



United States Environmental Protection Agency General Permit or Permit by Rule for New or Modified Minor Sources of Air Pollution in Indian Country

<https://www.epa.gov/tribal-air/tribal-minor-new-source-review>

Background Document: Air Quality Permit by Rule for New or Modified True Minor Source Gasoline Dispensing Facilities in Indian Country

Last Modified: February 13, 2017

Version 1.0

1. Gasoline Dispensing Source Category Definition

A Gasoline Dispensing Facility (GDF) is any stationary facility that dispenses gasoline into the fuel tank of a motor vehicle, nonroad vehicle or equipment, including a nonroad vehicle or nonroad engine used solely for competition. The final Air Quality Permit by Rule for New or Modified True Minor Source Gasoline Dispensing Facilities in Indian Country only covers GDF facilities that are located at true New Source Review (NSR) minor sources. A GDF could also include equipment which dispenses diesel fuel. Furthermore, a GDF could be an operation supporting other activities at a facility which otherwise requires a permit.

2. Source Category Characterization

The GDFs subject to this Permit by Rule are locations at which fuels are delivered by tank trucks to service stations, and commercial accounts, and then transferred to a motor vehicle gasoline tank. GDFs include all retail outlets such as traditional gasoline service stations, convenience stores, truck stops, marinas, and hypermarkets (e.g., warehouse clubs and big box stores), as well as private and commercial outlets such as those for centrally-fueled fleets, government operations, and private businesses.¹ This generally does not include airports offering aviation gasoline.

The operations and equipment at a typical GDF are described in [AP 42](#), Chapter 5.2, Transportation and Marketing of Petroleum Liquids.² Emissions of volatile organic compounds (VOC) at GDFs occur due to evaporation, displacement of vapors during unloading of the fuel into onsite storage tanks, displacement of vapors during refueling of vehicles, and breathing losses from the storage tanks. Emissions from GDF are generally divided into two categories: Stage I and Stage II. Emissions during unloading of the cargo (Stage I) are minimized by using submerged filling or bottom filling, in which the fill pipe opening is below the liquid surface level in the receiving tank. Liquid turbulence is controlled significantly during submerged/bottom filling, resulting in low vapor generation. Emissions during unloading can also be controlled with vapor balance. The vapors displaced from the receiving tank during unloading are routed back into the transport tank and returned to the loading terminal.

Stage I vapor balance requires that the source control emissions from the storage tanks during unloading of the gasoline cargo from the tanker truck. This typically involves having an extra tube hooked up to the receiving tank to transfer VOC-laden vapors displaced from the tank back into the tanker truck, for processing/disposal back at the loading terminal. The requirements in 40 CFR 63, [Subpart CCCCC](#) include a comprehensive set of Stage I vapor control requirements.

¹ A more formal regulatory definition of GDF can be found at 40 CFR 63.11132.

² AP 42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids, June 2008, <http://www.epa.gov/ttn/chief/ap42/ch05/index.html>.

Evaporative emissions from vehicle refueling and diurnal breathing (Stage II) can be controlled with vapor recovery devices.³ Recovery of vapors displaced from the vehicle fuel tank during refueling can be accomplished with pump-based controls or vehicle-based onboard refueling vapor recovery (ORVR) systems. Pump-based Stage II vapor recovery requires that the GDF equip its dispensing pumps with nozzles that recover the VOC-laden fumes that are displaced from the vehicle fuel tank during fueling. A coaxial tube and special nozzle are designed to attach to the vehicles fuel port and recover vented fumes during filling. The recovered fumes are pumped back into the fuel storage tank. ORVR controls, whose phase-in began in 1998 for new vehicles, are installed by the vehicle manufacturer. Stage II storage tank breathing loss emissions are controlled by vent pipe pressure/vacuum valves and fuel spillage has been reduced by limits on pump dispensing rates and fuel spillage standards for vehicles.⁴

The location of GDFs is highly correlated to human population density and vehicle traffic. The average GDF dispenses about 125,000 gallons per month (gpm). However, this value varies from under 10,000 gpm for some private outlets up to as much as 420,000 gpm in some very large retail outlets.⁵ This is a wide range of throughputs, and it can be concluded that gasoline throughput at GDFs varies significantly.

3. State Minor Source Permit Programs

The U.S. Environmental Protection Agency (EPA) reviewed state government websites for general permits for GDFs. These state permits were examined for use in developing the Permit by Rule for GDFs in Indian Country. The EPA selected appropriate elements from the state permits (such as general permits, registrations, permits by rule, etc.) in developing the documents and regulations for the Permit by Rule for this source category. Permit documents for GDFs issued by the States of [Alabama](#), [Arizona](#), [California](#), [Iowa](#), [New Jersey](#), [Ohio](#), [Oregon](#), and [Nevada](#) were examined in developing this Permit by Rule. Permits from these states were chosen for examination because of several characteristics they possess:

- Readily available;
- Clear throughput limits;
- Degree of regulatory control depends upon the amount of throughput;
- Comprehensive set of regulations; and
- Organization of the regulations followed the typical form for federal NSR permits:
 - Limitations and standards, and
 - Monitoring, testing, recordkeeping, and reporting requirements.

Typically, states do not require permits for facilities having gasoline throughputs less than 10,000 gallons per month. The state permits regulate VOC emissions from GDFs by regulating gasoline throughput and equipment requirements. Another common feature of these permits is that they replicate or incorporate by reference the requirements found in the Area Source National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Category: Gasoline Dispensing Facilities (40 CFR Part 63, Subpart CCCCCC). No GDF is exempt from the GDF NESHAP regulation, but the requirements vary depending on monthly fuel throughput. These state permits contain requirements for: work practices, submerged filling, Stage I vapor balance equipment for storage tank filling, inspections, and recordkeeping/reporting for throughput. Some states have permits for both ozone

³ Ibid.

⁴ Evaporation of fuel spillage is not included in the GDF emissions calculations, as they are considered as fugitive emissions for NSR purposes.

