost of the burners replacement at Air Liquide is low enough that the project does not qualify as reconstruction.

According to Subpart A of 40 CFR 60, *Modification* means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted. The burners replacement did not increase air emissions of any air pollutant to which NSPS Subpart Ja applies, so it did not qualify as a modification.

According to the above, NSPS Subpart Ja does not apply.

3.3.4 40 CFR 60 Subpart GGG (Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006)

40 CFR 60 Subpart GGG (NSPS Subpart GGG) applies to equipment leaks of VOC at petroleum refineries that commenced construction after January 4, 1983 and before November 7, 2006. Subject fugitive components are those “in VOC service” (i.e., contain or contact material that is at least 10% VOC by weight). From the fugitive emissions calculations in the NOC application for OAC 813a, none of the streams are greater than 10% VOC. As such, the equipment leaks at Air Liquide are not subject to the requirements of NSPS Subpart GGG.

3.3.5 40 CFR 60 Subpart GGGa (Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006)

40 CFR 60 Subpart GGGa (NSPS Subpart GGGa) applies to equipment leaks of VOC at petroleum refineries that commenced construction after November 7, 2006. Air Liquide commenced construction in 2002. As such, NSPS Subpart GGGa does not apply.

3.3.6 40 CFR 60 Subpart QQQ (Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems)

40 CFR 60 Subpart QQQ (NSPS Subpart QQQ) applies to individual drain systems along with other portions of the oily wastewater collection system at petroleum refineries. Oily wastewater means “wastewater generated during the refinery process which contains oil, emulsified oil, or other hydrocarbons. Oily wastewater originates from a variety of refinery processes including cooling water, condensed stripping steam, tank draw-off, and contact process water”. Air Liquide routes its wastewater to PSR for treatment as oily process water in the refinery Effluent Plant. It is unlikely that any water at Air Liquide would contact any organics or oil during normal operations since the only organics that Air Liquide handles is natural gas as a raw material. As such, the drains at Air Liquide would not be considered process drains and is not subject to NSPS Subpart QQQ.

3.4 40 CFR 61 National Emission Standards for Hazardous Air Pollutants (NESHAP)

National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR 61 apply to specific operations that handle certain hazardous air pollutants (HAP). Generally, several NESHAP rules potentially apply to petroleum refineries based on the materials they handle; however, only one, 40 CFR 61 Subpart FF, applies specifically to petroleum refineries. 40 CFR 61 Subpart FF (National Emission Standard for Benzene Waste Operations) applies to petroleum refineries that treat, store, or dispose of benzene-containing waste.

Air Liquide does not handle any process material that contains benzene, and as such, Air Liquide is not subject to 40 CFR 61 Subpart FF.

3.5 National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP under 40 CFR 63 apply facility-wide to specific industries that are major sources of HAP. Generally, the construction date of equipment does not play into specific applicability; it just determines whether the equipment is considered “existing” or “new” equipment, which dictates the standards to which it is subject. Petroleum refineries, as major sources of HAP, are subject to certain NESHAP (Subparts CC and UUU) under 40 CFR 63. In addition, 40 CFR 63 Subpart DDDDDD (also known as the boiler MACT) potentially applies to Air Liquide.

3.5.1 40 CFR 63 Subpart CC (National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries)

40 CFR 63 Subpart CC, also known as the Refinery MACT, applies to “petroleum refining process units” that are located at a major source and that contain or contact any of the HAPs listed in Table 1 of the rule. “Petroleum refining process unit” means a process unit used in an establishment primarily engaged in petroleum refining that produces transportation fuels (such as gasoline, diesel fuels, and jet fuels), heating fuels (such as kerosene, fuel gas distillate, and fuel oils), or lubricants; separates petroleum; or separates, cracks, reacts, or reforms intermediate petroleum streams. Examples of such units include hydrogen production. Hence, 40 CFR 63 Subpart CC applies to the Air Liquide SMR. Equipment vents, leaks, and wastewater streams associated with petroleum refining process units are also listed as affected.

In December 2015, EPA amended several rules in an initiative known as the “Refinery Sector Rule” (RSR) amendments. The affected regulations include 40 CFR 60 Subparts J and Ja and 40 CFR 63 Subparts CC and UUU. Air Liquide, as a support facility to the Shell Puget Sound Refinery (PSR), is potentially subject to these refinery regulations.

