



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. 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.

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, Stage II vapor recovery systems 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 refilling. Stage II equipment captures gasoline vapors during vehicle refueling and sends them back to the UST. 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.

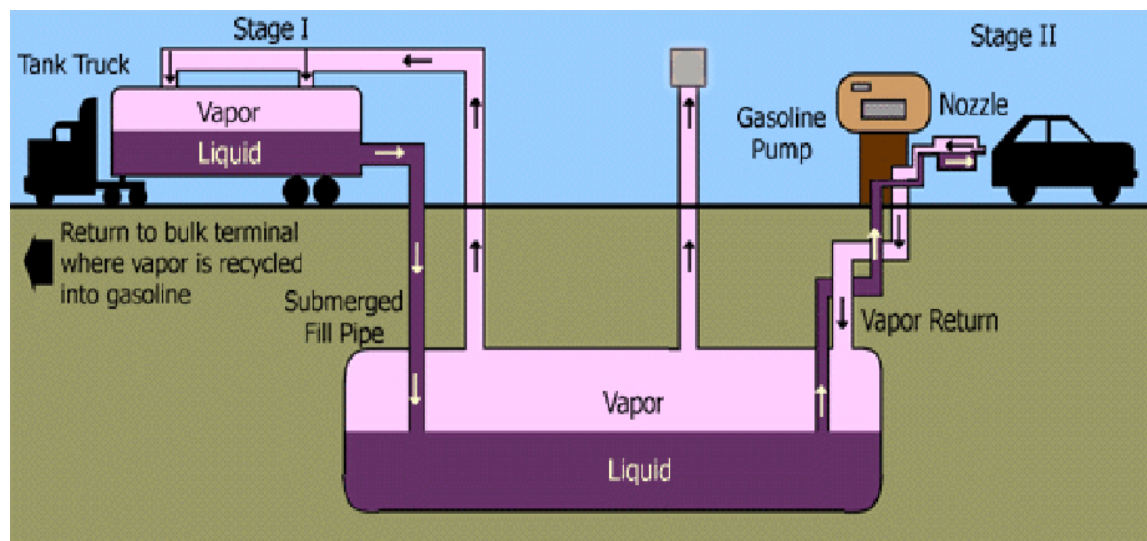


Figure 1. Stage I and II vapor recovery.

Am I required to have Stage I and II?

Use the flowchart in Figure 2, along with the list of counties in Table 1, to determine whether your facilities are required to have Stage I or II vapor-recovery equipment. You should be able to find your monthly throughput listed on your inventory-control sheet as “monthly gallons pumped.”

In addition to current rules, all gasoline-dispensing facilities with a monthly throughput of more than 100,000 gallons are required to be equipped with Stage I equipment by January 10, 2011, regardless of location.

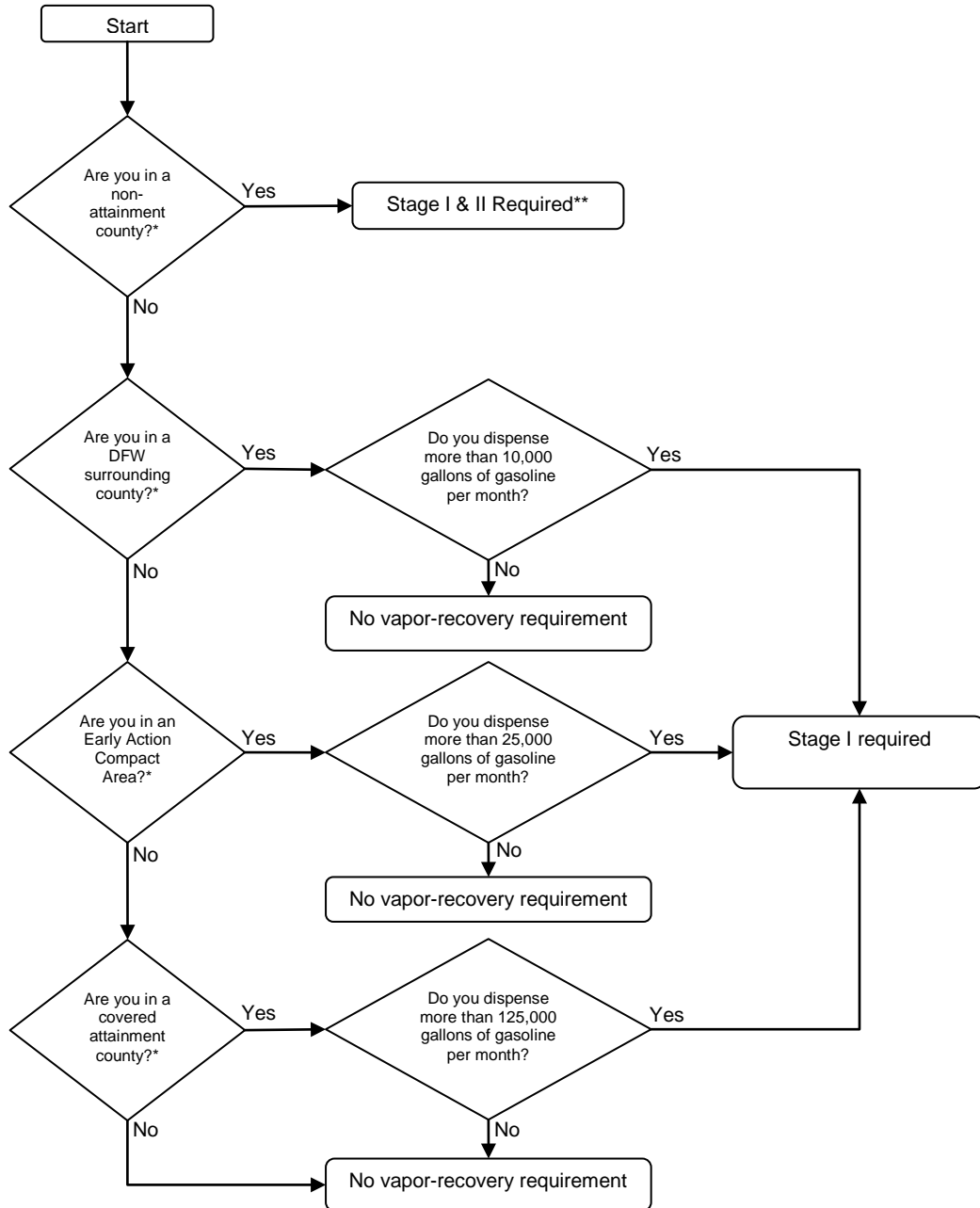
What are the requirements for Stage I systems?