⁵ See Tables 1 and 2 of the report, "Analysis of Future Options for Connecticut's Gasoline Dispensing Facility Vapor Control Program," Connecticut Department of Energy and Environmental Protection, June, 2012.

attainment and nonattainment areas. The state permits for nonattainment areas, such as the State of New Jersey, contain additional requirements for Stage II vapor recovery equipment and testing. Although the EPA has determined that the widespread implementation of ORVR devices in the vehicle fleet have made Stage II vapor recovery unnecessary,⁶ some states have not yet revised their State Implementation Plans (SIPs) to remove these requirements.

The [California Air Resources Board](#) (CARB) has developed an extensive set of regulations for controlling VOC emissions from GDFs. The EPA is proposing to incorporate the CARB requirements for controlling standing losses from aboveground storage tanks at GDFs into this Permit by Rule as the additional requirement for facilities located in serious, severe, or extreme ozone nonattainment areas.

4. Requirements for Permits by Rule

4.1 Documents for Permits by Rule

The EPA developed a standardized set of permit documents in support of the Permit by Rule for GDFs located in Indian Country. These consist of the following documents:

- Questionnaire: Assists the facility owner or operator in determining whether they are eligible for the Permit by Rule;
- Screening Processes for Threatened and Endangered Species and Historic Properties: For the permits by rule, we have separated the screening processes from the Notification of Coverage Forms and created a separate document, “Procedures to Address Threatened and Endangered Species and Historic Properties for New or Modified True Minor Sources in Indian Country Seeking Air Quality Permits by Rule”;
- Notification of Coverage under the Permit by Rule: States the criteria for qualification, gathers information on the source, facility location, and source contact, requests technical information on the facility, the attainment status of the location, the facility’s actual emissions for those sources undergoing modifications; and requests that the source certify they will comply with the requirements, which are included in the rule for GDFs at 40 CFR 49.164;
- Instructions: Guides the applicant in filling out the Notification of Coverage under the Permit by Rule;
- Air Quality Permit by Rule, Terms and Conditions: Contains the requirements and regulations with which the source must comply. The emission limitations, monitoring, recordkeeping and reporting requirements are in the permit, as well as requirements for sources located in nonattainment areas. (Note that all of the requirements and regulations with which the source must comply in a permit by rule are included in the rulemaking action the EPA has taken for this source category at 40 CFR 49.164.); and
- Potential to Emit (PTE) Calculator Spreadsheet: Allows applicants to calculate their PTE, based on owner inputs of the number of refueling positions at the GDF, the ozone attainment status of the GDFs physical location, and assuming compliance with EPA standards and continuous operation throughout the year. The PTE Calculator spreadsheet generates potential emissions, based on these inputs.

⁶ See EPA final rule, Air Quality: Widespread Use for Onboard Refueling Vapor Recovery and Stage II Waiver, (77 FR 28772, May 16, 2012) and public docket EPA-HQ-OAR-2010-1076.

4.2 Exemption and Qualification for Permits by Rule

Facilities applying for the Permit by Rule must meet the following criteria:

- Must be a true NSR minor source; and
- Meet the emissions limitations established for the Permit by Rule.

New facilities with a PTE (or modifications to existing facilities with an emissions increase) lower than the minor NSR thresholds specified in the provisions of the Federal Indian Country Minor NSR Rule at 40 CFR 49.153 are exempt from the minor NSR program. The minor NSR thresholds are listed in Table 1 below. Facilities applying for the Permit by Rule may calculate their PTE using the PTE calculator provided to determine if their project is below these thresholds and, thus, exempt from the minor NSR program.

Table 1: Minor NSR Thresholds in 40 CFR 49.153

Pollutant	Attainment Area	Nonattainment Area
Carbon Monoxide (CO)	10 tpy	5 tpy
Particulate Matter (PM)	10 tpy	5 tpy
PM ₁₀	5 tpy	1 tpy
PM _{2.5}	3 tpy	0.6 tpy
Sulfur Dioxide (SO ₂)	10 tpy	5 tpy
Nitrogen Oxides (NO _x)	10 tpy	5 tpy
VOC	5 tpy	2 tpy

Under current EPA policy, only true NSR minor sources qualify for the Permit by Rule. Therefore, facilities will be required to compare their PTE to the NSR major source thresholds to determine if they qualify for the Permit by Rule. The NSR major source threshold for attainment areas is 250 tpy for any criteria pollutant. The NSR major source thresholds for nonattainment areas are summarized in Table 2 below:

Table 2: NSR Major Source Thresholds for Nonattainment Areas

Pollutant	Nonattainment Classification	NSR Major Source Threshold
Ozone	Marginal	100 tpy of VOC or NO _x
	Moderate	100 tpy of VOC or NO _x
	Serious	50 tpy of VOC or NO _x
	Severe	25 tpy of VOC or NO _x
	Extreme	10 tpy of VOC or NO _x
PM ₁₀	Moderate	100 tpy
	Serious	70 tpy
CO	Moderate	100 tpy
	Serious	50 tpy
SO ₂ , NO ₂ , PM _{2.5}	No nonattainment classification	100 tpy

If the facility's PTE is above the NSR major source threshold of 250 tpy, or above any applicable nonattainment area thresholds listed in Table 2 (for any pollutant for which the area in which the source is locating or modifying is designated nonattainment), then the facility does not qualify for the Permit by Rule. The following documents are available to assist sources in the screening and application process:

- Questionnaire;
- Notification for Coverage under the Permit by Rule;
- Instructions for the Notification for Coverage under the Permit by Rule; and
- PTE calculator.

For facilities not exempt from the minor NSR program and having a PTE below the NSR major source thresholds, the facilities will further evaluate if they could meet the throughput limits and operating requirements established in this Permit by Rule. The specific requirements for the Permit by Rule are discussed in Sections 4.3 and 4.4. The emissions associated with the throughput limits are lower than the NSR major source thresholds and were derived as described below in Section 5.

4.3 Specific Permit Requirements for Permits by Rule

The terms and conditions of the Permit by Rule are based on the required permit content and analyses in the Tribal Minor NSR Rule. The required permit content is listed in 40 CFR 49.155(a) – *What information must my permit include?* Below we describe the basis for the permit conditions.

