



Gasoline Stage I and II Vapor Recovery

A guide for owners and operators of underground storage tanks

This is a general guide to laws and regulations about underground and aboveground storage tanks and an aid in minimizing potential risks; it does not replace those laws and regulations, which take precedence over any information contained herein. If your tank system is located in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, or Williamson County, additional requirements related to the protection of the Edwards or the Trinity Aquifer may apply (Title 30, Texas Administrative Code [30 TAC], Chapters 213 and 214). In addition to the laws and TCEQ rules, local governments and other state and federal agencies may have rules that apply. The owner and operator are responsible for ensuring compliance with all applicable laws and regulations.

What is Stage I and II vapor recovery?

The federal Clean Air Act includes special rules for areas that do not meet the national ambient air quality standards. The Act requires each state to develop and execute a State Implementation Plan (SIP). These SIPs include measures to deal with pollution. Stage I and Stage II are two control strategies helping Texas achieve its goals for air quality.

Stage I vapor recovery captures vapors released when gasoline is delivered to a storage tank. The vapors are returned to the tank truck as the storage tank is being filled with fuel, rather than released to the ambient air. Owners and operators of gasoline dispensing facilities must comply with state regulations for their Stage I vapor recovery system. Depending on their monthly throughput and location, facilities are subject to Stage I record keeping, testing, and inspection requirements.

Stage II captures gasoline vapors when a vehicle is being fueled at a dispenser. The vapors are returned through the dispenser hose to the petroleum storage tank instead of being released into the air. On some vehicles, onboard canisters help

capture up to 95 percent of harmful gasoline vapors that might otherwise be released to the atmosphere. See Figure 1.

What is the purpose of vapor recovery?

Stage I equipment decreases the amount of gasoline vapors released into the atmosphere during tank refilling. Stage II equipment captures gasoline vapors during vehicle refueling and sends them back to the underground storage tank. Gasoline is a complex mixture of hundreds of chemical compounds. Repeated or prolonged exposure to some of those compounds could pose a health risk to humans. In addition, some elements of gasoline vapors called *volatile organic compounds* contribute to the formation of ground-level ozone. Ozone is the primary component of smog.

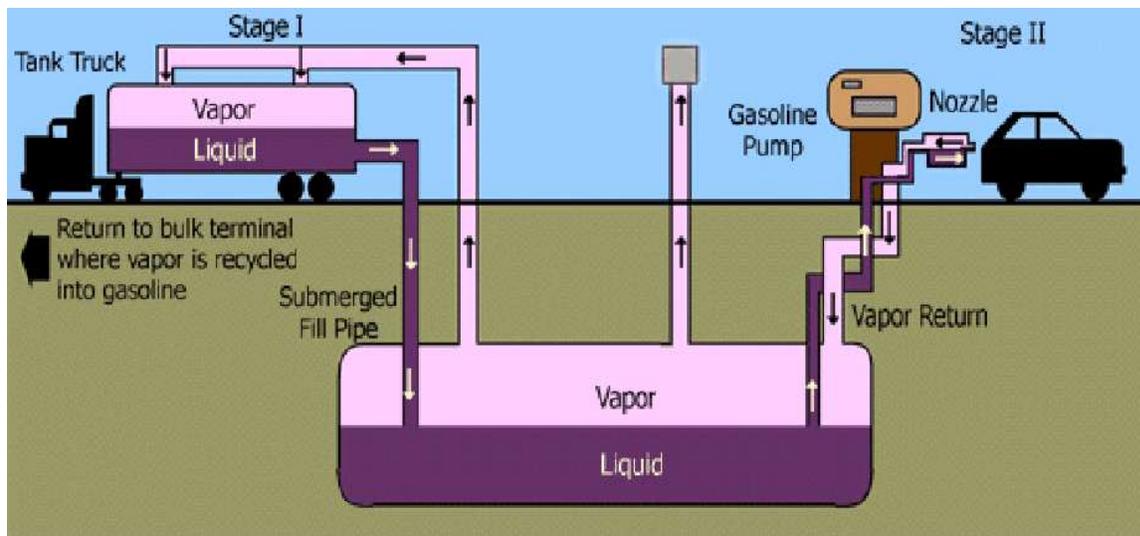


Figure 1. Stage I and II vapor recovery.