Miscellaneous Process Vents (MPV): According to 40 CFR 63 Subpart CC, MPV may be classified as Group 1 or Group 2. Group 1 MPV means a MPV for which the total organic HAP concentration is greater than or equal to 20 ppmv, and the total VOC emissions are greater than or equal to 33 kilograms per day for existing sources and 6.8 kilograms per day for new sources at the outlet of the final recovery device

(if any) and prior to any control device and prior to discharge to the atmosphere. Group 2 MPV means a MPV that does not meet the definition of a Group 1 MPV.

Air Liquide evaluated vents at their facility for 40 CFR 63 Subpart CC applicability. Two of the organic HAP regulated by 40 CFR 63 Subpart CC, hexane and methanol, were found to be present in concentrations greater than 20 ppmv: hexane was found in natural gas and methanol was found in syngas and PSA offgas.

Air Liquide's vents that have organic HAP concentrations greater than 20 ppmv were found to discharge less than 33 kg (72 lb) of VOC per day. The VOC discharge from each vent was conservatively calculated assuming the entire volume of the equipment serviced by the vent is fully depressurized from 5 psig to atmosphere in a single day. The most VOC emitted from any single vent was reported by Air Liquide to be less than 0.4 lb/day. This means that these process vents qualify as Group 2 MPV according to the definitions in 40 CFR 63.641. Air Liquide will submit a Notice of Compliance Status (NCS) report listing these vents as Group 2 MPVs within 150 days of the compliance date on 1 August, 2017 by 29 December, 2017.

Wastewater Streams: Wastewater is defined in the Refinery MACT as "water or wastewater that, during production or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product and is discharged into any individual drain system. Examples are feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; and condensed steam from jet ejector systems pulling vacuum on vessels containing organics." As discussed above under NSPS Subpart QQQ, Air Liquide routes its wastewater to PSR for treatment in the PSR Effluent Plant. However, it is unlikely that any water at Air Liquide would contact any organics during normal operation. The only organics that Air Liquide may potentially handle is natural gas as a raw material. As such, Air Liquide's wastewater system is not subject to Refinery MACT requirements.

Equipment Leaks: Equipment leaks is defined in the Refinery MACT as emissions of organic hazardous air pollutants from a pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, or instrumentation system "in organic hazardous air pollutant service" as defined in the rule. "In organic hazardous air pollutant service" means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAPs. The original NOC application from Air Liquide (OAC 815) estimated both VOC and HAP emissions from fugitives. None of the streams within Air Liquide are likely to contain at least 5% HAP. As such, Air Liquide's equipment leaks are not subject to Refinery MACT requirements.

Storage vessels: Air Liquide does not have any storage vessels that are subject to Refinery MACT requirements.

3.5.2 40 CFR 63 Subpart UUU (National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units)

Air Liquide does not operate any catalytic cracking units, catalytic reforming units, or sulfur recovery units. As such, Air Liquide is not subject to 40 CFR 63 Subpart UUU.

3.5.3 40 CFR 63 Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters)

Air Liquide is subject to 40 CFR 63 Subpart DDDDDD, also known as the boiler MACT. According to §63.7485, one is subject to 40 CFR 63 Subpart DDDDD if one owns or operates an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAP as defined in §63.2 or §63.761. Air Liquide is part of a major source of HAP. The basis for this determination follows.

According to §63.2, major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

Emissions from Air Liquide itself are less than 10 tons per year of any hazardous air pollutant and less than 25 tons per year from any combination of hazardous air pollutants. The Puget Sound Refinery (PSR) is a major source of HAP.

Air Liquide is part of a major source of HAP (i.e., PSR) because the two are contiguous and under common control. According to EPA, “joint ownership, voting interest, contracts, liability, managerial hierarchy, and dependency are screening tools to use for common control decisions” (see EPA document Control Number M980015 from the EPA Applicability Index²). Since Air Liquide provides its entire product (hydrogen) to PSR, under contract, then Air Liquide and PSR may be deemed to be under common control.

In addition, according to NWCAA Compliance Order 3, dated April 1, 2011, Air Liquide was determined to be a support facility to PSR.

Therefore, Air Liquide is subject to 40 CFR 63 Subpart DDDDD.

According to provisions in the boiler MACT, Air Liquide has to perform an initial energy assessment and tune-up of their SMR. Because the SMR has oxygen trim, Air Liquide must follow up with tune-ups of the SMR every five years.