40 CFR 49.155(a)(1) – General Requirements

The rule establishes general requirements that each permit must identify: the effective date of the permit; the date by which the owner/operator must commence construction in order for the permit to remain valid; the emission units subject to the permit and their associated emission limitations; and monitoring, recordkeeping, and reporting requirements to assure compliance with the emission limitations. The Permit by Rule contains all of this required information, except for the emission units subject to the permit. Because of the nature of permits by rule we believe it is more appropriate to identify the emission units covered by the Permit by Rule in the Notification of Coverage. Each permit contains a separate section that specifically identifies the emission limitations and standards, monitoring and testing, recordkeeping, and reporting and notification requirements. The General Terms and Conditions in the Permit by Rule are a standardized set of boilerplate conditions included with permits by rule.

40 CFR 49.155(a)(2) – Emission Limitations

The permit must contain the emission limitations determined by the reviewing authority under 40 CFR 49.154(c) for each affected emissions unit. 40 CFR 49.154(c) – *How will the reviewing authority determine the emission limitations that will be required in my permit?* – identifies the case-by-case control technology review that must be used by the reviewing authority to determine the appropriate level of control. In carrying out the case-by-case control technology review, the reviewing authority must consider the following factors:

1. Local air quality conditions;
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas;
3. Anticipated economic growth in the area; and
4. Cost-effective emission reduction alternatives.

In addition, the reviewing authority must require a numerical limit on the quantity, rate or concentration of emissions for each regulated NSR pollutant emitted by each affected emissions unit, for which such a limit is technically feasible. The emission limitation required may also be included as pollution prevention techniques, design standards, equipment standards, work practices, operational standards or any combination thereof. However, the emission limitations must assure that each affected emission unit will comply with all requirements of 40 CFR parts 60, 61, and 63, as well as any federal or tribal implementation plans that apply to

the unit. Finally, the emission limitations required may not rely on a stack height that exceeds good engineering practice or any other dispersion technique, except as allowed by 40 CFR 51.118(b). To address the requirements for establishing emission limitations the following considerations were used for setting the limits in the Permit by Rule for GDFs:

1. Local air quality conditions – To address this requirement, the Permit by Rule is not intended to apply to Title V major sources. For GDFs locating in serious, severe, or extreme ozone nonattainment areas throughput limits are necessary to ensure sources are below the applicable Title V major source (and major NSR) thresholds. As a result, GDFs locating in areas with worse air quality conditions must have less potential emissions. The Permit by Rule also includes specific emission limitations on aboveground storage tanks in those areas. The additional control requirements for nonattainment areas are discussed in Section 4.3.1. The derivation of emission limitations and the throughput limits in the applicability questionnaire, application, and Emission Limitations and Standards section of the Permit by Rule are discussed fully in Section 5.
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas – For sources locating in attainment areas we looked at the control requirements specified by 40 CFR parts 60, 61 and 63. These regulations establish minimum technology and emission limitations that must be met nationally and also meet the requirements of 40 CFR 49.154(c)(4) to ensure compliance with parts 60, 61, and 63. For this Permit by Rule we considered regulations that apply to the equipment at GDFs:
 - 40 CFR 63 Subpart CCCCCC – National Emission Standards for Gasoline Dispensing Facilities;
 - 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines;
 - 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines;
 - 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines; and
 - State permit examples.

Note that 40 CFR 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984 – does not apply to GDFs. See 40 CFR 60.110b(b)(6).

These regulations cover emissions from the following equipment at GDFs:

- Gasoline storage tanks and filling operations;
- Gasoline pumping operations; and
- Emergency stationary engines.

Review of the regulations resulted in permit conditions requiring GDFs to meet the requirements for GDF that have a throughput of 100,000 gallons per month or more. This requires the GDFs to meet Stage I vapor recover requirements, use submerged filling, and to minimize emissions from spills and open containers. Certain small gasoline storage tanks are exempt from the Stage I vapor recovery requirements. Tanker tanks unloading gasoline into storage must meet certain work practice standards for reducing emissions.

Emergency engines, based on model year, must be certified to existing emission standards and those engines not required to be certified have to meet certain maintenance requirements. Those engines using fuel oil must use diesel or biodiesel with a sulfur content not to exceed 15 parts per million (ppm).

List of requirements in 40 CFR 63 Subpart CCCCC, 40 CFR 60 Subpart IIII, and 40 CFR 60 Subpart ZZZZ:

- 40 CFR 63.11116(a) – requirement to minimize vapor releases;
 - 40 CFR 63.11117(b) – requirement to use submerged filling;
 - 40 CFR 63.11117(c) – exception of certain tanks from 63.11117(b);
 - 40 CFR 63.11118(b)(1) - requirement to use Stage I dual-point vapor balance systems;
 - 40 CFR 63.11118(c) – exception of certain tanks from 63.11118(b)(1);
 - 40 CFR 63.11118(d) – requirements for cargo tanks;
 - 40 CFR 63.11120(a) – initial and ongoing testing requirements;
 - Table 1 to Subpart CCCCC of 40 CFR 63 – management practices;
 - Table 2 to Subpart CCCCC of 40 CFR 63 – management practices for a cargo tanks;
 - 40 CFR 60.4205 and 60.4202 – certification requirements for emergency compression ignition engines;
 - 40 CFR 60.4207 – fuel requirements for diesel;
 - 40 CFR 60.4233 and 60.4231 – certification requirements;
 - 40 CFR 63.6603(a) – requirements for existing emergency engines at area sources;
 - 40 CFR 63.6604 – fuel requirements;
 - 40 CFR 63.6640 – compliance requirements; and
 - Table 2d to Subpart ZZZZ of 40 CFR 63 – compliance requirements.
3. Anticipated economic growth in the area – The reviewing authority may consider anticipated economic growth when determining whether coverage under the Permit by Rule is justifiable. Considering, however, that the Permit by Rule sets emission standards that are consistent with what is required by GDFs across the country in both attainment and non-attainment areas, we expect that this will rarely be a factor.
4. Cost-effective emission reduction alternatives – The Permit by Rule sets emission standards that are consistent with what is required by GDFs across the country, based on the ozone status of the area where the source is locating. As such, the chosen technologies are considered widely available and consideration of more cost-effective alternatives is not necessary at this time. We intend to periodically review technology costs in the future to determine when more stringent, cost-effective technologies become widely available.