Am I required to have Stage I?

Applicability of the Stage I vapor recovery rules is determined by the county in which the gasoline dispensing facility is located and the gallons of gasoline dispensed from the facility in a month (monthly throughput). Use the list of counties in Table 1 to determine whether your facility is required to have Stage I vapor recovery equipment. You should be able to find your monthly throughput listed on your inventory control sheet as “Total monthly gallons dispensed.”

If your facility is located in an affected county and dispenses more than the monthly throughput listed for that county, your facility is subject to the Stage I rules. If your facility is located in an affected county and dispenses less than the monthly throughput listed for that county, it is exempt from the requirements of

the Stage I rule, with a few exceptions. Monthly throughput exemptions can be found in 30 TAC 115.227. For more information, visit our Web page Stage I Vapor Recovery at <www.tceq.texas.gov/goto/stageI>.

Table 1. Counties requiring Stage I.

Affected Counties	Monthly Throughput
Brazoria, Chambers, Collin, Dallas, Denton, El Paso, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, Tarrant, Waller*	Any amount*
Ellis, Johnson, Kaufman, Parker, Rockwall	More than 10,000 gallons of gasoline in any month after April 30, 2005
Bastrop, Bexar, Caldwell, Comal, Guadalupe, Hays, Travis, Williamson, Wilson**	More than 25,000 gallons of gasoline in any month after December 31, 2004**
Anderson, Angelina, Aransas, Atascosa, Austin, Bee, Bell, Bosque, Bowie, Brazos, Burleson, Calhoun, Camp, Cass, Cherokee, Colorado, Cooke, Coryell, De Witt, Delta, Falls, Fannin, Fayette, Franklin, Freestone, Goliad, Gonzales, Grayson, Gregg, Grimes, Harrison, Henderson, Hill, Hood, Hopkins, Houston, Hunt, Jackson, Jasper, Karnes, Lamar, Lavaca, Lee, Leon, Limestone, Live Oak, Madison, Marion, Matagorda, McLennan, Milam, Morris, Nacogdoches, Navarro, Newton, Nueces, Panola, Polk, Rains, Red River, Refugio, Robertson, Rusk, Sabine, San Augustine, San Jacinto, San Patricio, Shelby, Smith, Somervell, Titus, Trinity, Tyler, Upshur, Van Zandt, Victoria, Walker, Washington, Wharton, Wise, Wood**	100,000 gallons or more in any month after October 31, 2014**

* If your gasoline dispensing facility is in the Beaumont–Port Arthur, Dallas–Fort Worth, El Paso, or Houston–Galveston–Brazoria area, it may be exempt from the Stage I rules if it has dispensed no more than 10,000 gallons of gasoline in any calendar month after January 1, 1991, and construction began before November 15, 1992. The TCEQ may request verification of throughput by monthly inventory control records, so be sure to maintain those records.

** If your gasoline dispensing facility is in a covered attainment county [30 TAC 115.10(10)] and the capacity of the stationary gasoline storage containers is no more than 1,000 gallons, your facility is exempt from the Stage I rule, with a few exceptions.

What are the requirements for Stage I systems?

For Stage I vapor recovery systems you must comply with the following:

- Control displaced vapor emissions using either:

- a vapor control system operated in accordance with 30 TAC 115.221(1) or
- a vapor balance system which must be operated according to the conditions found in 30 TAC 115.222.
- Inspect for liquid leaks, visible vapors, and significant odors during gasoline deliveries. Immediately discontinue delivery if any of those items is observed, and do not resume until the observed issue is remedied.
- Ensure that the gasoline tank truck has been inspected for leaks within the most recent year.
- Conduct annual testing procedures according to 30 TAC 115.225. These two tests are—
 - California Air Resources Board Vapor Recovery Test Procedure TP-201.1E: Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves.
 - California Air Resources Board Vapor Recovery Test Procedure TP-201.3: Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities.
- Keep records of dates on which gasoline was delivered to your facility and the identification number and date of the last leak testing of each tank-truck tank from which gasoline was transferred to the facility.
- Maintain the following records for two years:
 - a record of the test results of any testing conducted at the facility
 - monthly inventory records to show gasoline throughput

Also, your facility must be equipped with pressure-vacuum relief valves on the storage tank vent lines, two-point connections for vapor recovery during fuel delivery, and drop tubes that extend to within 6 inches of the tank bottom. All Stage I equipment must be certified by the California Air Resources Board (CARB) or an approved third party.