For Stage I vapor-recovery systems, your facility must be equipped with pressure or 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.

Additionally, by January 10, 2011, all gasoline-dispensing facilities 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 can be found at the TCEQ’s Web site. 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 Table 1.

**Your facility may be exempt from Stage II recovery requirements if you continue to meet one or both of the following conditions:

1. Your facility has never dispensed gasoline into the fuel tanks of motor vehicles on and after your prescribed Stage II compliance date.

2. Original construction of gasoline-dispensing equipment began before November 15, 1992 **and** the facility never dispensed an average of 10,000 gallons or more of gasoline per month between January 1, 1991, and November 15, 1992 **and** never dispensed 10,000 gallons or more of gasoline during **any one** calendar month since November 15, 1992, except during documented emergencies or natural disasters.

If you meet one or both of the exemption requirements, you may submit a Stage II Vapor Recovery Exemption Confirmation Form (TCEQ-20532). For more information about Stage II recovery exemptions, links to the TCEQ Web site appear at the end of this document.

Figure 2. Flowchart for determining whether Stage I or II vapor recovery is needed.

Table 1. Counties requiring Stage I and II.

Nonattainment counties	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller, Hardin, Jefferson, Orange, El Paso, Collin, Dallas, Denton, Tarrant
Counties surrounding Dallas–Fort Worth	Ellis, Johnson, Kaufman, Parker, Rockwall
Early Action Compact Areas	Bastrop, Caldwell, Hays, Travis, Williamson, Bexar, Comal, Guadalupe, Wilson
Covered attainment counties	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

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 Stage II testing requirements?

If your facility is required to have Stage II equipment, the following tests are required once every 12 months, within the same calendar month in which it was 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.state.tx.us/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 Procedure Cover Sheet (form TCEQ-10502) copies of all result forms from each applicable test. For more information about testing for 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?

The owner or operator of a gasoline-dispensing facility equipped with Stage II equipment 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 or vacuum relief valves, vapor-check valves, or Stage I dry breaks.

Keep a separate daily and monthly inspection sheet, and document every inspection made. 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?

If your facility is required to have a Stage II vapor-recovery system, you 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, either 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 I equipment, you must keep the following records for at least two years:

- the 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
- the results of any testing conducted at your facility

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 part description
 - 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 (e.g., pump or nozzle 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 conducted at the fuel-dispensing facility

Furthermore, proof of attendance and completion of training with the documentation of all Stage II training for each employee should be maintained as long as that employee continues to work at the facility.

Where can I find more information?

The complete requirements for Stage I & II may be found in 30 TAC 115, Subchapter C.

<[info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=115&sch=C](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=115&sch=C)>

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.state.tx.us/files/rg-399.pdf_4447468.pdf>

Download TCEQ forms

<www.tceq.state.tx.us/forms>

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

Search agency publications at the TCEQ's Web site
<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 hot line at 800-447-2827 or online at <www.sblga.info>.