40 CFR 49.155(a)(3) – Monitoring Requirements

The Permit by Rule must include monitoring that is sufficient to assure compliance with the emission limitations that apply to the source. The Permit by Rule requires monitoring of the vapor control recover systems on a weekly basis to determine whether the equipment is in good working order. For sources located in extreme ozone nonattainment areas, this monitoring shall be performed daily. The Permit by Rule also requires initial performance testing to ensure the vapor recovery systems were designed properly. If located in a serious, severe, or extreme ozone nonattainment the permittee must also monitor the monthly gasoline throughput.

40 CFR 49.155(a)(4) – Recordkeeping Requirements

The Permit by Rule must include recordkeeping that is sufficient to assure compliance with the emission limitations and monitoring requirements, including certain statements listed in 40 CFR 49.155(a)(4)(i) and (ii). In addition to the recordkeeping requirements in 40 CFR 49.155(a)(4)(i), the Permit by Rule also requires records of the weekly (or daily) inspections of the vapor recovery systems, the maintenance and use of emergency engines, and the results of each performance test required. If located in a serious, severe, or extreme ozone nonattainment area, the permittee must maintain records of monthly gasoline throughput and the 12-month rolling total of gasoline throughput.

40 CFR 49.155(a)(5) – Reporting Requirements

The Permit by Rule includes the reporting requirements listed in 40 CFR 49.155(a)(5)(i) and (ii) related to annual reports and reporting of deviations.

40 CFR 49.155(a)(6) – Severability Clause

The Permit by Rule includes a severability clause to ensure the continued validity of the other portions of the permit in the event of a challenge to a portion of the permit.

40 CFR 49.155(a)(7) – Additional Provisions

The Permit by Rule contains the additional provision required for each permit. These conditions are found in the General Provisions section of the Permit by Rule.

4.3.1 Requirements for Sources Located in Nonattainment Areas

For sources located in nonattainment areas we looked at the control requirements required in other nonattainment areas in the country, specifically:

- South Coast Air Quality Management District (AQMD) Rule 461 Gasoline Transfer and Dispensing— this rule is in an ozone nonattainment area ([South Coast AQMD Rule 461](#))

Beyond what is already required for attainment areas in the Permit by Rule, this rule also has additional requirements for aboveground storage tanks (ASTs). Please see Section 4.3.2 for a discussion on why the Permit by Rule does not require Stage II controls. The certification procedure for ASTs is CP-206. CP-206 requires ASTs to meet standing loss emission limitations of 0.57 lbs VOC per 1,000 gallons per day for new ASTs and 2.26 lbs VOC per 1,000 gallons per day for modified or reconstructed ASTs. This requirement is included in the Permit by Rule as well as the applicable testing procedure to demonstrate compliance. The other limits that apply to attainment areas in the Permit by Rule also apply to nonattainment areas.

4.3.2 Additional Considerations not included in the Permit by Rule

The Permit by Rule does not include Stage II vapor recovery which is common in some state permits reviewed. The reasons for not including these limits in this Permit by Rule are explained below:

Stage II Vapor Recovery: State permits for GDFs located in serious, severe, or extreme ozone nonattainment areas typically require that the gasoline dispensing pumps be equipped with Stage II vapor recovery equipment. Stage II controls were originally required in Section 182(b)(3) of the Clean Air Act (CAA), 42 U.S.C. 7511a(b)(3). The EPA promulgated rules requiring the installation of ORVR in all new motor vehicles. ORVR equipment⁷ replaces the need for Stage II vapor recovery at GDFs, and ORVR is being phased in to the motor

⁷ See the EPA website <http://epa.gov/otaq/orvr.htm> for more information on ORVR.

vehicle fleet as older motor vehicles are replaced. The Congress recognized that ORVR and Stage II controls would eventually become redundant as the motor vehicle fleet turned over and thus included a provision that would allow states that had adopted Stage II requirements under section 182(b)(3) to remove those controls after the EPA found that ORVR was in widespread use in the motor vehicle fleet. On May 16, 2012, the EPA announced its finding that ORVR was in widespread use and Stage II was no longer required under section 182(b)(3) of the CAA for serious, severe, and extreme nonattainment areas.⁸ However, states still need to revise their SIPs to remove it and address sections 110(l), 184(b)(2), and 193 requirements. Due to the time lag required to revise SIPs, state permits still contain Stage II requirements. The widespread use determination by the EPA indicates that ORVR is the governing control technology now and into the future. Therefore, Stage II vapor recovery is not required in this Permit by Rule for new or modified GDFs in tribal areas. However, the GDF Permit by Rule is not available for GDFs locating or modifying within the geographical boundaries of the State of California. Stage II vapor recovery continues to be in widespread use in California due to the significant air quality problems in that area. EPA may later develop a general permit or permit by rule applicable within California.

4.4 Information on Completing Screening Processes Prior to Submitting a Notification of Coverage under the Permit by Rule

In order to be covered by this Permit by Rule, owners and operators must satisfactorily complete the screening processes for their source that are specified for threatened and endangered species and historic properties. The document entitled “Procedures to Address Threatened and Endangered Species and Historic Properties for New or Modified True Minor Sources in Indian Country Seeking Air Quality Permits by Rule,” contains EPA’s guidance to assist sources in completing these processes.

5. Emission Limitations⁹ and Surrogate Throughput Limits

5.1 Developing the Surrogate Limits and Limitations

The EPA evaluated the emissions from equipment in use at a typical GDF. VOC is the primary pollutant of concern. The EPA examined the minor NSR thresholds for VOC (shown in Table 1 above) and derived the corresponding fuel throughput applicability limits for sources in attainment, unclassifiable or attainment/unclassifiable areas and nonattainment areas (see Table 3). These are the fuel throughput levels corresponding to the PTE of VOC at which the NSR rule becomes applicable to a GDF.