The initial energy assessment for the SMR at Air Liquide has been completed in December 2015.

² <http://cfpub.epa.gov/adi/pdf/adi-mact-m980015.pdf>, accessed on 07/10/2012.

3.6 Compliance Assurance Monitoring (CAM)

The requirements of Compliance Assurance Monitoring are contained in 40 CFR 64. They apply to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit provided the unit satisfies all criteria as delineated in 40 CFR 64.2(a)(1)-(3). In particular, 40 CFR 64.2(a)(2) stipulates that the emission unit uses a control device to achieve compliance. Air Liquide does not use any control devices, as these are defined in 40 CFR 64.1, to achieve compliance. Therefore, Air Liquide is not subject to the CAM rule.

3.7 Chemical Accident Prevention Provisions

The goal of 40 CFR 68 and the risk management program it requires is to prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur. If a tank, drum, container, pipe, or other process at a facility contains any of the extremely hazardous toxic and flammable substances listed in Table 1 to 40 CFR 68.130 in an amount above the “threshold quantity” specified for that substance, the facility operator is required to develop and implement a risk management program.

Air Liquide uses methane in their SMR, but the quantities used are significantly less than the 10,000 lb threshold quantity listed in Table 1 to 40 CFR 98. Air Liquide does not have any other substances in the threshold quantities listed in Table 1 to 40 CFR 68.130 and therefore it is not subject to the requirements of 40 CFR 98.

3.8 New Source Review (NSR)

3.8.1 Basic Information

New Source Review requires stationary sources of air pollution to acquire permits before they begin construction. NSR is also referred to as construction permitting or preconstruction permitting.

There are three types of NSR permits. A source may have to acquire one or more of these permits:

- Prevention of Significant Deterioration (PSD) permits, which are required for new major sources or a major source making a major modification in an attainment³ area;
- Nonattainment NSR permits, which are required for new major sources or major sources making a major modification in a nonattainment area (the facility is located in an area which is currently in attainment for all pollutants, so nonattainment NSR permits don't apply); and
- Minor source permits, which are required for sources that emit pollutants below the major source threshold but above the minor source threshold. It is generally the case that a major new or modified source will also require

³ An attainment area means a geographic area designated by EPA at 40 CFR 81 as having attained the National Ambient Air Quality Standard for a given criteria pollutant (Reference: WAC 173-400-030 (9)).

minor NSR permitting that covers a different subset of pollutants. Minor source permits apply in both attainment and non attainment areas.

3.8.2 What are Permits?

Permits are legal documents that the source must follow. Permits specify what emission limits must not be exceeded and how the source is to demonstrate compliance with the set limits. Permits may contain conditions to ensure that the source is built according to the permit application upon which the permitting agency relies for air impact analysis. For example, the permit may specify a stack height that was used by the permitting agency to determine compliance with air pollutant limits. Some limits in the permit may be specified at the request of the source to keep them from being subject to other requirements. For example, the source may take limits in a minor NSR permit to keep the source out of PSD. To assure that sources follow permit requirements, permits also contain monitoring, recordkeeping, and reporting (MR&R) requirements.

3.8.3 Who Issues the Permits?

In Washington State most NSR permits are issued by the Washington State Department of Ecology (“Ecology”) or local air pollution control agencies like NWCAA. The EPA issues the permit in some cases. Ecology and local air pollution control agencies have their own permit programs that are approved by EPA in the State Implementation Plan (SIP). In general, in the NWCAA jurisdiction, which encompasses Island, Skagit, and Whatcom Counties, Ecology issues major NSR permits (PSD permits) and NWCAA issues minor NSR permits (Orders of Approval to Construct, or OACs).

3.8.4 Prevention of Significant Deterioration

Before a major source can be constructed or modified in an area that meets all the health-based ambient air requirements (i.e. in an attainment area), the owner or operator must demonstrate that the project will not cause or contribute to violations of any ambient air quality standard or air quality increment. Also, the owner or operator must demonstrate that the project will not cause significant deterioration in nearby Class I Areas (parks and wilderness areas).

Air Liquide is not currently a major source, and so is not subject to the PSD program. The facility could become subject if they undertake a project that triggers major source thresholds.

3.8.5 Minor NSR

New or modified sources of air pollution are required to obtain a permit from the NWCAA before beginning construction. Permits are referred to as Orders of Approval to Construct (OACs) and contain a wide range of local, state, and federal requirements to minimize air pollution impacts on the environment. The type of activity, the size of the operation, and the kinds of pollutants emitted determine permit conditions.