In addition, all gasoline dispensing facilities (GDF) with a monthly throughput of more than 10,000 gallons must have a drop tube that extends to within 12 inches of the tank bottom if the pipes were installed on or before November 9, 2006, or within 6 inches of the tank bottom if the pipes were installed after November 9, 2006, regardless of county. A list of approved Stage I equipment is available at the TCEQ's website. A link appears at the end of this guide.

Additional requirements may apply depending on your throughput and location. Please refer to EPA publication EI 43-02, Summary of Regulations Controlling Air Emissions, for more information (see the link at the end of this guide).

What are the requirements for facilities exempt from Stage I?

If your facility is located in an affected county and is exempt from the rule, based on monthly throughput, you must still comply with the following requirements:

- Ensure there are no avoidable gasoline leaks in the liquid transfer or vapor balance systems.
- Ensure that the tank truck is kept vapor-tight after unloading.
- Inspect for liquid leaks, visible vapors, and significant odors during gasoline deliveries. Immediately discontinue delivery if any of those items is observed, and do not resume until the issue is remedied.
- Maintain monthly inventory records to show gasoline throughput. This requirement does not apply to facilities located in a covered attainment area with a stationary gasoline-storage capacity of 1,000 gallons or less.

What are the requirements for Stage II systems?

All Stage II systems are required to be compatible with onboard refueling vapor recovery (ORVR). Additionally, all Stage II equipment must be certified by CARB or an approved third party. CARB executive orders delineate system-specific requirements for installation, equipment, and maintenance. Table 2 gives a list of common CARB executive orders. For a more complete list of Stage II ORVR-approved systems and CARB executive orders, follow the TCEQ Web address at the end of this module.

Table 2. Common CARB executive orders.

System	Executive Order
Gilbarco	G-70-150 AE
Dresser-Wayne	G-70-153 AD
Tokheim	G-70-154
Balance	G-70-52 AM
Healy 800	G-70-191-AA
Healy 400 ORVR	G-70-186

What are the requirements for Stage II decommissioning?

Owners or operators of GDFs constructed on or after May 16, 2012, are no longer required to install Stage II equipment, and existing facilities may decommission Stage II equipment. Stage II equipment may be removed after May 16, 2014, provided that all other requirements for decommissioning have been met,

including appropriate notification. You must submit a Decommissioning Notification Form (TCEQ-20698) to the appropriate TCEQ regional office and local government program at least 30 calendar days before any physical decommissioning activities begin. Additionally, a one- to three-day notice and a report with test results must be submitted to the appropriate TCEQ regional office. All decommissioning must be completed by August 31, 2018.

Owners and operators of GDFs that decide to keep their Stage II equipment may do so, but must continue to test, repair, replace, retrofit, and maintain the equipment in accordance with current requirements, described below.

What are the Stage II testing requirements?

If your facility has Stage II equipment, the following tests are required once every 12 months, within the same calendar month in which they were completed during the previous year:

- TXP-102 Pressure Decay
- TXP-104 Flow Rate (if applicable)
- TXP-105 Liquid Removal (if applicable)
- TXP-106 Volume-to-Liquid Ratio (vacuum assist)

Additionally, the following tests are required once every 36 months:

- TXP-101 Vapor Space Manifolding
- TXP-103 Dynamic Back-Pressure

You must submit a Pre-Test Notification Form (TCEQ-10501) to your TCEQ regional office at least 10 days before you conduct any type of testing on your Stage II equipment. This form can be downloaded at <www.tceq.texas.gov/search_forms>. Regional office mailing addresses appear on page 2 of the form.