The EPA used the pollutant emissions levels from the minor source NSR applicability thresholds in Table 1 of 40 CFR 49.153 (Review of New Sources and Modifications in Indian Country) to back calculate the gasoline throughput limits for permit applicability for attainment and nonattainment areas as shown in Table 3. VOC emissions due to storage tank refilling, displacement from the vehicle tank, and storage tank breathing losses are calculated using emission factors from AP 42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids, and recent [EPA](#) guidance¹⁰ and [findings](#),¹¹ based on the throughput of gasoline. Stage I and Stage II type emissions occur with diesel

⁸ See EPA final rule, Air Quality: Widespread Use for Onboard Refueling Vapor Recovery and Stage II Waiver, (77 FR 28772, May 16, 2012) and public docket EPA-HQ-OAR-2010-1076.

⁹ The definition of emission limitation used in this Background Document is the one provided in the Indian Country NSR rule (described in Section 4.3) and includes requirements established by the reviewing authority that relate to the operation of a source, which allows for the use of production throughput limits.

¹⁰ U.S. EPA, Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures, EPA-457/B-12-001, August 7, 2012.

fuel dispensing operations but they are very low. The true vapor pressure of diesel fuel is only about 0.2 percent of 7 psi RVP gasoline at 70°F. For completeness, the PTE calculator provided as part of this Permit by Rule includes diesel emissions but these in total would be very small in comparison to gasoline vapor emissions. For 2014, a gasoline throughput of 2,105,263 gallons per year was determined to be equivalent to 2 tpy of VOC emissions. This is the NSR pollutant emission applicability threshold for ozone nonattainment areas. Similarly, for 2014, a gasoline throughput of 4,016,064 gallons per year was determined to be equivalent to 5 tpy of VOC emissions. This is the NSR pollutant emission applicability threshold for ozone attainment areas. Sample calculations showing how these throughputs were determined are shown in Appendix A. It should be noted that these calculations are for 2014, and the results would be different (and throughput limits likely larger) for later years.

Table 3. Lower Fuel Throughput Limits for 2014

Attainment Status	Lower Fuel Throughput Limits (gallons/year)
Ozone Attainment, Unclassifiable or Attainment/Unclassifiable Areas	4,016,064
Ozone Nonattainment Areas	2,105,263

These emission numbers assume that all GDFs that dispense more than 1,200,000 gallons per year will be using Stage I vapor controls, as required under 40 CFR 63.11118. These emission numbers also assume that 82% of the motor vehicle fleet has ORVR installed¹² and this will reduce displacement emissions during refueling by about 80%. As the percentage of the vehicle fleet with ORVR installed increases over time, the emissions of VOC during refueling will decrease. Table 4 shows the EPA’s estimate of the percentage of the vehicle fleet with ORVR.

Table 4: Percent of Vehicle Fleet with ORVR

Year	% ORVR
2011	72%
2014	82%
2020	92%
2025	96%

In order to determine if an upper gasoline throughput limit was necessary for GDFs located in ozone attainment, unclassifiable or attainment/unclassifiable areas, the EPA examined the throughputs of gasoline that would correspond to emissions of VOC at NSR major source levels. The EPA examined if there is a natural ceiling on the amount of fuel a single GDF can dispense. A study of Canadian gasoline retailers found that the average gasoline retailer dispensed 3.22 million liters (850,634 gallons) of fuel per year in 2010. The largest retailers had average sales of 8 million liters, while some had maximum throughputs in excess of 10 million liters (2.64 million gallons). This data indicates that GDFs do have some practical upper limit on the amount of gasoline that can be sold at a single gasoline station. The traffic congestion and wait times at the pumps at a gasoline station serve as a bottleneck

¹¹ Glenn Passavant, OTAQ, Memorandum to Public Docket EPA-HQ-OAR-2010-1076, Updated Data for ORVR Widespread Use Assessment, 2012.

¹² Glenn Passavant, OTAQ, Memorandum to Public Docket EPA-HQ-OAR-2010-1076, Updated Data for ORVR Widespread Use Assessment, 2012.

on the potential emissions of VOC due to vehicle tank refueling. A throughput of 2,640,000 gallons of fuel per year results in approximately 2.6 tons of VOC emissions for a GDF located in an ozone nonattainment area. This is well below the NSR major source threshold.

This line of reasoning is further reinforced by use of the PTE calculator. For 2014, to reach emissions of 5tpya GDF would have to pump 5.3 million gallons per year or 440,000 gallons per month. This is at the high end of population estimates identified in analysis conducted by the New York Department of Environmental Conservation. The widespread implementation of ORVR, reformulated gasoline blends for nonattainment areas, and studies showing decreased spillage losses all contribute to lower emissions at GDFs per gallon of throughput in the future. Thus, the EPA has determined that generally upper limits on fuel throughput are not necessary.

However, to help ensure that GDFs permitted through this Permit by Rule remain small sources, the EPA has developed VOC containing material usage emission limitations as a surrogate for establishing ton per year emission limitations for sources in attainment, unclassifiable or attainment/unclassifiable areas and nonattainment areas. The material usage limits in the Permit by Rule reflect the emission rates listed in Table 6. For GDFs located in serious, severe or extreme ozone nonattainment areas, the Permit by Rule limits throughput of gasoline to less than 8,000,000 gallons per year based on a 12-month rolling total (See Appendix B for the calculation of this throughput limit). For GDFs located in attainment, unclassifiable or attainment/unclassifiable areas and marginal or moderate ozone nonattainment areas, the Permit by Rule limits throughput of gasoline to less than 25,000,000 gallons per year based on a 12-month rolling total (See Appendix C for the calculation of this throughput limit).