3.9 Greenhouse Gases (GHG) Regulations

3.9.1 40 CFR 98, Federal Mandatory Greenhouse Gas Emission Inventory Regulation

The requirements for the mandatory greenhouse gas reporting are contained in 40 CFR 98. This regulation is implemented in its entirety by the EPA. This regulation is excluded from appearing in an AOP because it does not contain applicable requirements under the Title V program (WAC 173-401-200(4)).

The following discussion is included here for completeness. In order for a facility to be subject to 40 CFR 98, it must meet the requirements of 1, 2, or 3 below:

1. A facility that contains any source category that is listed in Table A–3 of 40 CFR 98 Subpart A.
2. A facility that contains any source category that is listed in Table A–4 of 40 CFR 98 Subpart A that emits 25,000 metric tons CO₂e or more per year in combined emissions from stationary fuel combustion units.
3. A facility that has stationary fuel combustion units with an aggregate maximum rated heat input of 30 MMBtu/hr or greater, and the facility emits 25,000 metric tons CO₂e or more per year in combined emissions from all stationary fuel combustion sources.

Subpart P of 40 CFR 98 establishes reporting requirements for hydrogen production. This source category consists of process units that produce hydrogen by reforming, gasification, oxidation, reaction, or other transformation of feedstock, and that sell the hydrogen as a product. Hydrogen production units that are located at a petroleum refinery are included in this source category if they are not owned by or under the direct control of the refinery owner. Hydrogen production units that are owned by a petroleum refinery must report under subpart Y (Petroleum Refineries).

According to information submitted by Air Liquide, in 2011 their throughput was 1,131,065,770 scf of natural gas and their GHG emissions were 63,139 metric tons of CO₂e. Therefore, the facility is subject to the reporting requirements of 40 CFR 98.

3.9.2 WAC 173-441, Washington State Reporting of Emissions of GHG

Chapter 173-441 WAC, “Reporting of Emissions of Greenhouse Gases”, is a mandatory greenhouse gas (GHG) reporting rule for:

- Suppliers that supply applicable fuels sold in Washington State of which the complete combustion or oxidation would result in at least 10,000 metric tons of carbon dioxide annually; or
- Any listed facility that emits at least 10,000 metric tons of CO₂-equivalents (CO₂e) of greenhouse gases annually in the state.

WAC 173-441 was adopted by Ecology on December 1, 2010 and became effective on January 1, 2011. This regulation applies to the facility because the facility emits at least 10,000 metric tons of CO₂e of greenhouse gases per year. Similar to the

federal reporting rule (40 CFR 98, see discussion in Section 3.9.1), WAC 173-441 requires annual GHG inventories with reports due no later than March 31 of the following year for facilities that are also subject to 40 CFR 98. Under WAC 173-441, annual emissions shall be reported to Ecology beginning in calendar year 2012. This regulation is implemented in its entirety by Ecology and is considered an applicable requirement under the Title V program; as such, it is included in Section 2 of the AOP for the facility.

3.9.1 Chapter 173-442 WAC – Clean Air Rule

Chapter 173-442 WAC, “Clean Air Rule” (CAR), adopts a mandatory greenhouse gas reduction program for petroleum product producers, natural gas distributors, petroleum product importers, and other energy intensive, trade exposed (EITE) covered parties. EITE covered parties include are included in WAC 173-442-020 by their NAICS code. Air Liquide has an NAICS code of 325120, “Industrial Gas Manufacturing.” This is not included in WAC 173-442-020.

Because Air Liquide GHG emissions are less than 70,000 MT CO₂e/year, the facility does not have to report. However, if Air Liquide’s GHG emissions do exceed 70,000 MT CO₂e/year on a three-year average, then they will need to be assigned a baseline, a GHG reduction pathway, and emission reduction requirements under WAC 173-442-070.

4 GENERAL PERMIT ASSUMPTIONS

4.1 Permit Content

The permit contains (1) standard terms; (2) generally applicable conditions for the type of facility permitted; and (3) specifically applicable conditions originating from local rules, state rules, federal rules, PSD permits, approvals to construct and any orders referencing the facility. Applicable requirements that were satisfied by a single past action on the part of the source are not included in the permit but are discussed in the Statement of Basis. An example would include performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

4.2 One Time Requirements

The initial energy assessment for the SMR at Air Liquide was completed in December 2015, and a copy of the report was submitted to the NWCAA. Therefore, the boiler MACT requirement for the assessment has been removed from the AOP.