All test results, regardless of their outcome, must be submitted to the appropriate regional office within 10 working days after the test is conducted. Attach to the completed Vapor Recovery Test Result Cover Sheet (form TCEQ-10502) copies of all result forms from each applicable test. For more information about Stage II vapor recovery testing, please refer to the Vapor Recovery Test Procedures Handbook (TCEQ publication no. RG-399).

What are the Stage II inspection requirements?

If your facility is equipped with Stage II equipment, you must inspect for the following defects daily:

- any missing or disconnected equipment
- a crimped or flattened vapor hose

- a torn nozzle boot
- for balance nozzles, a damaged faceplate
- for vacuum-assist systems, a damaged or missing cone
- a nozzle shutoff mechanism that malfunctions in any manner
- a vapor processing or control unit that is inoperative or defective
- a system monitor or printer that is malfunctioning or out of paper
- a gasoline leak in either the dispensing or Stage II equipment

Monthly, the owner or operator must inspect for inoperative or defective pressure-vacuum relief valves, vapor check valves, or Stage I dry breaks. Keep a separate daily and monthly inspection sheet, and document every inspection. If you discover any defect, you must remove all affected dispensing equipment from service until the defect has been properly repaired, replaced, or adjusted. For more specific information on Stage II inspection requirements, refer to the rules in 30 TAC 115.242.

What are the Stage II training requirements?

Facilities equipped with a Stage II vapor recovery system are required to have at least one worker at that station trained and certified to operate and maintain the system. To obtain this certification for yourself or one of your employees, you must register for a course from a TCEQ-approved training provider.

If you own or operate more than one facility, you may send at least one employee from each facility to a “representative” course, or you may send one employee to a “trainer” course. An employee who has taken a “trainer” course is allowed to train the employees from other facilities. The TCEQ Web site maintains a list of training providers (see the Web address at the end of this guide).

The certified individual is responsible for making all current and future employees familiar with the purposes and correct operating procedures of your Stage II system. If the facility representative who received the approved training is no longer employed at that facility, another representative must successfully complete approved training within three months of the departure of the previously trained employee.

What records do I need to keep?

For facilities with Stage II equipment, you must keep the following records onsite for at least two years:

- a record of any maintenance conducted on any part of the Stage II equipment, including—
 - a general description of the part serviced or replaced

- the date and time the equipment was taken out of service
- the date of any repair or replacement
- information on the manufacturer of any replacement part
- a general description of the location of any repaired or replacement part in the system (for example, the dispenser number, etc.)
- a description of the problem
- the results of any additional testing conducted at your facility

Additionally, you must keep the following records on site indefinitely:

- a copy of the CARB executive order or third-party certification for the Stage II system
- a copy of any owner or operator request for executive director approval of alternate methods and any ED approval issued
- a record of the results of the daily, monthly, and yearly self-inspections at the fuel dispensing facility

Also, the facility should maintain proof of attendance and completion of Stage II training for each employee as long as that employee continues to work at the facility.

Where can I find more information?

Stage I Vapor Recovery: <www.tceq.texas.gov/goto/stageI>

The complete requirements for Stage I and II, 30 TAC Chapter 115, Subchapter C:
<texreg.sos.state.tx.us>

Stage I and II gasoline vapor recovery, list of approved equipment, other information: <www.tceq.state.tx.us/goto/vapor_recovery>

Training for Stage II vapor recovery:
<www.tceq.state.tx.us/goto/stage_ii_training>

Vapor Recovery Test Procedures Handbook (RG-399):
<www.tceq.texas.gov/publications/rg/rg-399.html>

Download TCEQ forms: <www.tceq.texas.gov/search_forms.html>

EPA guide to Stage I (publication no. EI 43-02):
<www.epa.gov/ttn/atw/area/gdfb.pdf>

Search agency publications at the TCEQ's website:
<www.tceq.state.tx.us/publications>

For information about installation or renovation of Stage I or II equipment, please refer to module RG-475c, Licensed Underground Storage Tank Contractors.

For confidential environmental compliance assistance for small businesses and local governments, contact Small Business and Local Government Assistance via the hotline at 800-447-2827 or online at <www.TexasEnvirohelp.org>.