Table 5: Emission Rates used to Determine Emission Limitations for Gasoline Dispensing Facilities

Pollutant of Concern	Serious, Severe or Extreme Ozone Nonattainment Areas	Ozone Attainment, Unclassifiable or Attainment/Unclassifiable Areas and Moderate or Marginal Ozone Nonattainment Areas
VOC	7.52 tpy	25 tpy

The Permit by Rule includes the throughput limits listed in Table 6 below as surrogates for the ton per year emission rates listed in Table 5 for gasoline dispensing facilities located in ozone nonattainment and ozone attainment, unclassifiable or attainment/unclassifiable areas. The EPA developed the throughput limits for sources in both attainment and nonattainment areas based on (1) the emission rates in Table 5 and (2) assumptions similar to the ones described above for the calculations of throughput limits that correspond to the minor source thresholds. The throughput limits serve as surrogate emissions limitation and are set at levels intended to ensure that GDFs under this Permit by Rule remain minor sources.

Table 6: Surrogate Throughput Emission Limitations for Gasoline Dispensing Facilities

Throughput Limit	Serious, Severe or Extreme Ozone Nonattainment Areas	Ozone Attainment, Unclassifiable or Attainment/Unclassifiable Areas and Moderate or Marginal Ozone Nonattainment Areas
Gasoline usage	8,000,000 gallons/year	25,000,000 gallons/year

5.2 Emission Limitations

Three considerations form the basis for the upper limits for the GDF Permit by Rule:

1. Are there any EPA regulation-based emission limitations?
2. Where do state programs establish eligibility limits?
3. Is there a natural ceiling on the amount of gasoline a single GDF can dispense?

5.2.1 EPA Regulation-Based Emission Limitations

There are no EPA regulations-based emission limitations for GDFs in any NSPS or NESHAP regulations. If a source were to have potential emissions at or above major source levels (100 tpy of VOC), then a Title V permit would be necessary. However, it is unlikely for a GDF to have potential VOC emissions that would require a Title V permit. The amount of fuel throughput corresponding to 100 tpy of potential emissions (Title V major source levels) far exceeds the reasonable capacity of even the largest GDFs to accommodate the vehicular and tanker truck traffic in and out of the refueling facility. The EPA also considered writing the Permit by Rule with an upper limit on fuel throughput for GDFs located in ozone nonattainment areas. The EPA determined that an upper limit on fuel throughput (or surrogate emissions limitations) for these GDFs is not necessary for most areas, but included one for serious and above ozone nonattainment areas as extra air quality protection.

In order to ensure that a GDF Permit by Rule would not be a Title V major source because it was a major source of hazardous air pollutants (HAP), the EPA examined the HAP content of the VOC emissions. The emission levels at which a new or modified source becomes a major source of HAP are 10 tpy for a single HAP or 25 tpy for any combination of HAPs. The EPA tested the HAP content in the vapor of normal gasoline,¹³ and determined that a single HAP in gasoline vapor was present at an average of 1.6% by weight and a maximum of 4.4% by weight. Total HAPs were present in gasoline vapor at an average of 4.8% by weight and a maximum of 11% by weight. [Material Safety Data Sheets](#) for typical gasoline blends were evaluated and it was determined that single HAPs are present in liquid fuels at an average concentration of 25% and total HAPs are present in liquid fuels at an average concentration of 65%. The EPA used this HAP content information and calculated the HAP emissions from vapor emissions and liquid spillage at GDFs, assuming that all HAPs in any liquids spilled would volatilize completely. A GDF is not a major source for HAP until the VOC emissions are above approximately 200 tpy. Therefore, there is no concern that a GDF operating under a permit by rule could be a major source of HAP emissions.

¹³ US EPA, OAQPS, "Gasoline Distribution Industry (Stage 1) – Background Information for Proposed Standards," EPA-453/R-94-002a, January 1994

5.2.2 State Program Limitations

The throughput limits and emission limitations in state permits vary considerably. The Arizona general permit has a lower applicability throughput limit of 6,000,000 gallons per year and an upper limit of 13,500,000 gallons per year. The Alabama, California, and Nevada general permits that were examined have no explicit lower or upper throughput limits, but are required for all GDFs subject to Subpart CCCCC. Linn County in the State of Iowa issues separate permits for facilities with throughputs greater than 10,000 gallons per month and facilities with throughputs greater than 100,000 gallons per month. There is no upper limit on gasoline throughput in the latter permit. New Jersey has two general permits with no lower throughput limits. The first permit has an upper throughput limit of 120,000 gallons per year and the second permit has an upper throughput limit of 6,000,000 gallons per year. Ohio permits have three different lower throughput limits (5,000, 10,000, and 50,000 gallons per month) depending on the county of location and if the facility has Stage I or Stage II controls installed. There is no upper limit on gasoline throughput in the Ohio permits. The State of Oregon has two general permits for gas dispensing facilities. Their throughput limits vary depending upon the attainment status of the county in which the GDF is located. One permit has a lower limit of 10,000 gallons per month and an upper emissions limitation of 39 tpy of VOC and applies to GDFs using Stage 1 recovery. The other permit applies to facilities in specific nonattainment counties that dispense greater than 600,000 gallons of gasoline per year. The only commonality noticed in the lower and upper thresholds in state permits is that some of the state permits follow the limits in NESHAP Subpart CCCCC of 10,000 and 100,000 gallons per month. States with no ozone nonattainment areas tended to have no upper limits on throughput, while urbanized states set upper throughput limits or emissions limitations in their general permits. Table 7 shows the limits imposed by GDF permits for the states reviewed.