Condition 11 of OAC 813d requires Air Liquide to provide written notice to NWCAA of the date of initial firing of the John Zink burners. The notification was received via email on 1 December 2016.

4.3 Federal Enforceability

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act or under any of its applicable requirements such as part 63 of Title 40 (the NESHAP program). Local and state regulations may become federally enforceable by formal approval and incorporation into the State Implementation Plan (SIP) or through other delegation mechanisms. Federally enforceable requirements are enforceable by the EPA and by citizens of the United States by citizen lawsuits. All applicable requirements in the AOP, including Standard Terms and Conditions, Generally Applicable Requirements, and Specifically Applicable Requirements are federally enforceable unless identified in the AOP as enforceable only by the state and labeled as "state only".

Chapter 173-401 WAC is not federally enforceable although the requirements of this regulation are based on federal requirements for the air operating permit program. Upon issuance of the AOP, the terms based on Chapter 173-401 WAC will become federally enforceable for Air Liquide.

Most rules and requirements are followed by a date in parentheses. Two different versions (identified by the date) of the same regulatory citation may apply to the source if federal approval/delegation lags behind changes made to the Washington Administrative Code (WAC) or the NWCAA Regulation. The date associated with a WAC regulation denotes the "State Effective Date" of the regulation. For SIP-approved WAC regulations (identified by the absence of the "state only" designation), the date represents the "State Effective Date" of the regulation version that was SIP-approved. For NWCAA regulations, the date represents the

most recent NWCAA Board of Directors adoption date, which is identified as the “Passed” or “Amended” date in the NWCAA Regulation. For SIP-approved portions of the NWCAA Regulation (also identified by the absence of the “state only” designation), the parenthetical date represents the “Passed” or “Amended” date of the Regulation version that was SIP-approved. The date associated with an OAC permit represents the latest revision date of that OAC. For a federal rule, the date is the rule’s most recent promulgation date.

4.4 Future Requirements

There are no pending applicable requirements that apply to Air Liquide. Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within Section 3 of the AOP. There is presently no pending application to construct a new emission source at Air Liquide. Air Liquide officials have certified in their permit application that the facility will meet any future applicable requirements on a timely basis.

4.5 Compliance Options

Air Liquide did not request emissions trading provisions or specify more than one operating scenario in the AOP application, so the permit does not address these options. This AOP does not condense overlapping applicable requirements (streamlining) nor does it provide any alternative emission limitations.

5 PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS

5.1 Permit Elements

The Air Liquide AOP is divided into the following sections:

Permit Information Page

Attest

Table of Contents

Section 1- Emissions Unit Identification

Section 2 - Standard Terms and Conditions

Section 3 – Standard Terms and Conditions for NESHAP

Section 4 - Generally Applicable Requirements

Section 5 – Specifically Applicable Requirements

Section 6 - Inapplicable Requirements

5.2 Permit Information

The Permit Information page identifies the source and provides general information relevant to the permit such as the facility address, the responsible corporate official, the permit issuance date and the permit expiration date, and the agency personnel responsible for permit preparation, review, and issuance.

5.3 Attest

The Attest page provides authorization for the source to operate under the terms and conditions contained in the permit.

5.4 Section 1 Emission Unit Identification

The Emission Unit Identification section lists emission units, rated capacities, installation date, and air pollution control methods at the Air Liquide facility.

5.5 Section 2 Standard Terms and Conditions

The Standard Terms and Conditions section of the AOP (Section 2) specifies administrative requirements or prohibitions with no ongoing compliance monitoring requirements. The legal authority for the Standard Terms and Conditions is provided in the citations in Section 2 of the AOP. The description of the regulation in each of these conditions (with the exception of those labeled “Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02”) is sometimes a paraphrase of the actual regulatory requirement. Where there is a difference between the actual requirement and the paraphrased description, the cited regulatory requirement takes precedence. In an effort to make the section more readable, the terms and conditions have been grouped by function. In some cases,

similar requirements at the state and local authority level have been grouped together.

Several permit conditions in Section 2 of the AOP are labeled “Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02”. These conditions are a clarification of the regulatory requirements, as the NWCAA interprets those requirements. “Directly enforceable” conditions are legal requirements with which the permittee must comply and are directly enforceable through the permit per NWCAA’s gap-filling authority.

A number of requirements that would not be applicable until triggered have also been included in Section 2 of the AOP. An example of one such requirement is the requirement for a source to submit an application for new source review.

5.6 Section 3 Standard Terms and Conditions for NSPS and NESHAP

Air Liquide is subject to the standards of performance for petroleum refineries (Subpart J to Part 60 of 40 CFR), the boiler MACT (Subpart DDDDD to Part 63 of 40 CFR), and subpart CC to 40 CFR 63. Section 3 of the AOP includes the standard terms and conditions that are contained in Subpart A (General Provisions) of 40 CFR 60 and Subpart A of 40 CFR 63. Such standard terms and conditions are administrative, notification, and/or other requirements that typically have no ongoing compliance monitoring requirements.

5.7 Section 4 Generally Applicable Requirements

The Generally Applicable Requirements section of the permit identifies requirements that apply broadly to Air Liquide. With some exceptions, each of these requirements applies non-specifically to sources. For example, NWCAA Regulation Section 455.1 broadly prohibits particulate emissions that exceed 0.1 gr/dscf from any emissions unit. However, some requirements apply to only certain types of emissions units. For example, NWCAA Regulation Section 455.11 applies only to combustion equipment and WAC 173-400-060 applies only to general process units. Despite these differences in applicability, these requirements have been listed together in the Generally Applicable Requirements section of the permit.

The Generally Applicable Requirements are organized in Table 4-1 in the permit. The first column of Table 4-1 provides permit term numbers used to identify listed elements. The requirements specified in the second column are applicable plant-wide to all emission units at the source, including insignificant emission units. The third column describes the applicable requirements for informational purposes only, and is not enforceable. The fourth column identifies monitoring the permittee must perform to ensure compliance with the applicable requirement as required by WAC 173-401-605(1) and 615(1) and (2). The fourth column is enforceable except that insignificant emission units are exempt from all monitoring, recordkeeping and reporting requirements.

Chapter 173-401 WAC requires the permit to include both a reference test method and a monitoring method. The Monitoring Recordkeeping and Reporting (MR&R) requirements in the fourth column indicate official methods that the NWCAA, the

EPA, or the WDOE may use to determine compliance with applicable requirements. Where the applicable requirement fails to specifically state a test method, a method is added to the permit, as required by WAC 173-401-615(1)(a). The facility has no immediate obligation to perform these tests. If the NWCAA determines via the stated reference test method or other methods that the facility is not complying with the associated applicable requirement, then a violation of the applicable requirement has occurred.

5.8 Specifically Applicable Requirements

This section lists applicable requirements that apply uniquely to a process unit or to a specific category of process unit. Typically, these requirements originate from an Order of Approval to Construct issued by NWCAA. Gap filling, which is described more fully in Section 5.9, was necessary in some cases to fulfill the requirements of Chapter 173-401-615 WAC.

5.9 Gap Filling

Some regulations or statutes do not specify compliance determination or monitoring methods. Chapter 173-401-615 WAC requires the AOP to feature monitoring, recordkeeping and reporting adequate to demonstrate compliance with applicable requirements. In these cases, a site-specific compliance monitoring method was developed based on the characteristics of the permitted facility, the nature of the underlying requirement, the requirements of Chapter 173-401-615 WAC, and EPA guidance. The process of developing and implementing these requirements is called “gap filling”. The following describes the derivation of site specific compliance monitoring in the Air Liquide AOP.

As an example of gap-filling, consider permit term 4.1 that references WAC 173-401-615(3) (10/17/02). The WAC rule states that submittal of reports must be at least once every six months. In order to make the requirement less ambiguous permit term 4.1 was gap-filled to require reports to cover regular intervals and be submitted over specified date windows.

As another example of gap-filling, consider permit terms 4.3-4.12. These permit terms have to do with general nuisance, odor, and fugitive dust emissions, referencing applicable sections of WAC 173-400 and the NWCAA Regulation. For example, WAC 173-400-040(4), which describes fugitive dust emissions, states that the source “shall take reasonable precautions to prevent the release of air contaminants from the operation.” Therefore, in order to streamline MR&R requirements, where they exist, and introduce MR&R requirements, where they were absent altogether, gap-filling was employed. In this case, a written air contaminant complaint response plan must be developed and maintained at the site, and a procedure for dealing with complaints is outlined.