Table 7: State GDF Permit Limits and Limitations

State	Lower Gasoline Throughput Limits	Upper Gasoline Throughput Limits	Upper Pollutant Emission Limitations	Special Requirements
Alabama	None *	N/A	N/A	
Arizona	6,000,000 gallons/year	13,850,000 gallons/year	N/A	
California	None *	N/A	N/A	
Iowa	10,000 gallons/month	100,000 gallons/month	N/A	
Iowa	100,000 gallons/month	None	N/A	
New Jersey	N/A	120,000 gallons/year	0.74 tons VOC/year	Using only Stage I vapor recovery
New Jersey	N/A	6,000,000 gallons/year	1.8 tons VOC/year	Using Stage II vapor recovery
Nevada	None *	N/A	N/A	
Ohio	5,000 gallons/month	< 10,000 gallons/month	N/A	Stage I vapor recovery
Ohio	10,000 gallons/month	< 50,000 gallons/month	N/A	Stage II vapor recovery
Ohio	50,000 gallons/month	N/A	N/A	Stage II vapor recovery

State	Lower Gasoline Throughput Limits	Upper Gasoline Throughput Limits	Upper Pollutant Emission Limitations	Special Requirements
Oregon	≥ 10,000 gallons/month	N/A	39 tons VOC/year	Subject to Stage I vapor recovery
Oregon	≥ 600,000 gallons/year	25,100,000 gallons/year	39 tons VOC/year	Subject to Stage II vapor recovery

* Permit required for all GDFs subject to 40 CFR 63, Subpart CCCCCC.

References:

40 CFR 49.1 – 40 CFR 49.173, Indian Country Air Quality Planning and Management.

<http://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol1/pdf/CFR-2011-title40-vol1-part49.pdf>

40 CFR 52.21, Prevention of Significant Deterioration of Air Quality.

<http://www.gpo.gov/fdsys/pkg/CFR-2007-title40-vol3/xml/CFR-2007-title40-vol3-sec52-21.xml>

[40 CFR Part 63](#), Subpart CCCCC, National Emission Standards for Hazardous Air Pollutants for Gasoline Dispensing Facilities.

<http://www.epa.gov/ttnatw01/gasdist/gasdispg.html>

Alabama, Department of Environmental Management, Air Permit Application for Gasoline Dispensing Facilities.

<http://adem.alabama.gov/DeptForms/Form197.pdf>

[AP 42](#), Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, U.S. Environmental Protection Agency. <http://www.epa.gov/ttnchie1/ap42/>

[Arizona](#), Pima County Dept. of Environmental Quality, “General Air Quality Operating Permit for NESHAP Gasoline Dispensing Facilities.” <http://www.deq.pima.gov/permits/PDF/GDF/GDF.pdf>

California Environmental Protection Agency, Air Resources Board, “[CP-206](#) - Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks.”

<http://www.arb.ca.gov/regact/2007/ast07/ast07.htm> and

<http://www.arb.ca.gov/regact/2007/ast07/frocp206.pdf>

[California](#), San Diego Air Pollution Control District, Equipment Specific Permitting Guidelines, Gasoline Dispensing Facilities.” http://www.sdapcd.org/permits/EquipGuide/gasoline_dispensing.pdf

[Federal Register](#), U.S. Environmental Protection Agency, Vol. 76, No. 127, July 1, 2011, Pages 38748-38808, “Review of New Sources and Modifications in Indian Country; Final Rule.”

<http://www.gpo.gov/fdsys/pkg/FR-2011-07-01/html/2011-14981.htm>

Glenn Passavant, U.S. Environmental Protection Agency, Office of Transportation and Air Quality, Memorandum to Public Docket EPA-HQ-OAR-2010-1076, Updated Data for ORVR Widespread Use Assessment, 2012.

[Iowa](#), Linn County Public Health Air Quality General Permit for a Large Gasoline Dispensing Facility.

<http://www.linncleanair.org/Content/Regulations/Requirements-for-Gasoline-Dispensing-Facilities.aspx>

Material Safety Data Sheets for Commercial Gasolines. http://www.docs.citgo.com/msds_pi/UNLEAD.pdf

http://www.mcoho.org/services/risk/docs/MSDS_for_Gasoline.pdf and

http://www.valero.com/V_MSDS/002%20-%20UNLEADED%20GASOLINE.pdf

[Nevada](#), Division of Environmental Protection, Class IV Operating Permit for Gasoline Dispensing Facilities.

<http://ndep.nv.gov/bagp/technical/class4.html>

[New Jersey](#), Dept. of Environmental Protection, “General Permit Storage and Transfer of Service Station Fuels Using Only Stage 1 Vapor Recovery.” <http://www.nj.gov/dep/aqpp/downloads/general/GP-014.pdf> and

“General Permit Storage and Transfer of Service Station Fuels at Gasoline Dispensing Facilities.”
<http://www.nj.gov/dep/aqpp/downloads/general/GP004.pdf>

Ohio Environmental Protection Agency. <http://www.epa.ohio.gov/dapc/engineer/stgtc.aspx>

Oregon Dept. of Environmental Quality. <http://www.deq.state.or.us/aq/permit/acdp/general.htm>

U.S. Environmental Protection Agency, “Summary of Regulations Controlling Emissions from Gasoline Dispensing Facilities (GDF).” <http://www.epa.gov/ttn/atw/area/gdfb.pdf>

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, “Gasoline Distribution Industry (Stage 1) – Background Information for Proposed Standards,” EPA-453/R-94-002a, January 1994.
<http://nepis.epa.gov/Exe/ZyNET.exe/2000H4F5.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\91thru94\Txt\00000015\2000H4F5.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>

U.S. Environmental Protection Agency, “Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures,” EPA-457/B-12-001, August 7, 2012.
<http://www.epa.gov/glo/pdfs/20120807guidance.pdf>

Western States Petroleum Association, “Underground Storage Tank Vent Line Emissions from Retail Gasoline Outlets,” AV-FR-92-01-204R2, May 1994.

**Appendix A –
Emissions Calculations for Lower Throughput Thresholds for GDFs for 2014**

Key for Calculations:

Abbreviation	Description	VOC Emission Factor (lbs/1,000 gallons)
STF	Storage Tank Filling Losses	0.30
STB	Storage Tank Breathing Losses	0.25
DIS-A	Dispensing Losses – Attainment, Unclassifiable or Attainment/Unclassifiable Area	1.91
DIS-NA	Dispensing Losses – Nonattainment Area	1.33
TP	Gasoline Throughput (gallons/year)	NA
CF	Conversion Factor (1 ton/2,000 lbs)	1/2,000
EF	Emission Factor	-

Note: Calculations are done for the year 2014. The EF for dispensing losses is dependent upon year and location. Assume worst case scenario storage tank breathing losses of 0.25 lb/1,000gallons.