NWCAA’s gap filling authority, Chapter 173-401-615(1)(b) and (c) WAC, is listed throughout the specific subsections of AOP Section 2, wherever it is used, and in the beginning (header) paragraphs Sections 4 and 5 of the AOP.

5.10 Section 6 Inapplicable Requirements

Washington Administrative Code 173-401-640(2) allows a determination regarding the applicability of requirements with which the source must comply. Section 6 of the permit lists requirements deemed inapplicable based on the applicability of the cited regulation. It is stated in the AOP that the permit shield applies to the specific, listed inapplicable requirements.

6 INSIGNIFICANT EMISSION UNITS AND INAPPLICABLE REQUIREMENTS

6.1 Insignificant Emission Units

Washington Administrative Code 173-401-640 allows a determination regarding the applicability of requirements with which the source must comply. Section 6 of the permit lists requirements deemed inapplicable based on the applicability of the cited regulation.

Categorically exempt insignificant emissions units listed in WAC 173-401-532 are present at the Air Liquide facilities. These categorically exempt emissions units normally have extremely low emissions and are considered insignificant by regulation and not of sufficient importance to list in the permit. Other emission units or activities generate only fugitive emissions for which there are no specifically applicable requirements. These activities are categorized as insignificant by Chapter 173-401-530(1)(d) WAC. Categorically insignificant and fugitive emission units and activities are listed in the following table.

Table 6-1 Insignificant Activities/Emission Units

Unit/Activity	WAC Citation Category
Internal combustion engines for propelling or powering a vehicle	WAC 173-401-532(10)
Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing, industrial, or commercial process	WAC 173-401-530(46)
Food preparation for human consumption including cafeterias, kitchen facilities, and barbecues located at a source for providing food service on the premises	WAC 173-401-532(41)
Bathroom and toilet vents	WAC 173-401-532(48)
Cleaning and sweeping of streets and paved surfaces	WAC 173-401-532(35)
Fuel and exhaust emissions from vehicles in parking lots	WAC 173-401-532(54)
Steam vents and safety relief valves not emitting process chemicals	WAC 173-401-532(87)
Air compressors, pneumatically operated systems, and related hand tools	WAC 173-401-532(88)
Sewer manholes, junction boxes, sumps, and lift stations associated with wastewater treatment systems at publicly owned treatment works	WAC 173-401-532(120)

6.2 Inapplicable Requirements

Chapter 173-401-640 WAC requires the permitting authority to issue a determination regarding the applicability of requirements with which the source must comply. Table 6 in the permit lists requirements deemed inapplicable to the emission units identified in Table 1-1 in the AOP and provides the basis for each determination.

7 PUBLIC DOCKET AND DEFINITIONS

7.1 Public Docket

Copies of this permit as well as the permit application and any technical support documents are available online at www.nwcleanair.org and at the following location:

Northwest Clean Air Agency
1600 South Second Street
Mount Vernon, WA 98273-5202

7.2 Definitions and Acronyms

"Acid Rain Program" means the program aimed at the reduction of SO₂ and NO_x emissions, thereby reducing the deposition of acid rain.

An "area source" means any stationary source of hazardous air pollutants that is not a major source.

"Attainment area" means a geographic area designated by EPA as having attained the National Ambient Air Quality Standard for a given criteria pollutant.

"BACT" (Best Available Control Technology) is an emissions limitation which is based on the maximum degree of control that can be achieved. It is a case-by-case decision that considers energy, environmental, and economic impact. BACT can be add-on control equipment or modification of the production processes or methods.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant.

"Fugitive dust" means a particulate emission made airborne by forces of wind, man's activity, or both. Unpaved roads, construction sites, and tilled land are examples of areas that originate fugitive dust.

"Fugitive emissions" means emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

"General permit" means a permit which covers multiple similar sources or emissions units in lieu of individual permits being issued to each source.

"GHG (Greenhouse gases)" are gases that trap infrared heat in the atmosphere. According to EPA definition, GHG means carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and other fluorinated greenhouse gases as defined in 40 CFR 98.

"HAP (Hazardous Air Pollutants)" are substances that are named as hazardous by the Clean Air Act. These substances, such as benzene, formaldehyde, or chromium-6, present tangible, serious hazards to humans.

"MACT (Maximum Achievable Control Technology)" is control technology requirement for major sources of HAP.

A “major source” means any stationary source that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, or 100 tons per year of any other regulated pollutant.

“NAAQS (National Ambient Air Quality Standards)” are ambient concentration standards set by EPA for pollutants considered harmful to public health and the environment. Currently there are NAAQS for six so-called “criteria pollutants”: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ground-level ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}) and sulfur dioxide (SO₂).

An “NOV (Notice of Violation)” is issued by an environmental regulatory agency to initiate enforcement action.

The “New Source Review (NSR)” is a pre-construction permitting program. It ensures that air quality is not significantly degraded from the addition of new or modified facilities, but also ensures that any large new or modified industrial sources will be as clean as possible. NSR permits are legal documents that the facility owners/operators must abide by. The permit specifies what construction is allowed, what emission limits must be met, and often how the emissions source must be operated.

“Opacity” means the degree to which an object seen through a plume is obscured, stated as a percentage. 100% opacity means nothing is seen through the plume, and 0% opacity means everything is visible (no plume at all).

“PTE (Potential to emit)” means the maximum capacity of a source to emit a pollutant under its physical and operational design. It usually means the emissions from a round-the-clock operation (24 hrs/day x 365 days = 8760 hours in a year). Any physical or operational limitation on the capacity of the source to emit a pollutant is treated as part of its design only if the limitation or the effect it would have on emissions is enforceable.

“PSD (Prevention of Significant Deterioration)” is an EPA program in which state and/or federal permits are required in order to restrict emissions from new or modified sources in places where air quality already meets or is better than NAAQS.

“(RACT) Reasonably available control technology” means the lowest emission limit that a particular source or source category is capable of meeting by the application of control technology. This technology must be reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis, taking into account the impact of the source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for any source or source category are adopted only after notice and opportunity for comment are afforded.

“Synthetic Minor permits” impose federally enforceable limits to restrict a facility's potential emissions to below major source thresholds. This option makes it possible for those facilities that can comply with the Synthetic Minor permit's federally enforceable limits to operate without the need for a Title V permit.

The following is a list of Acronyms used in the Air Operating Permit and/or Statement of Basis:

AIRS	Aerometric Information Retrieval System
AMP	Alternative Monitoring Plan
AOP	Air Operating Permit
ASIL	Acceptable Source Impact Level
ASTM	American Society for Testing and Materials
BACT	Best available control technology
BFO	Ecology Bellingham Field Office
BTU	British Thermal Unit
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring
CD	Consent Decree
CEM	Continuous Emissions Monitor
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH ₄	Methane
CO ₂	Carbon dioxide
CO	Carbon monoxide
COMS	Continuous Opacity Monitoring System
dscf	dry standard cubic feet
EPA	The United States Environmental Protection Agency
FCAA	Federal Clean Air Act
FCCU	Fluid catalytic cracking unit
FGS	Flue gas scrubber
gr	grain, a unit of mass (there are 7,000 grains in a lb)
GHG	Greenhouse Gases
H ₂ S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HC	Hydrocarbons
HRSG	Heat Recovery Steam Generator
ISO	International Organization for Standardization
LDAR	Leak Detection and Repair
MACT	Maximum Achievable Control Technology

MMBtu	Million British thermal units
MR&R	Monitoring, recordkeeping, and reporting requirements
NAAQS	National Ambient Air Quality Standards
NH ₃	Ammonia
NOC	Notice of Construction
NO _x	Oxides of Nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
NWCAA	Northwest Clean Air Agency
O ₂	Oxygen
O ₃	Ozone
OAC	Order of Approval to Construct
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 micrometers in diameter
PM _{2.5}	Particulate Matter less than 2.5 micrometers in diameter
ppb	parts per billion
ppmvd	parts of pollutant per million parts of dry stack gas on a volumetric basis
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
PTE	Potential to emit
QA/QC	quality assurance/quality control
RACT	Reasonably Available Control Technology
RATA	Relative Accuracy Test Audit
RCW	Revised Code of Washington
SCR	Selective Catalytic Reduction
scf	standard cubic foot (cubic foot of gas at ISO STP)
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SRU	Sulfur recovery unit
STP	Standard Temperature and Pressure
TAP	Toxic Air Pollutant
TSP	Total Suspended Particulates
ULSD	Ultra low sulfur diesel (less than 15 ppm sulfur content)

VOC Volatile Organic Compounds
WAC Washington Administration Code
WDOE Washington State Department of Ecology