Attainment, Unclassifiable or Attainment/Unclassifiable Area: Lower Gasoline Throughput Threshold:

$$\begin{aligned} \text{VOC Emissions}_{\text{STF}} &= \text{TP}_{\text{STF}} \times \text{EF}_{\text{STF}} \times \text{CF} \\ &= 4,016,000 \text{ (gallons/year)} \times 0.30/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 0.6024 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{STB}} &= \text{TP}_{\text{STB}} \times \text{EF}_{\text{STB}} \times \text{CF} \\ &= 4,016,000 \text{ (gallons/year)} \times 0.25/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 0.502 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{DIS-A}} &= \text{TP}_{\text{DIS-A}} \times \text{EF}_{\text{DIS-A}} \times \text{CF} \\ &= 4,016,000 \text{ (gallons/year)} \times 1.91/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 3.8353 \text{ tpy VOC} \end{aligned}$$

Total VOC Emissions = 4.94 tpy

Nonattainment Area: Lower Gasoline Throughput Threshold:

$$\begin{aligned}\text{VOC Emissions}_{\text{STF}} &= \text{TP}_{\text{STF}} \times \text{EF}_{\text{STF}} \times \text{CF} \\ &= 2,105,000 \text{ (gallons/year)} \times 0.30/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 0.3158 \text{ tpy VOC}\end{aligned}$$

$$\begin{aligned}\text{VOC Emissions}_{\text{STB}} &= \text{TP}_{\text{STB}} \times \text{EF}_{\text{STB}} \times \text{CF} \\ &= 2,105,000 \text{ (gallons/year)} \times 0.25/1,000 \text{ (lb/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 0.263 \text{ tpy VOC}\end{aligned}$$

$$\begin{aligned}\text{VOC Emissions}_{\text{DIS-NA}} &= \text{TP}_{\text{DIS-A}} \times \text{EF}_{\text{DIS-NA}} \times \text{CF} \\ &= 2,105,000 \text{ (gallons/year)} \times 1.33/1,000 \text{ (lb/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 1.40 \text{ tpy VOC}\end{aligned}$$

Total VOC Emissions = 1.98 tpy

**Appendix B –
Emissions Calculations for Upper Throughput Limitation for GDFs in Serious, Severe and
Extreme Nonattainment Areas for 2014**

Key for Calculations:

Abbreviation	Description	VOC Emission Factor (lbs/1,000 gallons)
STF	Storage Tank Filling Losses	0.30
STB	Storage Tank Breathing Losses	0.25
DIS-NA	Dispensing Losses – Nonattainment Area	1.33
TP	Gasoline Throughput (gallons/year)	NA
CF	Conversion Factor (1 ton/2,000 lbs)	1 / 2,000
EF	Emission Factor	-

Note: Calculations are done for the year 2014. The EF for dispensing losses is dependent upon year and location. Assume worst case scenario storage tank breathing losses of 0.25 lb/1,000gallons.

Nonattainment Area: Lower Gasoline Throughput Threshold:

$$\begin{aligned} \text{VOC Emissions}_{\text{STF}} &= \text{TP}_{\text{STF}} \times \text{EF}_{\text{STF}} \times \text{CF} \\ &= 8,000,000 \text{ (gallons/year)} \times 0.30/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 1.2 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{STB}} &= \text{TP}_{\text{STB}} \times \text{EF}_{\text{STB}} \times \text{CF} \\ &= 8,000,000 \text{ (gallons/year)} \times 0.25/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 1.0 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{DIS-NA}} &= \text{TP}_{\text{DIS-A}} \times \text{EF}_{\text{DIS-NA}} \times \text{CF} \\ &= 8,000,000 \text{ (gallons/year)} \times 1.33/1,000 \text{ (lbs/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 5.32 \text{ tpy VOC} \end{aligned}$$

Total VOC Emissions = 7.52 tpy

**Appendix C –
Emissions Calculations for Upper Throughput Limitation for GDFs in Ozone Attainment
Areas and Marginal and Moderate Ozone Nonattainment Areas for 2014**

Key for Calculations:

Abbreviation	Description	VOC Emission Factor (lbs/1,000 gallons)
STF	Storage Tank Filling Losses	0.30
STB	Storage Tank Breathing Losses	0.25
DIS-NA	Dispensing Losses – Nonattainment Area	1.33
TP	Gasoline Throughput (gallons/year)	NA
CF	Conversion Factor (1 ton/2,000 lbs)	1 / 2,000
EF	Emission Factor	-

Note: Calculations are done for the year 2014. The EF for dispensing losses is dependent upon year and location. Assume worst case scenario storage tank breathing losses of 0.25 lb/1,000gallons.

Nonattainment Area: Lower Gasoline Throughput Threshold:

$$\begin{aligned} \text{VOC Emissions}_{\text{STF}} &= \text{TP}_{\text{STF}} \times \text{EF}_{\text{STF}} \times \text{CF} \\ &= 25,000,000 \text{ (gallons/year)} \times 0.30/1,000 \text{ (lb/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 3.75 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{STB}} &= \text{TP}_{\text{STB}} \times \text{EF}_{\text{STB}} \times \text{CF} \\ &= 25,000,000 \text{ (gallons/year)} \times 0.25/1,000 \text{ (lb/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 3.125 \text{ tpy VOC} \end{aligned}$$

$$\begin{aligned} \text{VOC Emissions}_{\text{DIS-NA}} &= \text{TP}_{\text{DIS-A}} \times \text{EF}_{\text{DIS-NA}} \times \text{CF} \\ &= 25,000,000 \text{ (gallons/year)} \times 1.33/1,000 \text{ (lb/gallon)} \times 1/2,000 \text{ (ton/lb)} \\ &= 16.625 \text{ tpy VOC} \end{aligned}$$

Total VOC Emissions = 23.5 tpy